

ABSTRACTS OF THE PAPERS AND POSTERS OF THE CONFERENCE

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Les poteries et leurs fonctions dans l'alimentation médiévale

Depuis la fin de l'antiquité, les céramiques vont connaître des transformations, en particulier sur les traitements des surfaces qui vont aboutir, au XV^{ème} siècle, à la généralisation des glaçures.

Les recherches et la maîtrise des différentes techniques par les potiers suivent un processus long et très différencié sur toute l'Europe. A l'origine, éléments de prestige, souvent utilisés comme décoration, les céramiques glaçurées vont peu à peu devenir des ustensiles usuels répandus dans toutes les couches de la population à la fin du Moyen Age.

Cette lente généralisation soulève de nombreux questionnements sur la relative inertie des progrès techniques des potiers, marginalisés en regard des productions prestigieuses des verriers et des émailleurs. Ils relèvent pourtant tous de la même maîtrise des fondants, des colorants et des modes de cuisson.

D'autre part, les céramiques glaçurées témoignent des modifications des pratiques alimentaires et des modes de préparation culinaire, sur lesquels les sources médiévales sont particulièrement avares. Notre argument repose sur l'étude typo chronologique et technique de collections céramiques issues de fouilles archéologiques, sur la pratique de l'archéologie expérimentale et la confrontation des diverses sources historiques et iconographiques. Il s'agit de proposer une vision évolutive du monde rural médiéval trop souvent considéré comme frappé de stagnation et opposé au modèle urbain.

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Verbreitung und Verteilung von Lebensmitteln unter dem Aspekt von ländlichen und städtischem Nahrungsangebot- eine naturwissenschaftliche und archäologische Betrachtung

Verbreitung und Verteilung von Nahrung sind dynamische Prozesse, denen sich üblicher Weise deren Verzehr anschließt. Somit hinterlassen sie keine archäologische fassbaren Spuren. Vor dem Verzehr findet jedoch als statischer Prozess von zeitlich begrenzter Dauer die Lagerung statt, die durch Brandereignisse zu einem rudimentären Dauerzustand werden kann.

Im archäologischen Kontext wird Vorratshaltung in Form von Speicherbauten und Speichergruben fassbar. Die Reste der Vorräte selbst, sofern sie nicht verzehrt und damit der

Beobachtung entzogen, sondern durch Schadfeuer vernichtet wurden, sind archäobotanisch als Konzentrationen verkohlter Körner im Boden fassbar.

Für das Hoch- und Spätmittelalter wurden 52 derartige Kornkonzentrationen aus 29 Orten in Baden-Württemberg und angrenzenden Gebieten ausgewertet. Darunter drei Burgen, 15 Städte und elf ländliche Siedlungen. Ein struktureller Zusammenhang mit archäologisch fassbaren Speicheranlagen ist dabei in kaum einem der Fälle gegeben. Nur selten hat man archäologisch eindeutig definiert Vorratsfunde in Grubenhäusern. Deutlich wird auch, dass sich bei dieser Befundgattung im vorliegenden Material kein Unterschied abzeichnet zwischen den Lagerungsbefunden von Stadt und Land. Als auffallendes „highlight“ kann man im ländlichen Bereich einen Vorrat in einem unterirdischen Stollensystem ausmachen.

In der Stadt ist als Besonderheit z.B. eine Darre in Heidelberg anzusprechen.

Der Großteil des Materials stammt jedoch aus den Verfüllungen von Gruben, Pfostengruben, Grubenhäusern oder Kellern, auch aus Feuerstellen oder Brandschichten.

Diejenigen Vorräte, die aus Verfüllschichten stammen, sprechen für eine regelhafte Verlagerung und Verklappung durch Brand verdorbener Nahrungspflanzenvorräte in geeignete Hohlformen.

Beim Vergleich der Siedlungstypen ergeben sich hinsichtlich der eingelagerten Kulturpflanzenarten deutliche Unterschiede: Hülsenfrüchte treten mit einer städtischen Ausnahme nur auf dem Dorf als Hauptkomponente auf. Auf den schlecht vertretenen Burgen wurden neben einem Dinkel- und einem Dinkel-Mischvorrat ein Hafer- und ein Hafer-Roggen-Mischvorrat erfasst. In den Städten sind Roggenvorräte (teils gemischt) und Roggenabfälle am häufigsten, gefolgt von Hafer(-Misch)-Vorräten. Auch auf dem Land sind die Konzentrationen mit Roggen als Hauptkomponente am häufigsten, doch sind es hier besonders die Druschabfälle, die mehr Ährenspindelglieder als Körner enthalten, und die wohl hauptsächlich als Viehfutter und nur in Notzeiten als menschliche Nahrung dienten. Sehr große Vorräte sind in den Städten und auf den Burgen deutlich häufiger als auf dem Land.

Als vorläufiges Ergebnis ist also festzuhalten, dass sich botanische Vorräte in den seltensten Fällen mit archäologisch als Vorratsverwahrung anzusprechenden Befunden in Zusammenhang bringen lassen. Dies ist jedoch nicht verwunderlich, da diese in der Regel verzehrt wurden und nur unbrauchbare oder durch ein Schadenereignis im Boden konservierte Konzentrationen auf uns kamen.

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'Useful and Harmful Birds': On reasons for fowling

In archaeological and historical research, much attention has hitherto been paid to hunting – including falconry – as a royal privilege or as a past time occupation of noblemen in the Middle Ages and later. But which role did fowling inhabit in the rural society and why and how was it pursued by 'common men'? Written sources bear witness of an extensive and widespread hunt of wildfowl, with a variety of different techniques applied, well into the late 19th and early 20th century, when animal protection laws put restrictions on the hunting of

birds in many European countries. Until then bird meat – the spectra ranging from sparrows, larks and thrushes to doves, ducks and wild geese – had been a regular and welcome supplement to the diet. Birds were however not exclusively hunted for their meat, but also as means of 'damage control'. The feeding habits of several species – feeding on grain, corn and fruits - conflicted with agricultural production and could cause crop damage, leading to a substantial loss of eatables. Based on a survey of archaeological evidence, as well as written and pictorial sources and historical maps, the ambiguous role of birds – as a source of nutrition, as a potential source of damage- in peasant society in foremost Northern and Central Europe is discussed.

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'Speichergruben für Getreide im Karpatenbecken im 10-13. Jahrhundert'

Der Aufsatz beschäftigt sich mit den in die Erde vertieften Speichergruben, mit einer Art von Baudenkmalern, die von den arpadenzeitlichen (hochmittelalterlichen) ungarischen Dörfern am meisten erhalten geblieben sind, bzw. erschlossen wurden.

Die ungarische Umgangssprache kennt mehrere Bezeichnungen für diese unterirdischen Bauwerke zum Speichern, z. B. Grube, Lehmgrube, Abfallgrube, Speicher für Abfälle, Getreidegrube, Speichergrube, bienenkorbformige Grube, bienenkorbformige Getreidegrube. Die archäologische Fachliteratur braucht aber diese Begriffen ziemlich unkonsequent. Die Präzisierung der Terminologie und die Einführung einer einheitlichen Benennung wären sehr notwendig, damit die Vertreter der verschiedenen Fachgebiete unter einer gewissen Erscheinung dasselbe verstehen.

Die Autorin unterscheidet zwei Gruppen unter den in den Boden vertieften Bauwerken mit Speicherfunktion: diejenigen, die im Inneren der Wohnhäuser errichtet wurden und diejenigen, die draußen, (im Freien) in die Erde eingehauen wurden. Diese letzteren klassifiziert sie auf Grund ihrer Formen, der Art von ihrer Ausführung, indem sie auch das in ihnen gespeicherte Material, die aus ihnen stammende Funde, bzw. die vermutliche Länge der Gebrauchszeit in Betracht nimmt. Sie versucht auch die Verhältnisse zwischen den im Freien errichteten Getreidegruben und den Grundstücken/Bauernhöfen, bzw. Wohnhäusern zu klären.

In der zweiten Hälfte der Abhandlung vergleicht die Verfasserin die Merkmale der in den Boden eingetieften Bauwerke, die das ungarische Bauerntum im 18-20. Jh. zum Speichern von Getreide errichtete, mit denen, die im 10-13. Jh. zu diesem Zweck im Gebrauch waren.

Auf diese Weise wurde die Rekonstruktion der Herstellungsmethode und der Gebrauchsart der arpadenzeitlichen, bienenkorbformigen, bzw. kellerartigen Speichergruben für Getreide möglich geworden.

Die obigen Untersuchungen bieten Grund auch für eine wirtschaftsgeschichtliche Interpretation an. Die Autorin versucht nämlich die Frage zu beantworten, ob das Getreide im 10-13. Jh. entweder von den einzelnen Familien, oder auf Grund der Einteilung der Grundstücke, oder von einer größeren Gemeinschaft gemeinsam gespeichert wurde. Es besteht auch die Frage: Ob es Unterschiede im Laufe der oben erwähnten drei Jahrhunderten in der Errichtungsmethode, in der Gebrauchsweise, bzw. in der Zahl der zur selben Zeit funktionierenden, bienenkorbformigen Getreidegruben gibt.

Die auf diese Weise gewonnenen Angaben vergleicht die Verfasserin mit den Daten der schriftlichen Quellen, die über die Körnerproduktion und über die Speicherung von

Getreide berichten. Auf dieser Basis versucht sie zu bestimmen, wie großer Teil der Flur eines ungarischen Dorfes im 10-13. Jh. als Ackerfeld bebaut wurde.

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Speicher im Schwarzwald – Granaries in the Black Forest

There is no other type of building that known world-wide like the “Black Forest Farmhouse”. It has developed to a – though unspecified – symbol of traditional architecture in Black Forest agricultural areas. The following lecture, however, deals with the apparently insignificant adjoining farm buildings – the Black Forest granaries.

These granaries are small buildings, usually made of wood. They served for keeping the threshed grain and were also used as general storehouses - ingenious constructions meant for protecting the most important agricultural products against wasting in the rough climate of the Upper Black Forest.

We hardly find any other region showing such a vast number of different types of granaries – and there is hardly any other region than the Black Forest where these basically ancient buildings are that little noticed.

The lecture tries to give an overview of the phenomenon “Granaries in The Black Forest”. It explains construction type and style as well as the very specific working processes for food producing and storing where granaries played a central role.

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Food production in medieval Ireland, aspects of arable husbandry

The narrative of food in medieval Ireland is well-informed by documentary sources, but the archaeological evidence is less clear. Despite considerable excavations especially in recent years, there are many basic questions that remain unanswered and unexplored. This paper will focus on the products of arable husbandry and in particular on questions surrounding the ability to generate surpluses. The insight that exists for the early medieval period reveals large numbers of corn-drying kilns, rich palaeo-environmental indicators, numerous hand querns and an important series of watermills. In the past, this assemblage has been studied in terms of satisfying subsistence-level productivity. More recently, interest has begun to observe other factors at work, and we seem to be moving quickly to a new understanding that sees a much busier economic dynamic which prepared the way for still greater transformation during the later medieval period. It is after c. 1170 AD that we have access to documents which record large-scale provisioning, and the archaeological indicators seem to support a sense of greater intensification of production until the fourteenth century. The paper will conclude with a statement on where research can most usefully be directed over the next decade to help ensure that discussions move beyond the concentration on gathering data and towards wider social and economic issues associated with interpretation;

issues that can perhaps begin to throw light on the attitudes to food from the perspective of the people who produced and consumed it.

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Silos et structures de conservation dans les campagnes du Sud-Ouest de la France (Moyen Âge au XIXe siècle) ; permanence et diversité des systèmes de stockage des denrées agricoles ».

Le territoire compris entre Loire et Pyrénées s'avère d'une grande richesse en découvertes archéologiques témoignant de l'utilisation, sur la « longue durée » des systèmes souterrains de conservation des denrées agricoles, en particulier tout au long du Moyen Âge. Des fouilles archéologiques récentes, dans le cadre préventif ou celui de l'archéologie programmée, des découvertes anciennes et quelques données issues des sources écrites et de la littérature agronomique permettent de dresser un panorama de l'utilisation des silos qui semble, à l'image de ce que l'on peut constater en Espagne ou en Italie, s'être prolongé ici, dans ces terres du sud, largement après le Moyen Âge.

Une revue des contextes de découvertes montre que le principe de l'ensilage souterrain est répandu aussi bien en milieu rural qu'urbain, en contexte paysan que seigneurial. L'examen de la documentation archéologique témoigne d'une grande variété de situations : en milieu urbain, par exemple, le principe du silo semble bien établi, dès le haut Moyen Âge dans certaines villes mais pas dans d'autres centres urbains, comme par exemple à Toulouse où, en revanche, les aires d'ensilages apparaissent dans sa proche campagne.

La relation entre présence de silos et résidences seigneuriales ou ecclésiastiques n'est également pas toujours évidente à analyser, malgré des découvertes désormais plus nombreuses. Dans quelques cas on peut constater la présence de silos directement associés à des résidences aristocratiques, mais souvent, les structures pourraient s'avérer antérieures à l'édification des sites nobles ou des implantations religieuses.

Dans les campagnes, l'utilisation des silos est tout aussi variée puisqu'on les retrouvent aussi bien dans certains hameaux désertés, villages paroissiaux, ou à proximité (voire à l'intérieur) de souterrains ruraux. Dans d'assez nombreux cas, de vastes groupes de silos paraissent isolés des centres d'habitat. Dans ce dernier cas, comme dans celui des structures découvertes à proximité des centres de pouvoirs se pose désormais la question du contrôle et de la gestion des denrées agricoles stockées.

Trois autres questions relatives à l'ensilage souterrain seront également abordées:

- l'utilisation du silo comme outil privilégié de conservation de denrées agricoles au delà du Moyen Âge, jusqu'à l'époque contemporaine.
- La nature des denrées ensilées, grâce aux premières analyses systématiques menées en collaboration avec les paléocarpologues.

- Enfin les problèmes de méthodologie archéologique que pose la découverte des structures creusées identifiées comme silos.

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Of bannocks and ale: cereal processing in Scotland, c.1100-1750

In the medieval and post-medieval periods, cereals were staple products of farming throughout Scotland and in particular barley and oats, although wheat and rye were also grown in the eastern counties. The preparation of cereals for consumption was, however, part of the daily round, whether for food or drink. The processes that were required included grain-drying, threshing and winnowing as well as brewing, milling and distilling. The structures used for these processes are often visible as archaeological evidence and tell us much about which grains were used and when, as well as the practical processes themselves. Kilns for drying grain, barns, stills and mills are all found on a regular basis. These structures vary in their construction from one region to another, which may be attributed to the vernacular traditions of these areas, but also to the economy, agriculture and the products consumed. This paper will review the archaeological and documentary data for the types of structure and the types of cereals used in different regions with some discussion of the products themselves.

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Archaeozoological research at the castle of Aqaba (Red Sea coast, Jordan): preliminary results

Excavations at the castle of Aqaba, located at the Red Sea Coast, have yielded a large amount of animal remains, ranging in date from the Roman period up to modern times. The majority of the material, however, was dated to the Mamluk period (end 13th – 14th century AD), the Ottoman period (16th – 19th century) and the beginning of the 20th century. The archaeozoological analysis of this material has led to a better understanding of the site's economy and provided information on a subsistence economy mainly based on sheep and goats. Butchering traces on camel bones indicated that they were slaughtered for their meat but complete carcasses of riding animals were also found. On the other hand, the remains of other domestic mammals (such as cattle) and wild mammals and birds were rather rare. The sea was an additional source of food, as indicated by the large number of shells and the fish bones collected at the site. The identified fish species evidence both coastal fishing as fishing in the open sea. A diachronic comparison between the consumption patterns of the different occupation periods of the site was carried out.

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Archaeological indications for pest control in medieval and post-medieval rural settlements in the Netherlands

Nuisance caused by pests is of all ages. Recent studies show that about 10% of the world's yearly food production is eaten by rats and mice. In Medieval society this percentage must have been much higher. It is however difficult to give exact figures on the amount of damage these rodents caused on food and food supplies.

Besides rodents, parasites and fungi caused personal distress and the spread of diseases such as the black death. The negative impact of rodents on foodstuffs is time and again mentioned in medieval and post-medieval written sources. Several measures were taken to reduce the number of pests. Written sources mention the use of different kinds of herbs, wood, minerals, and animal parts that were boiled or burned in order to get rid of pests. Also domesticated animals such as cats and dogs were used and wild animals, like foxes and owls were stimulated to catch rodents. Sometimes steps were taken to protect these wild animals from hunters. In the Late Middle Ages traps and snares were introduced and in written sources we encounter the first rat catchers. When all manmade devices and methods failed, one could always fall back on divine sources such as pilgrimages to churches that held relics of saints specialized in dispelling rodents and holy water sprinkled on crops.

Archaeological indications for pest control in connection to foodstuffs seem limited since most of the above mentioned remedies and contraptions left no traces in the soil. Furthermore archaeologists are not always aware that some of their finds may have something to do with pest control. This lecture will focus on the evidence from the archaeological record for pest control in medieval and post-medieval rural settlements. In some cases new meaning is given to archaeological finds. This provides valuable additional information on how medieval and post-medieval farmers tried to cope with pests threatening crops and foodstuffs.

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Fortified granaries in Southeastern al-Andalus

The *Agadir*, a collective fortified granary, is a very common structural type in North Africa and unusual, curiously, in the Iberian Peninsula. After the study of archaeological evidence in Southeastern al-Andalus we suggest that, possibly, many of the fortified sites that have a typology too compartmentalized and without apparent parallel should be interpreted as

fortified granaries, such as the case of Puentes (Lorca, Murcia) or the well-known site of the Cabezo de la Cobertera (Blanca-Abarán, Murcia),

The presence of such structures would be quite consistent with the known Al-Himyari text, which says that in the region the grain could keep in silos for fifty years, and with other fragments of al-Udri affecting the fertility of the cereal in this territory. Thus, the network of villages constitute a community of agricultural base strongly unified that would retain and protect in a collective way their property in the *agadir* (which is nothing but a superposition of individual cells fortified and protected by the community as a whole). The key lies in the relationship of the building with the territory and the settlements of the environment, the "network of villages", which was inserted into a central place and that explains their existence and the social organization of space.

Possibly in the eleventh century the fortified granaries came into play. Over time there should arise elements that would allow "dialogue" between areas of residence and agriculture spaces and so, the pattern of settlements became more complex, in subsequent centuries.

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Anbau, Ernährung und Aufbewahrung im bäuerlichen Milieu Niederösterreichs- verschiedene Quellen, verschiedene Aussagen

Ziel des Vortrags soll es sein, verschiedene Quellen zur bäuerlichen Ernährung in Niederösterreich miteinander zu vergleichen und den jeweiligen Aussagewert zu überprüfen. Dabei werden archäologisch gewonnene naturwissenschaftliche sowie schriftliche, normative und auch literarische Quellen herangezogen. Die Aussagekraft der Befunde, insbesondere der Feuerstellen, sollen im Licht dieser Informationen überprüft werden und es wird versucht, die verschiedenen Hinweise zu einem Gesamtbild zusammen zu fassen, bzw. die unterschiedlichen Aussagen einer möglichen Erklärung zuzuführen. Ein weiteres Thema wird die Frage der Aufbewahrung, bzw. Konservierung sein, die vor allem anhand archäologischer Hinweise besprochen werden kann. Als Grundlage für die Überlegungen zum mittelalterlichen bäuerlichen Nahrungswesen dienen vor allem die Ergebnisse der Wüstungsgrabung in Hard im Waldviertel, aber auch archäologische Hinweise durch neue Befunde aus dem übrigen niederösterreichischen Raum.

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Current problems of Research on Production, Processing, Storage & Distribution of Food in the Medieval Rural Environment of (Lower) Silesia

The text has been based upon discoveries originating from 215 sites in Lower Silesia, where layers dating from the 13th - mid 16th centuries (that is the very end of the early medieval as well as the whole late medieval periods) had been uncovered.

Assemblages of animal bones were obtained from 42 sites, among those only 14 more numerous than 3 pieces of bones, with the most numerous assemblage of 1161 bones from the site Śleza 13. Only for 7 assemblages of animal bones species have been identified, namely: cattle, pig, sheep/goat, horse, dog, goose, hen, hare and grouse. In the case of the site Nowy Śleszów 4 pigs were probably exported rather than consumed. Huge percentages of remains of cattle and horse on the site suggest great importance of animal husbandry in that settlement. Such a conclusion corresponds well with the evidence of the written sources. In the case of the site Boguszyce 20 only worse parts of the carcass have been found on the site, which could indicate too, that the better ones had been exported. On 23 sites animal bones have been discovered in the fillings of pits, on 14 sites in the cultural layers, on 4 sites: both in the pits and layers. There were also sites, where animal bones had been probably stored somewhere beyond the settlement, as no single bone has been found either in the fillings of the pits, or in settlement layers (e. g. Gębczyce 3).

There is very little evidence related to fish-rearing, though written evidence shows clearly, that it was a very important branch of Silesian economy in the late Middle Ages. Two finds of mussel shells in archaeological features suggests, that in the 13th - 16th cent. those mollusks were caught and eaten in the rural settlements of Lower Silesia.

There is almost no palaeobotanical evidence of what kind of plant could have been eaten, and any analysis must still rely on the written evidence. There is, however, some archaeological evidence for farming techniques in the form of sickles found on a few sites:, among them a sickle with uneven edge, intended for mowing cereals. There is no certain archaeological evidence for ploughing techniques; there was, however, one terrace field excavated in Sosnówka. In the period under study, grain was processed mostly with mechanical means, i. e. watermills. Remains of watermills were discovered on 3 sites, among them a quite well documented one in Ptakowice. There were also 4 sites, where stones originating from handmills had been found.

As in most cases only underground features have been documented by archaeological survey and excavation, there is no certain archaeological evidence for overground granaries, which must have existed according to ethnographic evidence as well as archaeological analogies from neighboring countries. Many of underground features discovered in the village cores could have been used as cellars where foodstuff had been stored. There were, as well, storey pits, most of them filled in secondarily with various kind of garbage. There is, however, some evidence how the food had been stored. That is the case of the feature 76 on the site Pieńsk 12, where sherds of huge storey pots with graphite have been found. Unexpectedly many probable storey features (pits and traces of wood-trunks) were found away from village cores.

The food was being prepared around the fireplaces. These were either hearts of the houses or open fireplaces. At least some of them were two-part, comprising of a shallow fireplace itself and a neighboring pit, where the dishes were boiled in embers (e. g. the feature no. 21 on the site Boguszyce 20).

The boiling dishes were pots, found on almost every site. There are also pieces of jugs found on 3 sites, and cups, which had sometimes served as the vessels for foundation-offerings under some buildings.

The requirements of future research in Silesia are strictly dependent from the current state of research and existing gaps in evidence. First of all, more late medieval villages should be researched on a broader scale, with proper sampling and elaboration of animal bones and macrorests of plants. A proper interpretation and typology of archaeological features should be worked out too, concerning both ethnographical and archaeological records.

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Les produits carnés en France méridionale : témoignages archéozoologiques

Les animaux domestiques de rente (ovins, caprins, porcins, bovins) sont des acteurs primordiaux de la vie rurale médiévale. La viande et le lait, produit secondaire, en sont les produits dérivés alimentaires. Les sociétés rurales tentent de gérer ces animaux pour concilier au mieux les impératifs de leur propre consommation avec les nécessaires emplois secondaires, comme la laine ou la force de trait, et aussi avec la valorisation de toutes ces productions dans le cadre d'activités commerciales. En conséquence, le monde rural ne peut être approché sans qu'un regard en négatif soit porté sur le monde urbain. Nous essaierons de dresser un tableau synthétique à partir des nombreuses études archéozoologiques réalisées dans la France méridionale pour illustrer le passage de l'animal vivant dans la chaîne de production alimentaire et la façon dont les produits carnés sont ensuite traités et répartis. Les animaux sauvages, - mammifères, oiseaux et coquillages -, seront intégrés, pour mettre en évidence le rôle de la chasse, et partiellement de la pêche, aux côtés de l'élevage. Les différentes étapes de la chaîne alimentaire - consommation, conservation, distribution - seront décrites en essayant de souligner l'influence des facteurs chronologiques, et secondairement sociaux, dans les résultats et les interprétations.

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Nothing to laugh for mice - traditional buildings and facilities for preservation and storage of foods

It is well known, that food may be conserved by cooling, drying, heating or by salting it. In the Alps, peasants knew to use cool airstreams, water, snow and ice to prevent milk getting sour before processed to cheese or butter. Therefore they used caves in limestone or cold air streams at the foot of a scree. Others built little cottages over a well or small creek. On some alps in the canton Tessin round stonebuildings were filled with snow during winter in order to use the evaporative loss during summertime for cooling milk.

Granaries and corn barns were built on posts with great, rounded stone-plates between post and building, forming in this way a barrier against mice which would try to get into the grain-stock.

Dried fruit consists a very important part of winter food in a country household. Even if it is possible to dry smaller quantities of pears along a stove wall, it would not work to produce entire winter-reserves. Since about 1780 at almost every farm in the Swiss-midlands special drying-houses were built. Farmers produced here large quantities of dried fruit, not only for themselves but also to feed a large number of home-industrial workers. Those drying-houses are of rather small volume as they have to protect only a stove and the working people. Although systems became more and more sophisticated, preparative work and quantity of burnig-wood remained rather huge. Therefore drying houses have scarcely survived.

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Reproduction and Use of Salt in al-Andalus. State of the Art and Proposals for its Study

Salt is a most important element in any farming groups, such as medieval societies. It is essential for raw consumption, but also because of livestock needs or for use in secondary activities such as leather-tanning or basic pharmacology. Moreover it permits the creation of a surplus by preserving and storing several products as well as trading with them over long distances.

The Islamic society inhabiting in the Iberian Peninsula throughout the Middle Ages was no exception. It is mentioned in culinary and agronomical texts of the time, but there is no documented tax that allows us to know its size in the economy of al-Andalus. Since we have not this kind of evidence, we have to study the salt in al-Andalus through the documentation after the Christian conquest, or archaeological studies.

Although interest in the salt has been very uneven throughout the Iberian peninsula, we will try to make a general historiographic assessment. It also reflects the most modern trends of this research, focusing on what is necessary to study start an assessment on the true extent of Andalusí economy and its relation with the physical environment. The exploitation of salt is strongly conditioned by the alter, because not everywhere it can be found as a natural resource.

Besides its production requires an infrastructure, either of minino or hydraulic type which in many cases has remained to this day, albeit with modifications. We therefore can study the salt from the remnants of these sites.

The exploitation of the salt either in coast or in inner lands created specific landscapes, with tracks that can be studied from Landscape Archaeology. In this sense, one major aspects is the study of salt production, trade and consumption as embedded in a network of settlements, roads, fortifications, towns and villages, as well as an area of production certain rural landscape.

Finally, several case studies from Granada and Guadalajara are presented in this paper.

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Le grenier médiéval d'Aschères-le-Marché : structures de stockage et indices carpologiques d'une petite unité agricole du centre de la France (Loiret)

Ce site fait partie de la trentaine de fouilles menées par l'INRAP sur le tracé de l'autoroute A 19 qui traverse d'Ouest en Est le département du Loiret. Il se situe sur le plateau de la Beauce, qui constitue la partie méridionale du bassin parisien et qui se caractérise par son relief peu marqué, limité au sud par la vallée fluviale de la Loire.

Menées plusieurs en phases successives entre les mois d'octobre 2006 et avril 2007, les fouilles d'urgence de la parcelle C8 ont mis au jour des vestiges de différentes époques, dont les plus anciens remontent au second Âge du Fer.

Toutefois, les indices archéologiques les plus originaux datent du Bas Moyen Âge, en pleine époque féodale. Un petit ensemble formé de silos, fosses, d'un enclos fossoyé et d'un bâtiment sur trous de poteaux met en lumière l'évolution d'une petite exploitation rurale du XI^e au XIII^e siècles. La structure la plus remarquable pour cette période est un souterrain formé de galeries coudées qui desservent trois petites salles.

Cette construction, arrivée jusqu'à nous dans un étonnant état de conservation, servit probablement de refuge ponctuel pour une population paysanne et peut-être également de réserve pour des denrées. Son étude exhaustive et pluridisciplinaire qui inclut l'analyse des nombreux restes végétaux piégés dans ses sédiments, a permis pour la première fois de dater et de contextualiser une structure de ce type dont on connaissait pourtant déjà bien d'autres exemples dans la région.

Le site a été abandonné au cours du XIII^e siècle, sans doute à la suite d'une réorganisation de l'habitat qui annonce la configuration actuelle du peuplement.

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The visibility of storage

Food storage no doubt was one of the key innovations in the history of mankind. It was crucial to the development of permanent settlement and population growth. However, to what extent is past food storage visible, visible in the archaeological record? As we all know every archaeological dataset is biased, and should be critically analyzed before being used. What we find and what we do not find is not just a matter of variability in preservation (due to post-depositional processes). When studying the nature and scale of food storage we also have to take in account differentiation in the archaeological visibility of food storage methods that were (or may have been) used in the past. Some have left clearly visible traces, others have not. Also we may be looking for evidence in the wrong places. And were all these small four-post structures we find during excavations really built for the purpose of storage? The paper will present a brief - and no doubt incomplete - overview of the many different storage methods, and it will concentrate on visibility. The subject will be addressed not only from a technical, but also from a topographical point of view. Archaeological, historical and iconographical data will be used.

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Rural economies in urban situations: production, preservation and storage of food.

Rural and urban, agriculture in towns, city farming – on first glance, these notions seem to be contradictions in terms. The general notion of a town is that of a densely populated, busy community with citizens active in trade and craft, whereas food and raw material is supplied by the rural periphery. Yet, agriculture in various forms, like growing vegetables or crops and raising livestock, is not an unusual phenomenon in urban situations, from the medieval even up to modern times.

On the contrary, in medieval towns many agricultural aspects associated with rural communities were quite common to the everyday life. Pigs, cattle and other livestock were found on the streets of many towns and cities. The yards of the town quarters held not only wells and cesspits but provided also space for gardens, byres or stables as well as granaries or barns. Gardens, arable land, meadows and pastures stretched along the embankment and the common land outside the city walls, as illustrated on many historical town maps or townscapes.

In order to provide an overview on urban agriculture throughout the times, the following paper will illustrate in detail several aspects of food production in medieval and post-medieval towns. Because of the time we will restrict ourselves mainly to Northern Germany. The paper will conclude with a quick glance on forms of urban agriculture in modern times.

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The supply and the consumption of food in rural Cistercian nunneries. The case study of Clairefontaine (Belgium).

Since the end of the 1980ies, the rural Cistercian nunnery is an intensely fashionable subject of enquiry. Unfortunately, the studies presented in the past, were often concentrating only on the religious life inside the monastery having no thought for the daily grind of the inhabitants. However, regarding the specific social organization inside the Cistercian nunneries, especially this everyday life offers great opportunities for further research. This is particularly significant in the light of food supply. The sisters were less self-sufficient than their male colleagues. To a large extent they depend on laic people living inside or outside the abbey walls to provide for daily necessities.

By taking a closer look at the case study of Clairefontaine abbey (Belgium), this research attempts to bring in new evidence on the supply, the production and the consumption of food in Cistercian nunneries during the Ancien Régime. The archaeological and architectural remains inform us about the layout of the outer courtyard with the different agricultural related entities. The cultivation of the landscape surrounding the abbey can be analyzed by cartographic evidence while historic sources allow us to reconstruct the development of the monastic estate. By studying the material culture, new insights on the consumption and distribution of food within this religious community are introduced. In addition, the paper considers the limitations and the possibilities faced scholars using a comparative multidisciplinary approach, taking the full range of archaeological, cartographical and historical data in account.

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The Medieval Dunghill: the processing, storage and distribution of food waste

For medieval rural communities the story of food did not necessarily end in its eating. Culinary waste or table leftovers formed a valuable, if potentially noisome, resource that could either be returned to the soil or fed to animals. This paper explores the afterlife of medieval food and its role in the cycle of agricultural production and consumption. It focuses in particular on the use of food waste as manure: how, as it were, soiled food became food for soil. Vital to the success of this system was the careful curation of this material and its subsequent distribution on the land. Here the medieval dunghill or compost heap became of central importance. Using evidence from England, the paper will reveal that lords and peasants held very different attitudes to food waste which influenced not only how and where it was stored and handled, but also how it was subsequently used in crofts, gardens, orchards, and fields.

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Surfaces de culture irriguée et concentrations de moulins hydrauliques en Al-Andalus. Le cas des Îles Baléares

À Majorque et à Ibiza, c'est dans les systèmes hydrauliques qui ont les débits les plus abondants et les surfaces de culture les plus étendues que les moulins hydrauliques sont le plus nombreux. Il s'agit de systèmes hydrauliques où les moulins sont installés tout au long du canal principal. Le fait qu'on en trouve souvent plusieurs entraîne que seulement certains systèmes hydrauliques, comme par exemple ceux des vallées de la Serra de Tramuntana, à Majorque et ceux de Buscastell, Balançat et de Santa Eulària, à Ibiza, aient un débit suffisant pour le bon fonctionnement des moulins. De plus, il s'agit souvent de systèmes hydrauliques partagés par plusieurs groupes claniques de paysans. Par contre, dans les systèmes hydrauliques à débit faible, de taille plus modeste et dont la construction et l'usage est restreint à un seul groupe clanique, on n'y trouve des moulins que très exceptionnellement. Finalement, il est à signaler qu'à Menorca il n'y avait pas de moulins hydrauliques avant l'arrivée des catalans (1287) et que la mouture se faisait avec des petits moulins manuels.

Dans notre communication, nous voudrions réfléchir sur le problème du nombre de moulins et le rapport de celui-ci avec les besoins de mouture des groupes paysans qui les ont construits. Notre réflexion portera également sur les conditions d'intégration des moulins dans la structure du système hydraulique et dans les mécanismes de distribution de l'eau.

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Food and agrarian production in medieval Czech lands: current approaches and perspectives

The paper is divided in two parts. At first, the new research in the subsistence economy and relationship between agrarian and non-agrarian production will be presented. The application of theoretical models of peasant economics on certain examples will be accented. In the second part will be discussed the contribution of current archaeozoological research in solving various problems, such as relations between town and countryside or different social ranks.

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Morphology, typology and Funcyionality of the Tannûr in Sarq al-Andalus

The *tannûr* is a small one-piece ceramic oven of trunk-conic shape, open on both ends, adorned with carved, combed waves and bands to thicken the ceramic. The inside of this piece is polished and has rows of smooth, vertical combed carvings for the adherence of the breads that will be baked inside. They are also used as portable cookers. Being a ceramic piece, the *tannûr* is quite large, but its size allows it to be moved if needed, although they are usually fixed. Smaller pieces are clearly portable.

Despite its importance, little is known, or at least, little has been published, about these pieces. The poster analyzes the morphology of the *tannûr* as well as what is known about these pieces in Middle East and North Africa, in search of possible precedents, similarities and evolutions. It also looks into the bread baking method. Finally, some provisional conclusions are reached regarding the spread of the use of these pieces, their rural or urban nature, and their evolution throughout the Middle Ages. To serve this purpose we will use mainly one of the two items found on the archaeological excavations conducted by the author on the archaeological sites of El Pocico III, and another item found on El Pocico I, both situated on a natural way that connects the “*huerta*”, fertile land of Murcia, to the Campo de Cartagena (Region of Murcia, Spain).

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Archaeobiological studies on medieval food supply in Switzerland

Due to the rareness of written sources plant and animal remains are important archaeological sources concerning alimentary supply. In the paper, archaeozoological and archaeobotanical finds from medieval sites (5th to 15th century) are presented.

The archaeobiological data base for rural settlements was considerably improved by excavations set in Northwestern Switzerland (cantons of Jura and Baselland) and in the Swiss Plateau (cantons of Berne and Zurich) during the last years. On the basis of selected sites the potential of archaeobiological researches for the discussion of food supply and related human activities in medieval times is shown.

Differences in animal husbandry and the consumption of meat are on the one hand explicable with the changes in natural environment and agricultural technology. On the other hand the comparison of bone assemblages also reveals social differences.

With respect to plant macrofossils, the remains of food plants that usually accumulate over a longer period show the spectrum of useful plants and allow conclusions on their cultivation. Social differences are sometimes comprehensible by evidence of certain species (e.g. imports). Short term accumulations such as crop stores, allow the reconstruction of land use as well as of methods of harvesting and plant processing.

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Water, plants and irrigation in Southeastern al-Andalus

The agricultural revolution in al-Andalus is best understood from the perspective of the irrigation system, although other technical innovations as well as the rural knowledge of the farmers contributed to it. Nonetheless, the revolutionary basis was the artificial amplification of water, which allowed intervention in the natural germination process of plants. At the same time, there was also an important advancement in the types of resources that were being applied to agriculture and how new technology was managed. For example, new plants were introduced from places geographically and climatically foreign to the Mediterranean coast. These events led contributed to a rapid agricultural evolution.

The analysis of these irrigated productive spaces within al-Andalus has made it possible to cite some general principles that govern this irrigated land and pertain to what is known as Hydraulic Archaeology. These systems were responsible for transforming the landscapes of the fertile lowlands or irrigated productive spaces. Nonetheless, the application of these systems. However, its application goes beyond mere technological or descriptive aspects to the point of adding its own discourse to the social and economical dynamics of the land, where they have been realized.

Nevertheless, when intensive irrigation is introduced, a very different option becomes available, in which the social management carries out an equal or more important role than that of the physical conditions. Therefore, when this strategy circulates and eventually becomes preferential, the social organization centered around labor, takes on a fundamental importance.

This agricultural model has to do with a social perspective, perhaps the least logical of the economic options possible in most of the mountainous or semi-arid zones. This is the case of the southeastern part of the Iberian Peninsula, where we can find many of this historical landscapes fossilized and still in use in a very diversified environment.

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From self-sufficiency to external supply and famine: foodstuffs, their preparation and storage in Iceland

From the Viking period up until modern times Iceland has experienced several unsettled periods in its history of food and nutrition. From the earliest settlements onwards people in Iceland were generally able to supply themselves with meat, fish, vegetables and milk products. The society was based on farming and fishing, thus able to survive in a sparsely populated and cold island on the margins of Europe. However, from the later middle ages onwards many foreign traders came to Iceland bringing with them additional foodstuffs, such as beer and honey. Those items were most welcome to complement the otherwise rather uniform everyday menu. But later, in post-medieval times, Icelanders experienced famines due to a series of epidemics and natural catastrophes.

The paper will discuss the several steps in this sequence and the methods of how they can be detected in archaeology, drawing on also archaeobotany, archaeozoology and written sources. Excavated examples from several historical periods and different kinds of settlements, including farmsteads and monasteries, will be presented to illustrate the results.

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Between all markets. Constructing a Carolingian subsistence economy east of the Rhine

Historical debates on the character of early medieval and Carolingian economy have oscillated between very local, totally insufficient production and an highly organized market economy. However, any such reconstructions have concentrated on the Frakish „core area“ in northeastern Gaul and – even more important – have evaluated Carolingian times against the yardstick of modern market maxims.

The actual economic crisis of the market system raises awareness that other economic systems are possible as well and may even be highly functional under different premisses than today's. In this paper I attempt to reconstruct such a different Carolingian economic system for the area of southern Germany. I propose that this economy was organised by the principles of subsistence, i.e. stability and avoidance or minimization of risk. Archaeozoology and palaeobotany show a highly diversified and very locally adapted farming system, remaining stable for centuries. The manorial system seems to have been not only a means of power, but an important economic institution organizing the collection, storage and redistribution of food over huge distances. The means of production, on the contrary, were decentralized at the single farmsteads as were the basic crafts. Altogether this economic system was characterized by diversification, networks and spread of risks instead of hierarchy and optimisation, it

aimed at stability instead of growth. These premisses seem to be in accordance with contemporary mentalities stressing charity instead of profit.

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Baking ovens in Central Europe – Possibilities of the proof of commercial baking.

Early in the course of the cultural history bread has already been an important part of provisions. This significance even increased in the Middle Ages.

Throu archaeological research the proof of bread or its production is barely traceable. As a required working plant the oven, wholly or partially dug into the ground, holds better conditions. Still, with the usual absence of its waste materials at the site, a baking oven is not always easily identified from the archaeologist.

In fact not always the preservation of the furnace is in such a good state that the previous use can be resolved or the distinction between hearth and oven becomes clear. Often only written and iconographical sources give clues about the original function.

Not only the proof of bread production but also evidence relating to commercial aspects can succeed here: Historical sources of the 18th century inform that per sqm furnace bottom a production of up to twentyfive 1kg-loaves of bread was possible. The comparison of medieval oven plant constructions showses majour differences in size and corresponding production output. To what extent we can win knowledge about the previous usage from this – private, common, commercial – and can our comprehension of these concepts really be captured in close categories?

The purpose of this presentation is not to describe a final solution to the problem, but to question the possibilities of verification of commercial baking and to encourage new approaches.

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Greniers collectifs berbères. Une relecture entreprise par Johnny De Meulemeester.

Avant tout spécialiste des châteaux en terre de Flandre, Johnny De Meulemeester avait été vite attiré par l'étude de ce type d'architecture dans l'espace méditerranéen, en particulier en Espagne. L'al-Andalus offrait l'intérêt supplémentaire, à ses yeux, de confronter pour le premier Moyen Age deux sociétés concurrentes.

Une collaboration née entre la Casa de Velazquez et la Division du Patrimoine de la Région wallonne allait permettre de mener une fouille sur un site fortifié dans la province de Murcie, à Abaran dans la vallée de Ricote, entre 1987 et 1990. Ce fut le point de départ d'une

recherche beaucoup plus vaste aux croisements de plusieurs disciplines d'archéologie du paysage.

Ce qui avait été pris pour un château s'avérait après fouille correspondre à autre chose. Ce petit promontoire occupé au 13^e siècle avait servi d'assise à un grenier collectif composé de plusieurs cellules regroupées autour d'une petite mosquée. La mise au jour d'un tel ensemble demeurait unique dans l'Espagne musulmane. Les modèles originels étaient à rechercher dans les pays du Maghreb.

Après un premier survol de littérature sur le sujet, il ressortait que les greniers collectifs qui constituaient une des composantes essentielles de ces sociétés, étaient encore parfois en usage dans certaines régions rurales.

C'est cette approche d'ethnoarchéologie qui motiva J. De Meulemeester. Grâce à des accords bilatéraux entre la Région wallonne et le Maroc, il fut possible entre 2000 et 2006 de mener plusieurs enquêtes dans le sud du Maroc, en particulier dans la vallée de l'Ounila, dans la province de Ouarzazate. Le grenier du village de Tazlaft encore en usage fut étudié dans son architecture, son fonctionnement quotidien par ses utilisateurs mais aussi analysé dans le contexte des systèmes d'irrigation entourant le village.

Un rappel de l'historiographie des greniers collectifs permet de souligner l'apport de ces recherches.

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Food and technology – Cooking utensils and food processing in medieval Norway.

It has been claimed that food and the preparation of food represent some of the most conservative and persistent aspects of culture. Is this really true as for the Middle Ages, with all the far-reaching transformations of the period – change of religions, state formation, urbanisation and commercial and demographic expansion and fluctuations? The paper discusses different aspects related to making food in this period. Demand for food, and ways of making it, may be seen as an interplay between tastes, traditions (and taboos), availability, practical devices and technological possibilities, as well as strategic decisions and social roles. Comparing archaeological evidence of cooking utensils and food processing from rural and urban contexts, the aim is to shed light on how it reflects similarities or differences in different settings – change or stability. As a basic and continual physical need, food embodies relations of production and exchange, linking the domestic and wider socio-economic spheres. Food and food preparation do not only reflect biological needs and functional practices but also routinized practices that structure action and unconsciously instantiate perceptions of identities and difference. How did urban culture and foreign impulses affect rural conditions in this respect? Were 'new' foods and ways of preparation incorporated into routinized set of practises or were they rejected – and if so, why?

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Modes et espaces de stockage des denrées alimentaires dans les maisons médiévales

Les données archéologiques concernant le stockage des denrées alimentaires en milieu rural sont encore relativement peu nombreuses pour l'Europe occidentale médiévale, si l'on excepte les pratiques communautaires. En effet les aires d'ensilage et les greniers collectifs attestent de pratiques assez répandues. Un aspect un peu moins étudié est celui des modes de conservation et de stockage individuels à l'intérieur des maisons paysannes, qui présentent un éventail étendu de dispositifs, comme le montre la fouille de plusieurs espaces villageois. Qu'il s'agisse de greniers à l'étage, de fosses ou de silos creusés dans le sol, ou de simples récipients de céramique disposés dans les pièces, ces structures témoignent de la variété des solutions apportées à la nécessité de la conservation domestique des productions agricoles ainsi que des denrées nécessaires à l'alimentation quotidienne.

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Getreide- und Lebensmittellagerung im Mittelalter (Slowakei).

Die Erforschung von mittelalterlichen Dorfsiedlungen im nördlichen Teil des Karpatenbeckens liefert eine ganze Reihe von Objekten, deren primäre Funktion als Lager bzw. Speicher für Lebensmittel bestimmt werden kann. Diese Art von Objekten bildet ungefähr ein Fünftel von untersuchten Siedlungsobjekten (Häuser, Ofen, Röstgruben, Werkstätten und Objekte, deren Funktion sich nicht bestimmen lässt).

Aus der Sicht der Form werden sie in vier Hauptgruppen eingeteilt. Die drei Hauptgruppen sind eingetieft und den vierten Typ bilden auf den Pfosten stehende Getreidespeicher. Am zahlreichsten sind große birnen- bzw. sackförmige Vorratsgruben vertreten.

Ganz interessant ist die räumliche Gliederung von Vorratsobjekten innerhalb der Siedlung. Einige von ihnen bilden einen Teil der Behausung, einige von ihnen gehören zum Wirtschaftshof, die Mehrheit von ihnen befindet sich aber irgendwo im Raum des Dorfs, wobei sich kein System in ihrer Anordnung feststellen lässt. Während die tiefen Vorratsgruben auf einigen Fundstellen ziemlich zahlreich vorkommen, kommen sie in einigen Siedlungen selten oder überhaupt nicht vor. Interessant sind solche Beispiele, wenn Siedlung/Dorf in mehrere Teile in Abhängigkeit von der Funktion der Objekte gegliedert ist. In solchem Fall befinden sich die Lagerräume für das ganze Dorf an einem Ort. Auch solche Beispiele ermöglichen die Rekonstruktion der sozialen Struktur von der mittelalterlichen Gemeinschaft.

Im Beitrag sind auch vorhandene archäozoologische archäobotanische Analysen von einigen untersuchten Lagerobjekten vorgestellt, die auf die Zusammensetzung von gelagerten Produkten hinweisen. In mehreren Vorratsgruben wurden auf dem Boden auch Tierskelette gefunden - es ist jedoch nicht klar, ob es reiner Abfall oder eine Art von Kühlschränken war.

Nach dem Untergang wurde die Mehrheit von Vorratsobjekten nur als Abfallgrube verwendet.

Im weiteren Teil des Beitrags beschäftigt sich der Autor mit dem chronologischen Vorkommen der einzelnen Objekttypen. Im letzten Teil des Referats beschäftigt sich der Autor mit dem Verfahren bei der Ausgrabung und mit der Technologie der inneren Aufbereitung der Gruben von dem Brennprozess, über die Auskleidung mit Flechtwerk aus Ruten und Auskleidung mit Stroh bis zum Auffüllen der Grube mit trockenem Getreide und sorgfältiger Abdichtung und Abdeckung der Grube. Auf Grund der ethnographischen Beobachtungen kann auch die wahrscheinliche Länge der Funktionalität bestimmt werden, aber es lassen sich auch die Möglichkeiten einer anderen archäologisch nicht identifizierbaren Lagerung von Getreide und anderen Lebensmitteln bestimmen.

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Fishing in wilderness – Samples of peasantry food management in Northern Finland

At the end of Finnish medieval period (ca. 1520 AD) the agrarian peasant habitation covered only the Southern part of Finland and the narrow stripe on the shores of the Gulf of Bothnia. Although the animal husbandry and farming played an increasing role in the means of livelihood of northern Finns, the traditional wilderness hunting and fishing were important far into the historical times. Their importance was both in supplementing the food resources and also in acquiring the products for the trade (furs, fish).

According to the 16th century writings especially fishing was in a key role in the life of northern farmers, who practised sea fishing and fishing in the mouths of great rivers but also made long fishing trips to the inland lakes, lasting several weeks, to the interior lakes usually twice a year. Hunting was connected above all in the autumn trips. The activity in wilderness has left a lot of various remains e.g. camp places, storage and hunting pits, marks of fishing grounds and other culture marked trees, some with carvings, fishing dams and hollows in trees for collecting bird eggs.

This paper concentrates to the remains documented by author in 2002 during the investigation in southern part of Finnish Lapland in Naarmankaira wilderness area. The aim is to introduce a way of earning living by fishing in boreal forest zone by using mostly 16th – 19th century examples as a guide to the medieval or perhaps even earlier exploitation of wilderness resources.

There is also a broader aim. Our knowledge of last prehistoric centuries and medieval times in interior Southern and Northern part of Finland is very vague. We hope that by understanding these younger practises we could learn to recognise and find also the older sites and remains dating back to those obscure centuries.

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Hungarian Cattle on the European Market between the 15-17th Centuries

Among the most important domestic species in Hungary, the cattle (also known as the *Hungarian Grey*) played a deceive role in the European livestock market between the 14th till the 17th century. The poster presents the main aspects of cattle breeding and the trade of the animals in a European context.

The presentation first will show the major zoo-archaeological findings about the animal itself. Then, the discussion goes further to the evidences about medieval and early modern historical-archaeological evidences on animal husbandry, especially focusing on the Great Hungarian Plain, which remained the major cattle breeding zone during the centuries.

Further on, the marketing of the animals will be discussed, with a special attention to the main facts and figures of the trading, the trading routes, and the social background of the stockmen. Last, some aspects of the utilization of the animal will be raised from artefacts to culinary pleasures.

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Feeding the village- reflections on the ecology and resilience of medieval rural economy

Within the last decennia archaeological research showed that the development of rural settlements in Europe was more complex than thought before. The reasons for these changes are still to be discussed.

One approach are models reflecting on the ecology and resilience of the medieval rural economy. This contribution will present some models of medieval economic systems mainly in western central Europe and ask for the risk of starvation on the one hand and the need for continuous adaptation on the other. It will look into the hypothesis that the development of villages in Middle Ages got important stimulus by the conditions of food production and increasing population.

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Gastronomic archaeology - how to unearth the culinary relations in our finds

Historic food is traditionally either dealt with by philologists dealing mainly with food recipes or archaeobotanists working with macrofossils and it seems "the twain shall never meet". But as there is a distinct discrepancy in the conclusions it is possible to make on the written and on the archaeological material. The food described in medieval documents is very far from the remnants of food exposed in archaeological excavations. We need to look at all the available information to get to understand our material. It is obvious that we here have a demand for the development of a new branch of knowledge that can combine the data from

the basic archaeological excavation, the archaeo-botanical analysis and of the written sources. This is vital and highly necessary if we want to disclose what the medieval meal and daily diet consisted of.

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Beer, ritual feasting, power politics and state formation in Eastern Norway

Heated stones used for preparing food and/or drink is a very common find in South Norway. There are two different types: one used for cooking/preparing meat in pits, the other one used for heating water when brewing. Brewing stones are not found in pits, but in extensive layers near medieval farmsteads. The two types have different datings and very different distributions patterns. Cooking pits used for cooking meat have a wide chronological distribution from the Bronze Age to the Viking Age. However, in South Norway the vast majority of cooking pits belong to the Late Roman and Migration period. They are found literally at every settlement from these periods, big and small, although the most extensive sites seem to belong to central farms or places used for communal feasting etc. Brewing stones, on the other hand, date from the Viking Age and Early Medieval period. The distribution of layers of brewing stones is very different from the older cooking stones. They are as common in the Uplands, that is the interior region of Southeast Norway, in the Viking Age as the cooking pits are in the earlier period. But outside of the Uplands they only occur on special sites, like Lejre in Denmark and Kaupang in Vestfold; places, that is, which are associated with special political, ritual or economic significance in the Viking Age. The Early Iron Age cooking pits, at least where they occur in large numbers, seem to be associated with ritual feasting, called *blot* in later Norse saga sources. The brewing stone layers in places like Lejre and Kaupang are most likely the remains of similar activities in the Viking Age, but with beer drinking as the central element. The latter is related to agricultural changes in the Late Iron Age, with a gradual transition taking place from mainly animal husbandry to a system with more weight being put on cereal production. The distribution of brewing stone layers outside the Uplands suggests that ritual feasting was much more centralised and probably more exclusive in the Viking Age than earlier. Only in the Uplands are brewing stones as widespread as the older cooking pits. This is an archaeological indication that the Uplands kept a traditional political and ritual organisation longer than other Norwegian regions. The centralisation which caused the gradual disappearance of large-scale ritual feasting outside the Uplands, is an expression of the political processes associated with the Norwegian state formation in the Viking Age. Interestingly, the later sagas describe the Uplands region as traditionalist in political as well as in ritualistic sense during the Viking Age. According to these sources, the region was ruled by a number of petty kings, each in control of lesser areas. Judging from archaeological sources, these petty kingdoms had a history going back to at least the Roman period. The area was not incorporated into the Norwegian state until the 12th century. It is possible that the ritual feasting evidenced by the layers of brewing stones was part of a cultural resistance to state formation and outside dominance as much as a continuation of an age-old political-ritual system.

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Food culture in medieval farmsteads and castles

The poster is about eating habits; food traditions and table manners, as a social phenomenon. Archaeological material from two castles and two rural settlements from the 10th to the 15th centuries in western Sweden are used to discuss eating habits.

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Meat and the Creation of Communities in Medieval Rural England

Meat represents more than just protein and nutrition: the slaughter of animals, their butchery, as well as the distribution and consumption of their meat, are powerful sensory and symbolic acts. This would have been particularly the case for rural communities in the medieval period, when the lives of people were substantially entwined with the animals, both domestic and wild, with whom they dwelt. Participation in the breaking, apportioning and eating of an animal's body would have bound together the individuals involved; it would have been a statement of shared ideology and an expression of group identity. Exclusion from such performances would have been equally expressive, communicating separation and social difference.

This paper will explore, through the analysis of archaeological animal bones (particularly deer remains), how practices of meat sharing changed between the 5th and 12th century. I will argue that the early medieval culture of 'cutting up', whereby the elite redistributed meat to the members of their community, gradually gave way to privatisation, with individuals of high and low status operating in different spheres. The value of studying food distribution for understanding medieval social structure and worldview will be emphasised.

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Beer Brewing in Medieval Sweden

Archaeobotanical remains of Sweet gale, *Myrica gale*, have been found in comparatively large amounts in pit houses dating to the Swedish Early Medieval period (ca.1050-1200 AD). Soil samples from the same contexts proved to be rich in organically bound phosphates. A hypothesis was formulated stipulating that not only the plant material,

but also the soil chemical properties were traces of beer brewing. Experiments were made to test this hypothesis and order to interpret the archaeological structures and to identify the process further, ethnographical sources were used. Medieval beer brewing techniques in Sweden are discussed, especially in the light of the influence of the Hanseatic league.

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Food preparation and preservation in north-west Italy: a comparative assessment in the study of early medieval eating and cooking utensils in the settlement context of Sant'Antonino in western Liguria and in the village of Trino Vercellese in the Po valley

This work investigates the household goods of the archaeological facies of two fortified villages from the early Middle Ages: Sant'Antonino in western Liguria (Savona) and Trino Vercellese in north-central Piedmont (Vercelli). Although the two settlements are partly coeval, they are situated in two very different contexts. The former is on a "Pietra di Finale" hill that rises to an altitude of 287.20 metres above sea level and is located in the immediate hinterland of the Finale area, about 3.5 kilometres in air distance from the northern Mediterranean coast, between the valley of the Aquila torrent and the Perti valley, which is cited in medieval documents as *Vallis Ulte* (or *Ultra*). The latter is on the left bank of the Po River near Vercelli and is northeast of the modern town. With regard to eating and cooking utensils, the article will examine all the materials that have been found and will suggest a subdivision based on the classes and types of the individual forms that have been reconstructed where possible. Mineralogical analysis of the individual classes of artefacts in the two different contexts will make it possible to verify the individual incidence that goods imported from the Mediterranean and Po areas and those produced locally may have had as part of the economic system supporting and maintaining the resident population. This will allow us to begin sketching out the trade flows converging on the two settlements in order to understand the provenance and technological characteristics of imported artefacts (from the Alpine, northern Italian, southern and African areas) and of those reflecting local production and tradition. Furthermore, it will be interesting to verify the incidence of soapstone with respect to the overall quantity of cooking vessels, considering not only the dominant role of these particular artefacts in both cooking and preserving food, but also their characterisation as "prestige goods" imported from the Alpine areas. Lastly, special attention will be paid to the problem of glassware, whose production and trade is one of the most fascinating aspects of this area of study, but one that also requires more in-depth examination for the entire Italian peninsula.

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Fishponds as places for food storage in medieval Hungary

According to a medieval „common place“, rivers in Hungary were so rich in fishes that peasants did not need any device to catch them. Although that topos must be an overstatement, the fact is that, before the 19th century river regulation works, along the main river courses, large territories of Hungary were indeed temporarily or constantly under water and often used for fishing.

A short excursion into the technics, management and organisation of medieval fishing based on medieval written sources, archaeological and ethnographical evidences will be presented. The paper also sets out to discuss the different forms of fishing within various social and landscape contexts.

Another part of the paper will focus on an ongoing survey dealing with the inundation area of river Dráva (border river between Hungary and Croatia) where the changing fluvial process resulted many oxbow lakes on the area. The case study based on data of written sources, early maps and archaeological field walking intends to illustrate the ways of exploitation of a wetland area and the occurrent relations between fishing activity and settlement strategies.

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Granary and helm, vernacular buildings, archaeological research and pictorial evidence

Storage of food for man and animals were the functions of several types of farm buildings. In addition to the loft in the main-buildings and byres/stables, food was primarily kept in granaries and helms. The study of older vernacular buildings, as well as pictorial sources, are indispensable to give us an idea how to interpret the plans from postholes and to reconstruct how the building may have looked and may have been used. This applies to the interpretation of buildings of all periods, but particularly so for those of medieval times, as the archaeological features and the still-standing buildings and pictorial sources are close to each other in time. Further evidence can be obtained from the traditional names of the different building types.

As the European late medieval and early recent landscape painting was most active in the Low Countries we have, of course, the greatest number of pictorial sources from there. It is therefore significant to seek depictions from other regions. In addition to paintings and prints, the study of early maps can also be very useful.

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