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A new urban archaeology for a systemic history of the post-classical cities

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This paper reflects on some aspects of urban archaeology fifty years after its diffusion in Europe, that highlighted the transformations between the end of the Roman city and the development of the medieval one. New techniques and tools – particularly bioarchaeology, demography, the study of the relations between cities and their dependant territories, spatial analyses and interdisciplinary and diachronic approaches – open new research opportunities. They also offer new questions about how the history of the past cities could be useful in the contemporary transformation of the cities.

Keywords: urban archaeology, early medieval cities, dark earth, bioarchaeology

Questo articolo riflette su alcuni aspetti dell'archeologia urbana cinquant'anni dopo la sua diffusione in Europa, che ha evidenziato le trasformazioni tra la fine della città romana e lo sviluppo di quella medievale. Nuove tecniche e strumenti – in particolare la bioarcheologia, la demografia, lo studio delle relazioni tra città e i loro territori dipendenti, le analisi spaziali e gli approcci interdisciplinari e diacronici – ci aprono nuovi percorsi di ricerca. E ci pongono ulteriori domande su come la storia delle città del passato possa essere utile nella trasformazione delle città odierne.

Parole chiave: archeologia urbana, città altomedievali, terre nere, bioarcheologia

1. Introduction

Cities are a key focus for the archaeologists studying past societies, at least when they are central to territories large enough for them to provide an administrative, economic and cultural reference point. In the Western Mediterranean, the urban model originates with the Greeks and Phoenicians (1st millennium BC). The Romans then exported this model to the regions they conquered. Notwithstanding the crisis of the end of the

Western Roman Empire, cities remained in many areas central places in the new Barbarian kingdoms.

Urban archaeology has partially uncovered the material history of cities in the post-classical period, showing aspects of urban history that written sources were either unable to tell, or sometimes misrepresented, since the ideal and paradigmatic model of urbanism was embodied by the Roman city. Our understanding of the complexity of urban phenomena is still incomplete, even though new research lines are offered by the use of new analytical tools.

From this perspective, this volume of PCA proposes that we reflect on urban archaeology, a scientific discussion renovated in the 1960s by Martin Biddle after his excavation of Winchester. The rigorous stratigraphic method has been adopted since the 1970s in the whole of Europe, in part thanks to young scholars who took part to that excavation, such as Henri Galinié, who subsequently introduced these standards in Tours in 1969. In Italy, though Nino Lamboglia had led an urban excavation describing a synthetic sequence in Ventimiglia since the 1930s, urban archaeology was popularised by British scholars following two different routes. The first, indebted to the Biddle school, was applied in the 1970s by David Andrews in Genova, by Hugo Blake in Pavia, David Andrews and Dominic Perring in the excavations for the Milan metro excavations (since 1982) and by Daniele Manacorda at the Crypta Balbi in Rome (since 1981). The second, applied at Santa Giulia in Brescia (since 1980), was codified by Martin Carver (1983) according to the following scheme: evaluation of the archaeological deposit; excavation strategy based on research agendas defined at a city- or regional-scale; stratigraphic excavation; post-excavation analysis and production of databases to understand the complexity of the data recovered. These principles have given a sense of purpose to rescue excavations, but have rarely been applied in other Italian cities (Brogiolo 2011a). However, the archaeological data gathered in thousands of urban excavations across Europe have allowed an accurate reconstruction of the history of the cities in the key period between the Roman era and the Early Middle Ages.

Two different processes of change have been highlighted: those which signalled the end of the ancient city and those which contributed to the development of the medieval city (for a synthesis see Brogiolo 2011b).

The first comprises the destruction, destructuring and refunctionalization of infrastructure (roads, aqueducts, sewers and harbours), public monuments (temples, forums and administrative buildings, entertainment structures, baths complexes) and private *domus*. Some buildings were demolished to obtain material for the construction of new ones (e.g. the

Capitolium in Verona); some were left to slowly decay, and others gained new functions (the arena of Verona and the *Capitolium* of Brescia were used for craft activities and houses, that of Padua for houses; in Aosta and Pavia, the cathedral was now located in or by the forum).

At the same time, the urban landscape was enhanced with new elements which would define the medieval city: (1) defensive systems of moats and walls, which reorganized the ancient defences that had now fallen into disuse; (2) new administrative centres of military power (counts and dukes, who at first joined and then replaced the administration of the *curia*); (3) churches as landmarks of a Christian topography; (4) production activities now located inside the city; (5) the funerary world, which gradually moved into the city from the suburbs where it had been confined in the classical city; (6) new types of buildings: both masonry-built structures and huts and wooden houses which replaced the *domus*. Defence was a particularly important part of the medieval city, both taking resources away from the preservation of ancient monuments, and giving rise to new ways of socializing, dictated by new forms of solidarity which later became even stronger thanks to religious practices and which helped create medieval man.

This synthesis now needs to be updated, both using new techniques and tools – particularly chemical-physical and spatial methodologies (discussed in the research section of this issue) – and interdisciplinary and diachronic approaches.

2. Urban archaeology fifty years after Winchester

Since the 1970s, in Tours as in many other cities, one of the most debated issues has been that of “dark earth”. Mélanie Fondrillon and Amélie Laurent-Dehecq have returned to this topic once again, discussing evidence from both Tours and Burges; their study outlines the variegated origins of these deposits, which may be of a domestic or agrarian nature. However, dark earth has been interpreted variously as the result of: 1. intense and continued fertilisation; 2. animal grazing; 3. the decay of perishable structures (built with wood and/or earth); or 4. the accumulation of food and hearth residues at the level of habitation surfaces. This final interpretation seems to apply in the majority of cases, as gaschromatography and mass-spectrometry analyses (GC-MS) demonstrate, since they can distinguish between human- and animal-produced residues and their transformation into layers through trampling (Nicosia 2018).

When economic resources began to dwindle and top-down public regulation weakened, the postclassical city was subject to stratification processes typical of prehistoric and protostoric societies. In this context the management of the stratigraphic record is key: it provides a means through which we can gather evidence for the conversion of some neighbourhoods to agricultural use; the introduction of building techniques with poor or perishable materials (e.g. wood) or alterable materials (e.g. walls, mortars, silt and clay floors); the effects of intense flooding, as at Modena or Ferrara, where such natural processes produced layers of gravel and silt-sandy sediments. Over these, sewage and waste subsequently accumulated, as the drainage system was no longer able to conduct them out of the city, causing further post-depositional effects.

In dark earth layers we often find botanical remains, which can be studied with new analytical methods (Yannick Devos and Ann Degraeve on the case study of Brussels). It must be underlined the importance of phytoliths (silica structures found in plants which survive after the decay process) in identifying plant species, as they preserve the imprint of the original cell. Using thin sections, we can recognise the origin of remains from excrement (coproliths) or ashes, in order to understand whether these botanic remains come from on-site farming or food production.

Archaeobotany can also help us to understand the relationship between the city and its hinterland, as Elisabetta Castiglioni and Mauro Rottoli show in the case of Brescia over two distinct chronological periods. For the first, between the 3rd and the 1st centuries BC, 800 plant specimens were studied. They all came from the main religious site of the city, the *Capitolium* built in the northern side of the Roman forum. For the second period, between the 5th and 8th centuries AD, a further 36,000 remains come from residential structures (often huts) located in various places of the city. A significant gap occurs during the early imperial period, as no waste deposits were found in the investigated areas. This may testify to the efficient Roman waste disposal system, which prevented any accumulation of detritus on habitation surfaces.

Carpological remains point to a significant change in the vegetation surrounding the city. In the first period, deciduous oaks and elms prevail. This evidence seems to indicate the existence of lush woodlands in the plain located south of the city, which had not yet disappeared in the radical transformation in agrarian landscape brought about by *centuriation* in the 1st century BC. The situation changes in the Early Middle Ages: in Brescia (as in the whole area along the foot of the Alps) chestnut trees now prevail. Their cultivation started in the early imperial period, but in-

creased up in the 5th-6th centuries when the population made use of both the wood itself, as well as chestnuts as a food source. Oaks and elms were less frequent in this period, with hornbeams, beach trees, occasionally pine and white fir trees coming from the woods located to the north of the city. Moreover, in the first period agriculture was based on cereals (with a prevalence of spelt and switchgrass), with very limited evidence of fruits and legumes. In contrast, in Cremona some typically "Roman" species were found: jujube, mulberry, blackberry, olives. In Brescia oats and sorghum became frequent in Early Middle Ages, but fruits, except for grapes and nuts, were still scarce.

We also need to understand agriculture cultivations in the context of wider climatic evolutions. The scientific debate particularly focusses on the period between the 6th and the 7th centuries, when the written sources talk about the little ice age and catastrophic flooding. In some northern Italian regions, evidence of flooding has been confirmed in the stratigraphic sequence. However it is difficult to understand whether this flooding were produced by exceptional natural events or by the poor maintenance of rivers and other waterways. These phenomena could be linked to the fragmentation of the hydrographical basins between different public authorities (such as Longobards and Byzantines) and the disappearance of the magistracies that during the Roman period controlled the maintenance of the rivers (Brogiolo 2015).

Animal remains are absent from this issue but they are an important source of information. Today, new questions can be raised by using isotopic analysis, just as it is applied to human remains. Such analysis can generate information about animal and human mobility. From the evolution of farming and grazing to human diet and social status, these raise important issues that scholars must investigate, especially as new research perspectives arise.

To study human remains, beyond the traditional methods of description, anthropometric measures and biological diagnosis (physical characteristics, stress markers, pathologies), we can now use isotopic and DNA analyses. These can often demonstrate mobility and kinship, especially in relation to the settling of new populations and social hierarchies, which have traditionally been investigated using grave goods from cemeteries.

Isotopic analyses of the organic remains in ceramic (or soapstone) containers can also provide us with information about the evolution of cooking practices. In this area, the evidence obtained by Cau for the presence of Eastern Roman troops in 6th-century Spain is particularly significant (Pecci, Cau 2014). Similarly, the gaschromatographic analysis associated with GC-MS performed on the pottery found at the Bap-

tistry of Padua demonstrated the use of millet as staple food in Padua since the 6th century (Ganzarolli *et al.* 2018).

Following these new avenues for research, sampling a single site is however no longer sufficient to understand the complexity of a city. The materials found in waste or latrine pits arise from the specific conditions of those who used them, frequently for short periods of time. Every cemetery tells its own story, in a plurality of locations and burial rites, and not only when an ethnic-cultural distinction is evident (e.g. a Jewish or Longobard cemetery, or a burial ground for gladiators or soldiers).

A still undervalued topic is the energy resources used for the functioning of the complex body a city represents. The collection of wood for heating systems (a huge quantity for Roman thermal structures) and for craft activities (furnaces for lime, bricks and metal production, ovens) may have led to deforestation in entire regions. From this point of view we can probably interpret the replacement of Cornish Oak (common before the Roman period) with chestnut trees in the alpine foothills of Lombardy as an act of deliberate cultivation. Water from creeks and rivers (present in most cities) or from aqueducts (e.g. in Rome) could be used to move the wheels for mills and forges. The power of water was free, as it is today, but required investment to build and maintain the structures devoted to its transport; this was a challenge.

Human energy (frequently provided by slaves) and animals had feeding costs, and thus required an agricultural system to support them. Farming horses for the transportation of goods and people as well as for military activity implies well-organized management systems to ensure a continuous provision of resources.

We should also consider the effects of pollution linked to wood burning for heating and crafting activities. This pollution should also be related to the variations in lifestyle (living space, diet, waste disposal, activities carried out inside the city).

We should try to understand its consequences for wellbeing and health, in light of the pathologies found in the osteological record. The study of the cemeteries, beyond physical anthropology and palaeopathology, also attempts to understand demography, as well as assessment of the mortality rate and causes of death. To calculate the number of inhabitants of a Roman city, scholars based the parameters on the whole surface, the dimension of the theatres and other structures for performances or the number of temples (de Light 2012). Achieving a reliable estimate is more difficult for the Early Middle Ages, when huts replaced *domus*. In some *insulae* there was an increase in population density, but many constructed spaces become abandoned or devoted to agriculture

(Brogiolo 2017). It is only rarely that we can quantify population from the number and size of urban cemeteries. Cemeteries are fragmented between the suburbs, which mark continuity from the Roman period, and new burial areas inside the city walls, in abandoned spaces, near houses and then close to churches (Chavarría Arnau 2018).

3. Cities from a multidisciplinary and systemic perspective

The archaeological data alone, even when enriched with new analyses, are not sufficient for the complete study of cities. Other sources require handling with expertise derived from a range of allied disciplines in order to provide a truly interdisciplinary approach. Among the more appropriate for archaeologists, are modern cadastral maps and the *estimi*. These written sources can be linked with data identified during excavations or by studying standing architecture. These data, if georeferenced, allow us to follow the horizontal and vertical development of urban topography, linked to foci of power, ideological (religious and civic) routes through a city, the distribution of functions between different neighbourhoods and different social classes, and so on.

GIS analyses (density and orientation of the parcels, Kernel Density, Minimum Bounding Geometry, DSR index, Thickness index, analysis of façades and the length of the parcels) allow us to recognize and date aspects of urban planning, the parcelling of land and its evolution through time. In the example of the neighbourhood of Rudena in Padua, discussed here by Federico Giacomello, the primary goal of the analysis of the urban parcels was to identify parcels of uniform size. These are the result of a planned development and can suggest a relative chronology, with previous natural or anthropic structures (*terminus post quem*) and later structures that modify or cancel them (*terminus ante quem*). A secondary goal was to understand the relationship between different building typologies and land parcels, suggesting a chronology with the aid of the written, archaeological and architectural sources.

We can apply these techniques and research strategies not only to cities, but also to minor settlements, which could have had similar economic, military or social functions, as central places in a surrounding territory. In the Roman period settlements with a fluvial/lake port such as Brescello, close to the river Po, *Arilica* (now Peschiera) and Riva on Lake Garda and *vicus Sebuinus* (later *Stazzona* and now Angera) on Lake Maggiore were commercial hubs. The first was related to the rural areas of the territory Parma, while the others were at junction between the

Po plain to the Alps. This role continued, although with changing fortunes (demonstrated by the change of the names *Arilica* and *vicus Sebuinus* and by alluvial layers in Riva) during the Early Middle Ages, as recent archaeological investigations show. Within the minor settlements, castles played a primary role, for example – among the most well-known and significant – Monselice, Castelseprio, Garda. They were built in the 5th-6th centuries for military-strategic purposes. However, they grew in size, acquiring urban characteristics and functions (military structures, places of power, crafting activities, and a Christian topography), which produced multi-stratified layers consistent with those found in cities.

Studying these minor settlements allows us to understand the dynamism of cities. In the Longobard period, some castles actually played the role of the cities, sometimes with a substantial territory, but also in Roman times small towns like Claterna and Cividate Camuni became cities, if only for a limited period.

4. From the history of the cities to a social use of knowledge

Cities were born and developed for a range of different reasons: as markets and production centres in homogeneous territories (such as the cities in the alpine foothills of northern Italy); as emporia located at the crossroads of commercial routes (e.g. coastal cities or those located on important roads); as centres of religious, military or administrative power (capitals and county seats).

Therefore a fundamental area of research, albeit one that is often neglected, is the connectivity between centres and their dependant territories (administratively, commercially or because of other links, e.g. religious). This connectivity develops over time, adapting to specific parameters.

In order to guarantee a city's continued functionality, various sources of revenue were necessary, and these only partially originated inside the urban space. In the Roman period, the widespread land taxation and the aristocratic income from the countryside – from the ownership of the land and the trade in its produce – guaranteed it. In the Early Middle Ages, it was primarily the fiscal income of royals, dukes and monastic institutions which now fulfilled this role.

Possession of a dependent territory requiring administrative bodies to manage it is a prerequisite for a settlement to be called city. From this point of view, a city is an intersection and guarantee of activities. In the Roman period a strong ideological-cultural attraction joined the economic

and administrative activity. Not only the inhabitants of cities, but also those dwelling in the surrounding countryside visited the temples, *thermae* and entertainment structures. In the Middle Ages, cult places with relics, religious celebrations and markets had the same role.

The history of a city must always be placed in its national and international context. Whilst in the former the city's position within the hierarchy could vary, in the latter its financial resources were guaranteed through commerce. Such a framework helps to explain the differing trajectories of both the cities themselves as well as the Barbarian reigns more generally. Sometimes the conversion of space to agricultural use, the adoption of new building techniques and *in situ* waste disposal prevailed. But elsewhere, a rather different picture emerges, for example in Cordoba. Alberto Leon summarizes the contribution of twenty years of urban archaeology to our understanding of the urban and architectural nature of the great capital and its suburbs. This arose from a combination of influence from the state, and the needs of local communities and the public in the context of strong demographic growth which resulted from immigration following the Islamic conquest.

At the beginning of the third millennium, rapid changes are affecting complex historic cities, the latest step for centres with two thousand years (or more) of history, as some were founded in protohistory or the early Iron Age.

Reflecting on the changes which have occurred in the past does not help us to imagine future possibilities, but it does encourage us to ask questions. Questions about times and places: how and why new neighbourhoods were designed as a city expanded; how abandoned spaces were transformed; how and where immigrant groups settled; where and why centres of power, whether administrative or military, were located. Other questions are linked to the evolution of the different functions in individual cities, financial resources, and methods of administration of dependant territories or to the hierarchical relationships between a city and superior bodies such as the state or the church.

Asking these questions and others leads us to our final reflection. What are these histories, written after years of expensive and intensive research, useful for? What do they mean? What is their value for a contemporary society which is quickly forgetting about its past? What is the meaning of the holes filled with incomprehensible stubs of walls which scar the piazzas of many historic cities?

To answer these questions, we need to consider that:

- urban archaeology has never developed in most countries. China destroyed most of its historic centres (starting with Beijing) without

- documenting them, while much material from destroyed buildings were used to decorate the houses of nouveau riche;
- even in the countries where urban archaeology has developed, the results have not been representative of the resources invested. There are often a lack of city-level coordination and a limited capacity for data synthesis. Among the exceptions are the Brussels Capital Region's official cartographic website (www.mybrugis.irisnet.be) and Rome, with SITAR, a webGIS linkable with other data bases. These tools are fundamental elements for transforming rescue archaeology into strategic projects for an entire city or (to a region through the application of methods of urban archaeology to minor centres);
 - in opposition to the multiplication of fragmented and incomprehensible archaeological sites, rightly seen as a waste of time and resources (Ricci 2006; Manacorda 2007), we need to propose new analytical tools, including those which take advantage of developments in visualization systems;
 - only by following this path we will be able to prove archaeology's social and economic value (the latter linked to cultural tourism), which have until now been too often imposed from the top-down and without lasting impact.

To conclude, 50 years after urban archaeology began, we need to think carefully about how to make further progress in the future.

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