PROCEEDINGS

ARCHITECTURE, ARCHAEOLOGY AND CONTEMPORARY CITY PLANNING

«Issues of Scale»

LONDON
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The workshop took place in London, U+I Offices, 7a Howick Place, Victoria.

Workshop organizing committee:
James Dixon, Giorgio Verdiani, Per Cornell

The workshop has been realized in collaboration between Museum of London Archaeology (MOLA), the Architecture Department of the Florence University, Italy, the Department of Historical Studies, University of Gothenburg, Sweden.

Scientists participating at the workshop:
Per Cornell, James Dixon, Liisa Seppänen, Giorgio Verdiani, Matteo Scamporrino, Pia Englund, Anna Frank, Louise Armstrong, Nick Woodford, Valentina Fantini, Laura Polizzi, Neil Korostoff, Oliver Brown, Gwilym Williams, Sophie Jackson, Valerio Massaro, Sabrina Morreale, Ludovica Marinaro, Timothy Murtha, Thomson Korostoff, Giulio Mezzetti, Sarah Jones, Natalie Cohen, Francesco Maria Listi, Katrina Foxton.

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WORKSHOP PRESENTATION

In recent discussions on urbanism, the need to involve new actors has been a major theme. In this field, throughout Europe, various ways of allowing citizens to take a more direct part in planning are being developed. It is also important to look at the role or lack of role played by particular research fields. Architecture plays a major role in city planning.

While archaeology has become increasingly involved in field projects in urban environments, the discipline seldom plays an important role in planning itself. In several countries and particular cities this situation has been questioned during the last decades.

The approaches and the studies are various and bring to very different results, but all these experiences seem to move to collective and, little by little, well structured knowledge. The approach to match them, both from successfull and disastrous case of studies seems a good occasion to underline how intellingent approach, correct documentation, critic reasoning and in depth analysis can contribute to move to next steps in consciousness about the past and future of our cities.

We wish to open a new kind of communication between these research fields and related praxis. The possible contributions from archaeology include questions of conservation, diffusion of archaeological knowledge by different means, but also other fields, including practical knowledge on the development of

particular districts over time, knowledge of comparative studies of urbanism, questions of design or of 'gestalt' in urban settings, and the intersections between archaeology, architecture and public art.

In London in 2016, we tackled 'Issues of Scale', opening the workshop to topics including moving between buildings and built landscapes, the understanding of wider urban landscapes through single-site research, site-specificity in an international context, city planning at the level of the individual human, dealing with large amounts of quantitative and qualitative data, the potential for digital micro-investigation of historic buildings and sites, and the impact of financial disparities between different stakeholder/interest groups.

Through presentations and formal and informal discussion, we tackled these topics over the course of the workshop itself and excursions to the London 2012 Olympic Park, the redevelopment site at Kings Cross St Pancras and Hampton Court Palace. .

James Dixon
Per Cornell
Giorgio Verdiani

PROCEEDINGS

Virtual research as a tool for bottom-up urban design: the case study of Birmingham

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Abstract: The city of Birmingham is located in the West Midland (England), it is the second biggest city in UK counting 1,092,330 residents. Nowadays Birmingham is changing aspect quickly,a masterplan has already started. The area examined is Digbeth, 5 min from the city centre, where abandoned factories, old historical buildings, symbols of a flourishing past are waiting to be renewed, in this stimulating scenario Local Artists are expressing their talent. An organization named City of Colour, has been organising "City of Colour Festival"; this event takes place in particular areas in Digbeth inviting artists from all over the world to paint small portions of walls. Last year 100 artists participated and thanks to their contribution it is possible to consider Digbeth as an outdoor Graffiti gallery. The aim of the research is to provide a tool to preserve this art in the future, accepting Street Art as part of the cultural heritage of Birmingham. Using SFM solution, photoscanning each wall periodically it will be possible to conserve these pieces of art, without maintaining the painted wall, that would mean damaging the value of this kind of Art itself. The idea is to create an App, that will be used as a Virtual Tour of the city. Using Augmented Reality a projection of the historical art will be casted on the real wall, using it as a 1:1 model texturized. Users (citizen) will take an active part in the Big City Plan by simply using and updating the application. Collected data will be translated into a Virtual Map that will be used as reference for future urban growth of the city by the Local Planning Authority..

Keywords: Street Art, App, Augmented Reality, Urban Planning, VirtualMap, museum open air, Birmingham.

Introduction

The research started with a Master Thesis in 2014 titled: "The museum of Urban Ephemeral: Conservation and digital dissemination of Street Art, Birmingham Case Study" by Virginia Dimita; Mentors: Prof. Giorgio Verdiani; Valentina Fantini; James Dixon. The Thesis was focused on Birmingham, its location in UK, the history of the city and its development from the past to the present, trying to investigate using available urban plan the evolution of the city.

Birmingham Street Art as ephemeral Art was the main theme tackled going through the problems linked to it like: conservation and dissemination of and Art that it is so temporary and connected to the site where it is manifested that it is hard to preserve.

The solution proposed during the Thesis was to use advanced technology to survey the pieces of Art in order to create an itinerary Virtual Museum.

The Thesis was an useful starting point, the current research stepped far forward from the beginning, in order to tackle the problem listed above and integrate Street Art and Urban Archaeology in Urban Planning in UK.

History of Birmingham
Birmingham 1166-1889

Birmingham began in the early 12th century and grew into a town. In 1166 the King gave the Lord of the Manor, Peter De Birmingham, the right to hold a weekly market at Birming-

ham. Once a market was up and running merchants and craftsmen came to live in Birmingham and it soon developed into a busy little town.

Around 1250 Birmingham's market attracted buyers and sellers from all over the Midlands. In the 16th century Birmingham grew rapidly. In 1650 it had a population of around 5,000. By then it was a fairly large and important place.

The new industry of metalworking was fast taking over thanks to 3 No. natural advantageous characteristics of Birmingham: first it was near to a source of iron ore; second it was close to a coal seam, which provided fuel for forges; third it was surrounded by streams so that watermills could power the bellows for forges.

In the period between 1715-1792 Birmingham industries grew attracting workers from all ver the Midlands. The city started to develop: hospitals, school, street lights, new canals, services, By the end of the century its population had arisen to 73000 p.

As most of the industrial cities Birmingham was dirty and unsanitary. But in the second half of the century in the period between 1266-1850 conditions improved. A network of sewers was dug under the streets. Water company provided piped water.

Important buildings were built: 1832 Botanical Garden, 1875 Mosley Public bath, 1879 Council House. In 1882 electricity had been supplied. In 1889 Birmingham was made a City.

Birmingham 1901-2016

In the period between 1901 and 1938 the boundaries of Birmingham were extended. 50000 No. council houses were built in Birmingham and about 65000 No private houses. During the Second World War Birmingham was, as major manufacturing centre, an obvious target for German bombing. More than 2000 people died as a result of the bombing and most of the city destroyed.

Post world war there was the beginning of the Modernist Utopia with related post war plan;

Fig 1 - Birmingham Site Plan 1750

Fig 2 - Birmingham Site Plan 2013

one of them was Cadbury's futurist vision in the 1953, documented in the book "Birmingham: Fifty years on".

In the years 1945-54 more than 37,000 council houses were built in Birmingham. By 1970 the number had arisen to over 80,000.

An inner ring road was built in Birmingham between 1960 and 1971. Aston University was founded in 1966. In 1971 New Street Station was rebuilt. 1960 Library of Birmingham.

City Centre Strategy had been revealed in those years, Birmingham City Centre was to be rebuilt and refurbished. A list of relevant monuments and buildings were built: the International Conference Centre and Indoor Arena opened in 1991; the sculpture named 'forward' was unveiled; public sculptures in Birmingham include a statue of Thomas Attwood in Chamberlain Square and Iron Man unveiled in 1993.

Fountains and sculpture called "The River", were erected in Victoria Square in 1993, which was pedestrianised. A statue of Tony Hancock was erected in 1996, the Ikon Gallery opened in 1998 and the Midland Metro System (of trams) opened in Birmingham in 1999. In 2001 Millenium Point opened in Digbeth; 2003 New Bullring Shopping Centre and Selfridges.

Another relevant moment was in between 2013 and 2015 when the New Birmingham Library by the dutch practice Mecanoo was opened and in 2015 New Street Station now called "Grand Central" designed by FOA (Foreign Office Architects).

The city is nowadays an explosion of "Iconomic" buildings, following the New Big City Plan. Today Finance and Tourism are important industries.

Digbeth: Old Digbeth-Origin

The name "dyke-paeth" comes from an Anglo-Saxon word. In Old and Middle English, as in modern English, the word 'dyke' can either mean an artificially-dug ditch or the embankment made alongside the ditch. "Paeth" was the Old English word for "path" and sometimes for "course" as in watercourse. Perhaps the name may best be interpreted as 'dyke paeth'.

Fig 3 - Old Digbeth map
1 - The Old Crown (1500- oldest building in Birmingham, UK)
2 - Outdoor Market
3 - St. Martin Cathedral (13th century/ 1873 demolished and rebuilt)

It may not be obvious these days but Digbeth marks the site where, in the 7th century, the Anglo Saxon Beorma founded the first human settlement that would later become the city of Birmingham. From at least the 12th century the market town of Birmingham was clustered around the Bull Ring on the sandstone ridge overlooking the Rea valley. Travellers had to negotiate the floodplain of the River Rea, there

was a bridge built by a Birmingham family, as lords of the manor, the family profited from tolls paid by market traders from outside the borough. The valley was wide and marshy.

Fig 4 - Digbeth nowadays map
4 - Bullring (middle ages market/1960- 2 shopping centre/2003- actual one)
5 - Viaduct-Eastside Rail Station
6 - Moor Street Station (1909 original/ 2002 restored and expanded)
7 - Police Station
8 - Indoor Market- Rag Market (2000)
9 - Coach station (1929 the original/2008 actual one)
10 - Custard Factory (1800-1992-2010)
11 - Fazeley Studios (1800-1993-2008)

Industrial revolution

Centuries later, Digbeth formed the first industrial heart of Birmingham, after Henry Bradford donated land there to anyone wishing to set up a business.
A dense canal network helped setting numerous industries, which were used to transport goods from North to South England.
Digbeth plentiful water supply attracted people to the area, and It soon became of national importance, as a centre of production and trade at the height of the Industrial Revolution, with rail and canal links to the rest of the country.
This in turn led to an influx of workers, both British and foreign, who made up Digbeth once vibrant population.

Digbeth Today

Digbeth today is a vibrant quarter that retains all of that 19th Century architecture. A mixture of different communities, a fertile soil for artists. Before the 2nd world war the Italian community lived there, later on Polish, Irish etc. Busy daylight hours led to equally busy nights, and the city's Irish community have long regarded Digbeth as their spiritual home, which now plays host to the country's largest St. Patrick's Day Parade.

Big City Plan

The ambition for the area is to use its historic roots as a foundation for growing its established creative businesses and developing a vibrant urban community. The plan aims to facilitate the renaissance of the Quarter addressing a number of key issues:
• Providing safe connections into and through the Quarter
• Supporting its authentic character
• Balancing the needs of local businesses, cultural and creative activities
• Responding to the opportunities and challenges that the proposal for high speed 2 in neighbouring Eastside will bring

How?

The High Street will be redesigned to reduce car dominance and improve pedestrian environment. River Rea and the canals will be opened up , improving lighting and access to the canal frontage creating a lively and safe atmosphere The High Speed 2 with new station will offers a great potential to connect Digbeth to the city Core and bring focus to the north of the quarter.

Street Art Digbeth- City of Colour Festival

City of Colours is an urban arts company with a community interest mission to provide an accessible platform for artists of all levels and backgrounds to produce, exhibit and engage

Fig 5 - Birmingham Big City Plan 2016
1 - The Old Crown (1500- oldest building in Birmingham, UK)
2 - Outdoor Market
3 - St. Martin Cathedral (13th century/ 1873 demolished and rebuilt)
4 - Bullring (middle ages market/1960- 2 shopping centre/2003- actual one)
5 - Viaduct-Eastside Rail Station
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with the artistic community. Their aim is to educate, influence and inspire marginalised groups and all Birmingham residents to unlock their hidden potential and participate in

Fig 6 - Street Art Digbeth Map

the regeneration and development of their local area. One of the sponsor is Arts Council England and it is part of the Public Art Strategy in Birmingham. City of Colour Festival has been presented to public for the first time in 2014. 140 different artists from all over the world are invited every year to perform along the main street in Digbeth, transforming the quarter in an open air museum. The event attracts people of different ages, proposing workshop and various activities.

Conclusions

We have overlapped the maps from different historical periods and created this final scheme where it is visible that the street art is spreading in the main roads and where the quarter has started its development. Graffiti which is generally considered as temporary art, is actually underlining the historic roots of the area, defining new ways to develop Digbeth. The street art can be considered as a temporary installation in a site-specific, by creating different layers , each one of them with its own story to tell. Our research aims
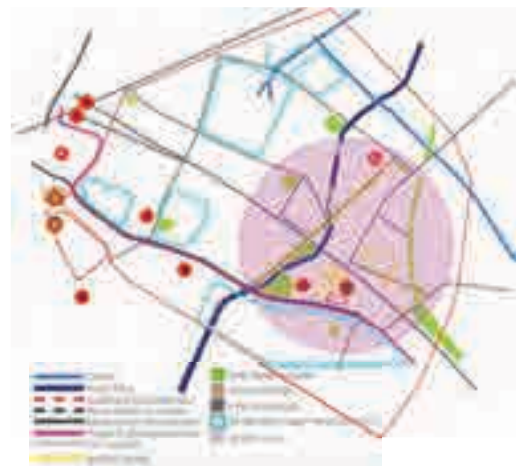

Fig 7 - Final Map

to develop an instrument, a phone application,able to discover those layers, collecting images and data through the passing of time, which can be used to improve or simply know

more about a specific area. People who walk and live in the area will collect the data which will be uploaded and organized by the system and be used by everyone. Public Art is a form of Bottom up urban design, because even if it has been promoted by the City council first, it needs the participation of public to make the art visible and popular.

Street Art

The urban writing was born as an illegal movement expression of the underground culture during 70s.

Its origin can be referred to Hip Hop ghetto's art, music, could finally find a new personal identity approaching the territory in a different and more independent way. From the assault to the subway train, popular phenomena called Subway Writing, always illegal and against authority, it started being recognised as Art during the 80s.

In 1972 Hugo Martinez, sociologist from City College New York, founded UGA (United Graffiti Artists) aiming to move the Art from the street to a studio.

Despite the huge attraction this new Art created, this attempting resulted in failure; in fact those pieces of art made illegally on unusual surfaces lost all of their pathos when moved inside on a canvas.

UGA was not a great result however it made writer more conscious of this new status. Later on Writers evolved in Street Artist, if before graffiti were a quick expression of art mixed with adrenaline, Street Art is strictly connected to a site-specific. Street Artists expressed themselves trying to improve the image of the city, although they still act illegally but in respect of the city.

New cities have definitely embraced Street Art as part of everyday life.

As many of the Writers, Street Artists, nowadays completely involved in the development of the city, have abandoned illegality and work on commission basis.

Especially big wall graffiti, complicated to be realised illegally, are now commissioned during world street art events. It is possible to affirm that Street Art became an influential
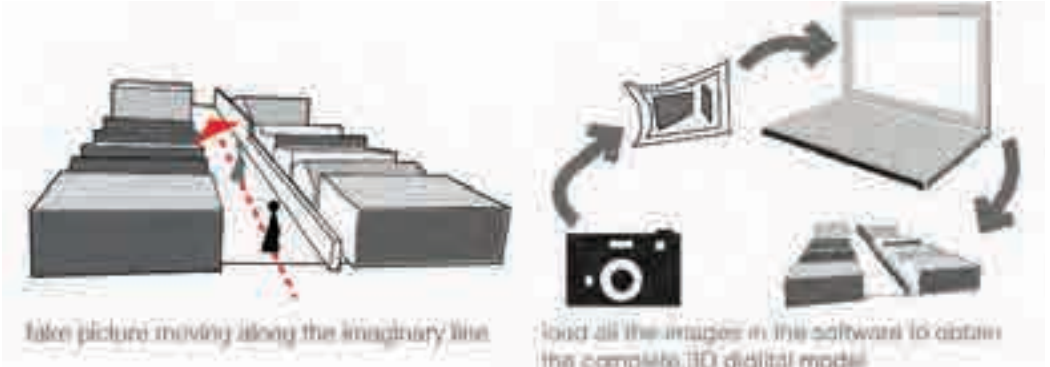

Fig 8 - Digbeth, Birmingham.

Fig 9 - Series of picture along Floodgate Street   *Fig 10 - The "photoscan" method*

take picture moving along the imaginary line

load all the images in the software to obtain the complete 3D digital model

global artistic movement, celebrated in the most important art museum in the world: May 2008 Street Art at Tate Modern; April 2011 Street Art at MOCA San Francisco.

Beside the popularity acquired by Street Art in many art museum, it has been used to activate the process of gentrification in abandon metropolitan areas. Brooklyn, Williamsburg etc New York; Hackney London, Northern quarter Bristol Digbeth is one of the case.

Survey

The survey was based on photogrammetry procedure, using the SfM (Structure from Motion) procedure. The so called "Photo scanning" was operated using:
• a digital camera
• a tripod
• Photos should have a total depth of field;
• Elements of interest clear and readable.
• It's important to photograph all the parts of the object;
• divide the object with imaginary section planes, parallel to the surface to be photo scanned.

The photographer should move along the imaginary line on the floor (projection of the section plane) with a regular interval and with a distance between each position proportionated to the field of view. The further process is the loading of all the images in the software and the start of the workflow to create the final digital 3D model of the surveyed space. This phase can be quite long, because using the software is a time consuming process, starting from a first alignment, to the creation of the geometry to the completion of the process with the creation of the overall texture to be mapped on the mesh surface. The result will be a complete 3D digital model created from the 2D information of the pictures; the final result is a three-dimensional polygonal surface with a texture applied on it. The texture is created by an union of the photos loaded in the software to start the whole operation.

The main areas of Digbeth where the City of Colour Festival took place have been scanned. Street Art is not just commissioned art it changes continuously, therefore the archive should be kept up to date constantly.

Fig 11 - Floodgate Street: First layer of Graffiti

Fig 12 - Floodgate Street:Second layer of Graffiti

Fig 13 - Street Art old library Birmingham (1974-2015)

Floodgate Street has been scanned twice in order to catch two different layers of Graffiti. The 3D models obtained have been imported in Maxon Cinema 4D; photorealistic image have been mounted using Adobe Photoshop on a Floodgate street picture.

App: MyMusa (My museum of Street Art)

User friendly map for a street art tour.
1. Sign up to MyMusa, using Facebook, Twitter, Tumblr, Flickr, etc.
2. Start Street Art Virtual Tour following the suggested routes
3. Walking around the areas admire any piece of art.
4. Read the QR code on the wall with your phone to see your favourite graffiti in augmented reality.
5. Click on the image to read the information related to the graffiti and shift to see all the layers on that portion of the wall
6. Click and Upload: take a picture of any

interesting piece of art you find on your way and send it to MyMusa staff, expanding and enriching the Virtual tour.

MyMusa is an App for any devices to be downloaded possibly from Birmingham Touristic website or Street Art website like Festival City of Colour.

The idea is to create an interactive app that uses advanced technology to admire and create an archive of Street Art in Birmingham.

The user by simply logging in the APP, will start a Street Art Virtual tour following the suggested routes. Moreover using Augmented Reality it will be possible to see and experience, by projecting the survey previously executed on the real wall, the Street Art as it was, where it was. Reading the QR code, printed on a tile, attached on each valuable piece wall, it will be possible to see all the layers of street art painted on the wall. By reading the QR code all the information related to the piece of art will be revealed, when trackable.

MyMusa encourages the user to become part of the survey itself, by simply taking pictures of any piece of art found around the city and uploading it on the app, the map will expand, personalising the tour and enriching the open air museum, with pieces of art that might have been excluded in the initial survey.

Each picture uploaded by the user will be analysed by MyMusa staff in order to understand the value of the piece of art itself. Users can share, like and dislike, any piece of Street Art, following the same principle of social network. The starting point of MyMusa was a photo-

Fig 14 - MyMusa APP functional scheme

grammetric survey of a few relevant areas in Digbeth (Birmingham), where Street Art is currently shown. Digbeth is the main location of City Of Colour Festival. Despite the fact Street Art has been commissioned in that area, artists feel free to cover existing art and express themselves with graffiti non authorised. This fact add to the area interests and the potentiality for the map to gather more information than the one collected in the initial survey from any MyMusa's users.

MyMusa staff will be composed by professional figure like: urban archaeologist, app developer and urban designer. As emerged during AACcP 2016 to have different professional figure involved in the app will help, developing the Virtual map correctly, taking in consideration relevant piece of art.

Once logged in, the Virtual Map can be read off-line, the function of augmented reality will disappear, however the list of information related to the Street Art exhibited during the tour will be part of the map itself.

The App is based on public engagement, this fact is a huge potentiality as it can be risky, leaving the choice about which Street Art should be kept and where can eventually influence part of the city.

Previous Case Study

Having said that the initial survey will be ex-

ecuted using Photogrammetic survey, might be deviating considering that the aim of the app is to engage the public to survey relevant pieces of art. To prove that this way of working is possible two previous case study have been taken into account.

The first case is a research carried out by Angela Mancuso and Andrea Pasquali presented during CHNT 2014 Wien. Their research was based on the survey of the wild boar located in Loggia del Porcellino, Florence. A.Mancuso and A.Pasquali proved that the 3d mesh obtained with direct survey campaign was as good as the 3d mesh obtained with web archive survey campaign.

Direct survey campaign consisted of taking

Fig 15 - Comparison between the two textured 3Dmodel obtained with Direct Survey Campaign and Web Archive Survey Campaign (A. Mancuso, A. Pasquali)

Fig 16 - Adrian Flury "A place I've never been"

picture of the statue with high resolution camera, trying to fully document the Statue and its details. The pictures were uploaded on Photoscan in order to calculate a 3d mesh with texture. Due to the high resolution pictures the model was complicated to calculate.

Web archive survey campaign was based on collating picture from websites; the wild boar statue is popular in Florence and numerous picture can be found. The process of uploading the pictures on Photoscan in this case was slower than with DSC because of the additional time related to the isolation of the object in the picture. The picture dowloaded from websites were less detailed and the wild board was often surrounded by additional information like: people, hands etc that would have confused the process of calculation. The 3d mesh obtained with WASC was slightly less detailed, as expected, but easily manageable with any device.

Proving that the two 3dmodels were equivalent if observed at certain zoom/distance.

The other case study analysed was the short movie "A place I've never been" directed by Adrian Flury, presented at Flatpack film festival 2015 Birmingham.

Adrian Flury by collecting from websites picture taken from tourists in Athen, was able to re-create a documentary of Parthenon in Athens without going there.

Each frame had been mounted with stop-motion technique

Applying these case studies to MyMusa it is possible to affirm that public engagement will definitely be able to survey and contribute

to the expansion of the Virtual Map although professional survey support will be needed. To have an high resolution camera to photograph Street Art and obtain a detailed 3dmesh then augmented reality, will not be necessary, in order to observe Street Art with a common device like: phone, computer, tablet.

Planning Street Art and Bottom Up urban design

To consider MyMusa as an useful tool for Urban Planning, we need to refer to Development Management Procedure Order, Article 15: Local Planning Authorities are obliged to undertake a formal period of consultation, prior to decide a planning application.

In Uk consultation is a democratic act of public engagement, where anyone is expressing his opinion on the matter of planning.

In Uk 1970s 1990s public art had been promoted and commissioned by City Council.

Fig 17 - Festival City of Colour 2016. Street Art Trinity Street Digbeth

This worked for all parties concerned; the site owners had occupied sites and the artists had places to work in which they could be relatively free in what they did. More importantly, the opportunity now arose, partly from this situation and partly through the people involved, to develop a distinct local art that worked directly in response to local (political) situations.

Street Art is more often part of urban regeneration scheme through the process of

gentrification. A Quarter initially unpopular becomes trendy when artists move in. Artists and Creatives are the first moving in an unpopular Quarter because of the low renting cost. After a while bars, cafés turn up, changing slowly radically the quarter from abandoned, desolate to a fancy high price rent Quarter.

Public art can transfer power to people and invite active discussion rather than just passing observation. It can increase the vitality of public space and work with the surrounding environment; temporary time sensitive projects can make the art even more precious.

MyMusa was born by an understanding of the role of Public Art, incorporating it with the procedure of public consultation; the app by simply integrating these two elements will become a planning instruments.

The Map will be constantly updated with public art by the users themselves and it will constitute an informative map of valuable areas to be integrated with the other planning instruments.

Conclusion

MyMusa and its Virtual Map will be an ongoing constantly up to date database of Street Art. Preservation and dissemination issues typically related to this sort of art are therefore solved.

Street Art will be archived in a database that will be the app itself but eventually used for further study. MyMusa database of information, once dowloaded by walking the open-air museum, will be available even offline, although the relationship between the piece of art and the site specific remains, because augmented reality can be seen only in the place where the Qr-code slab is located.

Therefore "Where it was, how it was" the two main points attribute to conservation and dissemination of cultural heritage are respected. The piece of art remains in the place where it has been done, even if it has been covered or deleted.

MyMusa has a double meaning: it is an in-

Fig 18 - Festival City of Colour 2016. Street Art Trinity Street Digbeth

Fig 19 - Festival City of Colour 2016. Street Art Trinity Street Digbeth

Fig 20 - Festival City of Colour 2016. Street Art Trinity Street Digbeth

structive game for the users and it is, once in use a planning instrument to be taken into account during planning stage.

The fact that the Virtual Map can be extended

by its user, by simply using the social network methodology of like/share, makes the map amendable and sensitive to public preference. City Council can consider the App and the virtual map extracted from it, as urban planning instruments, as a democratic exercise, expressing people ideas about areas of the city.

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Philadelphia Street Hierarchies

Thomson Korostoff

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Abstract: This project, a comprehensive history and typology of alleyways in the city of Philadelphia, engages directly with hierarchies of streets and housing in the city - examining the scales of everyday space. Philadelphia provides an interesting item of study, as its large blocks were filled in independently by myriad cross-streets, alleyways, courts, and back-houses that, though within a grid, are more akin to organic morphologies. This project explores the morphogenesis of the Philadelphia alleyways through architectural records of the change of the urban form and direct research into the broad drivers and specific plans of property development in the city's expanding grid. This will evaluate the forms that are created and investigate convergences or conflicts of interest between builders and municipal authority over gridded or organic forms, interesting in a city where the grid forms part of the city's identity. The project then uses the typology that becomes evident from this architectural analysis as a base to which demographic and economic data can be added to explore social history in addition to physical history, working towards a more comprehensive account of the scales of street life in Philadelphia. The nature of alleyway form in Philadelphia can be compared to forms in other cities of both physical and social similarities (i.e. both the automobile alleys of the American West and the tenement blocks of New York) to investigate causes and impacts of alleys. Present work is focused on the decade leading into the First World War in order to explore the breadth of potential sources. Current analysis includes traffic patterns, and building usage in two multi-block case studies in central Philadelphia that are large enough to provide broader conclusions about Philadelphia's form, but limited enough to allow direct investigation into the forms and residents of individual streets and even buildings.

Keywords: Hierarchies, Philadelphia, Urban Planning, Urban patterns, Urban form, Street life.

Introduction

The Philadelphia grid is considered one of the foundational American city plans, a pattern replicated across the nation that embodies geometry, legibility, and organization at its purest. A marked change, at its application in 1682, from the organic morphologies of European cities, the regularity of the drawn grid is startling. And over a century later Charles Dickens criticized Philadelphia: "It is a handsome city, but distractingly regular. After walking about for an hour or two, I felt that I would have given the world for a crooked street." [1]
But this grid is deceptive. Inside each of the huge blocks of Philadelphia's grid are myriad alleyways, courts, back-buildings, and passages that defied the regularity of the external blocks. Dickens' take on the personal aesthetic experience of the grid highlights its superficiality. While these alleys are composed of straight lines, it is only the visual appearance of non-crooked corners in the alleys and courts that distinguishes Philadelphia from a curving organic form such as Boston's. The means by which internal courts are built and formed is the same organic growth as a non-gridded city. [2]. The scale of Philadelphia's grid and the localized nature of organic growth within it create a distinctive urban form of squares and interiors, one that under examination at an intermediate block-level scale reveals a distinct hierarchy of street types. This hierarchical urban fabric produces a

diversity of architectural forms that in turn allow for a city that retains a remarkable level of demographic racial diversity into the 20th century. This diversity is invisible at citywide scales, but becomes legible at a block-level scale when placed into a hierarchy of abrupt residential segregation. At an individual architectural scale, this becomes a matter of economics. The period around the First World War offers an opportunity to look at these alleyways before many came to be demolished in the 1930's, while still allowing interpretation of their function in the face of the regularization of the 20th century.

To consider this infill of courts and back-houses as an organic form contests the conception of Philadelphia as a rationally planned city; and as a distinct hierarchy of house sizes and values, and accompanying racial changes, emerges, the ideal of the nonhierarchical grid that defined the city's identity in the early 19th century comes into question as well.

Urban and Historical Context

In his most famous pronouncement, William Penn declared a hopeful vision of Philadelphia as a "green Country Town, which will never be burnt. and always be wholesome". [3] This was to be enacted by a grid plan—shown in the Portraiture of the City of Philadelphia by Penn's surveyor Thomas Holme—which would organize the city for simple sale to remote investors. [4] In the 18th century, the broader form of this grid spanning two rivers was forgotten as the city clung to the valuable Delaware waterfront. This port was loosely segregated by function; warehouses along the waterfront, and associated financial buildings behind these, rope-walks and shipyards along the river bank to north and south, a belt of retail, and civic and religious buildings the furthest from river at the apex of a triangle. [5] These functions determined residential patterns, as most in the city lived as close to work as possible. Almost immediately, the colossal

blocks of two hundred thousand square feet came to be divided up with small interior alleyways and courtyards, with small houses built on the backs of lots or around the perimeters of freestanding mansions. [6]

As the expanding scope of the mercantile world required new forms of classification, an interest in gridded forms made the jump from commerce to public identity. In 1789, the city, re-crafting its charter at a time when bureaucracy itself was had discovered enthusiasm for the orthogonal, suddenly remembered this city grid and incorporated the grid plan into the city's seal, and its conception of itself as possessing a history of rationalism and equality. This new "imagination" of the grid surpassed any of Penn's enthusiasm for the original grid, now declaring a nonhierarchical, humanist, rational system of organization for a plan that had, in 1682, professed an explicit hierarchy and had been chosen in part to make speculative sale possible. [7] The very language—"green country town"—was itself an empty shell, referring to a plan for rural settlement that had already been abandoned by the time the Portraiture was drawn. [8] Though this process of infill was increasing seen as a violation both of the Greene Country Towne ideal and the republican rationalism of the grid, Penn's original plan foresaw this division into smaller lots, calling for "building here after streets," in addition to grid. [9] However, this technicality is still frequently overlooked today, and it certainly could not withstand the excitement of national myth-building. The ideology of the rationality and individualism of the grid itself assumed national significance in America in the early 19th century, becoming incorporated into the grid plan for New York in 1811, and across the nation as the township and range system, first used to divide Ohio in the last years of the 18th century, and in subsequent western territories as they were added.

As Philadelphia industrialized in the 19th century, the blocks of the city grew denser with subdivisions and small houses for a growing

proletariat and emerging middle class. Beginning in 1799 builders began constructing long blocks of speculative rowhouses, and permutations of the rowhouse became the dominant housing stock, even into the present day. [10] Philadelphia rowhouses can be classified into four basic categories by the number of rooms and presence of a rear wing. The four most common rowhouse types in Philadelphia are the "bandbox" house, one room deep, known also in Philadelphia as trinities when three stories tall; and two-room "London-type" rowhouses. With the expansion of a rear wing—connected by a narrow neck known in Philadelphia as a 'Piazza'—creates the "Town-" and "City-type" rowhouses. [11]

These types have only loose correspondence with street types. The form of the "bandbox" house is not interchangeable with alleyway housing, though it was taken to be during tenement cleanups in the early 20th century. These narrow houses appear both on alleyways and on larger streets, and alleyway housing is a mix of one-room bandbox and two-room "London-type" rowhouses. As alleyway forms, small bandbox houses sometimes appeared behind larger rowhouses in residential courts and passages, while at other sites, larger speculative blocks of alley houses were constructed along secondary street in a block interior.

Architecturally, the exceptions of everyday life do not permit any intermediate typology of alleyway forms—though houses fall into recognizable patterns, minor changes in conditions form a spectrum of small street types that defies any grouping. Even today, in surviving alleyways, there is little differentiation between through, closed, and internal streets, or those with and without garages.

The city contained this variety of forms of alley and court already by 1860, and these primarily survive past 1920. Attached images are from 1916 fire insurance maps, but earlier maps show that almost all the alley houses and back-buildings in this area predate 1860, they are more likely to have

disappeared between then and 1916 than been constructed. In this particular area the houses likely date to the 1840's or 50's. [12] Subdivision for small lots is older in Philadelphia than in other American cities: in Washington, D.C., many similar alley houses date to the period after 1865.

Broadly, this city was not organized by any large-scale sorting of peoples or land use in the 19th century, and each neighborhood possessed a mix of house types, races and classes, and commercial, residential, and industrial factors. Close to the beginning of the 20th century, the emerging profession of city planning tried to sort in exactly this way—overtly, to protect the residential from the industrial; by more subtle means, to keep black separate from white or rich from poor. And yet, as American cities were zoned into factory and commercial districts; into wealthy white suburbs and black or immigrant workers neighborhoods, close examination shows central Philadelphia continued to demonstrate the spatial patterns of a 19th - Century city. In the center of the city, neighborhoods are only loosely distinguished by race and class and building use; predominantly mixed both socially and architecturally. The municipal eye of the early 20th century shared the hostility towards alleyways of the previous century, now condemning them on the grounds of overcrowding, sanitation, or structural inadequacy. The photographic eye prioritized crumbling buildings and perceived social degeneration to make the case for their destruction.

The city's mania to remove alleys reached such lengths that even Elfreth's Alley—now a major tourist destination for its residential history -is included in the Philadelphia Record's collection of tenement photographs as apparently a slum- and therefore meriting demolition. [13]

Methodology

Three significant data collection efforts have formed a major part of this project, for two

6-block case areas in central Philadelphia, 6-block sections between Walnut and South, the first between 9th and 12th Streets and the second between 20th and 23rd Streets. The first collection is of architectural data from 1916 insurance maps and surveys, evaluating the proportion of building frontages to rears on each block; traffic patterns; and proportions of residential, commercial, industrial, and public or institutional building uses.[14] The second collection is of 1920 U.S. Census data for the 7th and 8th Wards. [15] The third collection is from a directory of Philadelphia building values published in 1917. [16] Attached maps show the process through which I determined the physical or morphological forms of Philadelphia's alleyways and determined the hierarchy of streets, which I then confirmed with manuscript and digital census data and the value directory, which is limited by the treatment by appraisers of many alleyway buildings as architectural components of streetfront buildings. [17]

I also drew from projects that mapped listings in Philadelphia social registers, which informed my understanding of the social meaning of spaces among the city's elite. Working with large datasets of urban historical information has allowed an approach that challenges the early 19th century ideals of the city and the observations of demographers and planners in the early 20th.

Findings

This study examines the functions and impacts of the physical variations of street types through residential demographic segregation, observed at three scales in Philadelphia in 1920. At the broadest, citywide scale, patterns of race and class are based on physical distance, visible in the demographic variation from one ward to the next, with a Philadelphia ward ranging from 20-50 blocks. These patterns are familiar to most American cities in the period. This is the scale at which segregation becomes most

distinctly enforced in this period, zoning sorting buildings while redlining and racially restrictive deeds sorted people, of regional pressures on urban geography; and this is the scale at which it is most commonly studied. It is a useful scale and effects at this scale are visible in the study: at this scale, the 8th Ward (north of Walnut Street) has eleven percent black residents in 1920 while the 7th Ward immediately to the south is 48% black. [18] In these case studies, the average of the western study area is significantly whiter, with higher house values, than the eastern area at the opposite end of the same narrow ward. Municipal and economic pressures become visible in a change startling in Philadelphia's often gradual geodemography: between Pine and Lombard Streets—a single block— the population changes from entirely white to entirely black, with house size shrinking precipitously and home values lessening by tenfold in some cases. However, a different, more distinct and legible pattern emerges at the block level.

Considering the city block-by-block, the data have revealed a distinct physical and social hierarchy of three types of streets in Philadelphia. East-West streets were socially desirable (according to social registers,) entirely white, fully residential, and broadly spaced with large houses that often have multiple servants.[19] North-South streets, while of the same width, have smaller houses, more commercial and light industrial building uses, a denser and racially mixed occupancy, and few or no servants. Finally, the smallest streets and alleyways in the interior of the blocks formed by the other streets have on average the smallest houses, exclusively black residents, no servants, and mostly residential uses except for occasional industry. Appraised house values further support this system.

At a closest scale, this hierarchy is further confirmed by architectural evaluation of individual buildings, such as the orientation of corner buildings (which prefer the higher street in the hierarchy) or location of window

bays (on lower streets)—details attuned to the contemporary social knowledge of builders and also relevant to a centuries-old practice of architectural policy limitations. [20]

The census data shows that, in addition to neighborhoods and blocks having identifiable demographics, segregation within each neighborhood is impacted by this individual architectural form. A few racial anomalies have come up in the census; a number of instances in which a black family resides on an otherwise white block. With individual examination, these appear as architectural anomalies as well, a back-building on a corner lot (408 S. 10th Street), or a house with multiple floors given to industrial uses (928 Pine Street). Black families also frequently appear as lodgers in white households, such as William Cooper, a 61-year-old butler who lived with his wife Elizabeth in the home of a Russian cigar shop owner and his Austrian wife at 1033 Locust, or possibly in the lower floor of the back-building with no alleyway address.

Analysis

These instances suggest that block-level racial segregation occurs primarily as a product of class segregation rather than a deliberate social effort. Philadelphia retains racial diversity in the center into the 20th century because the conditions of its original form, and subsequent morphogenesis, created spectrum of housing options which allowed for a variety of residents.

The use of multiple scales contrasts with the dominant approach in studies of residential segregation in the period approximately between 1880 and 1920—one of classifying specific neighborhoods as primarily having residents of a specific race, ethnicity, or class. [21] Such studies use statistical indices to determine the 'integration' of a given neighborhood, analyses of physical distance which rely on a similar scale as used by the authors of many of the segregational urban programs that gave rise to these patterns.

Meanwhile, architectural or biographic histories at the smallest scale approach the vernacular as a means to understand the everyday, but do not grant this informal organic growth status as a representation of city dwellers' very individual modifications to their environment and the variety of motivations behind this. Fine-grained investigation suggests these patterns comprise tactical resistance to municipal strategy.

Conclusion

Today, most alleyway dwellers in these parts of the city mirror the race and socioeconomic status of those on the larger streets. The Philadelphia street hierarchy has collapsed due to a number of factors—the division of larger houses into apartments of a similar size as alleyway houses, the desirability of small houses on quiet streets, an overall rise in house prices making these areas inaccessible to all but the wealthiest.

This study shows that early 20th-century Philadelphia represents an interesting place and time in American urbanism, one that can only be understood by examining citywide, neighborhood, and individual scales of architecture and demography. This examination of the racial patterns of Philadelphia's alleyways, by including the intermediate pattern of street hierarchies and the individual pattern of building additions, suggests that urban form, as much as physical distance, was still in 1920 the dominant factor shaping racial segregation in the city. The organic nature of some of the city's form, and its patterns of residence through this form, challenge the conception of Philadelphia's grid as rational and democratic, an idea which reached national importance in the early 19th century; and prompts interesting comparison to architectural hierarchies in America and Europe.

The influence of form in determining residence could merit comparison of Philadelphia with other intermediate and small-scale housing typologies such as Berlin in the

Image 1 - Thomas Holme, Portraiture of the City of Philadelphia in the Province of Pennsylvania in America, 1683. "Property Atlases/Maps" https://libwww.freelibrary.org/digital/item/41936. Image courtesy of the Free Library of Philadelphia, Map Collection.

early 20th century, where the distance from the street through a series of courtyards determined socioeconomic status; Paris in the mid-19th, where vertical segregation within apartment buildings provides a slice of the whole city; New Orleans through the 19th century, where superblocks progress from upper-class white exterior boulevards to progressively less white interiors; and certainly to Washington D.C. into the 20th century, where alleyway housing likewise had primarily black residents and a social stigma of the 'small streets'. [22]

The creation and occupation of Philadelphia's urban form has implications not just for the history, but the future of city planning. Early 20th-Century Philadelphia demonstrates the ability of urban form to shape demographics, a process that if understood can be used to continue to shape cities today. Architectural diversity, Philadelphia shows us, produces demographic diversity.

The rigidity of the grid and distinctiveness of each block interior produces a middle-ground between the planned and unplanned. The space in the interior of each block allowed each section of the city to be shaped individually according to its needs. This study challenges prior geographies by suggesting that alleyways are not just organic, but successful. Could this semi-organic form have potential in planning for the future, a model for mitigating tensions between structure and individuality? In a world in which millions of people live in unplanned informal settlements, the study of organic urban form is not just a look at the legacy of medieval cities, for instance, but is becoming a necessary urban practice.

Notes

[1] Quoted in Sam Bass Warner, *The Private City: Philadelphia in Three Periods of its Growth*, 2nd Edition (Philadelphia: University of Pennsylvania Press, 1968), 53; see also Dell Upton, *Another City: Urban Life and Urban Spaces in the New American Republic* (New

Haven: Yale University Press, 2008), 120.

[2] Some of the infill in Philadelphia bears many formal similarities to burgage plot infill in European cities, especially in England, in which long lots are gradually filled in with a succession of buildings in the back yard. See Spiro Kostoff, *The City Assembled: The Elements of Urban Form Through History* (New York: Bulfinch Press, 1992), 289-305.

[3] As quoted in Upton, 114. This quotation is known to anyone with even a glancing knowledge of Philadelphia's early history.

[4] See image 1

[5] From prior work done with the 1791 Philadelphia Directory.

[6] Sharon Salinger, "Spaces, Inside and Outside, in Eighteenth-Century Philadelphia", *Journal of Interdisciplinary History* 26, no. 1 (1995): 1-31, page 14; James Vance, *The Continuing City: Urban Morphology in Western Civilization*, (Baltimore: Johns Hopkins University Press, 1990), 265.

[7] Upton 113-124

[8] Upton chapter 5 footnote 2; Gary Nash, "City Planning and Political Tension in the Seventeenth Century: The Case of Philadelphia," *Proceedings of the American Philosophical Society* 112, no. 1 (Febuary 1968): 54-73; Hannah Benner Roach, "The Planting of Philadelphia: A 17th-Century Real Estate Development", *The Pennsylvania Magazine of History and Biography* 92, no. 1 (January 1968): 3-47.

[9] See Warner 52, Upton 115.

[10] These first rowhouses, Sansom's Row at 7th and Sansom Streets, looked onto Washington Square which had also recently been remembered as a public space from the Holme plan, rather than a body dump.

[11] William John Murtagh, "The Philadelphia Row House", *Journal of the Society of Architectural Historians* 16, no. 4 (December 1957): 8-13. See Images 2-3

[12] Salinger. See Images 2-3

[13] Reform efforts were also involved in the construction of alley houses—a large portion of alleyway housing built before 1860 was constructed philanthropically for black residents, an undertaking of the Society of Friends, or Quakers, in both Philadelphia and Washington, including the Philadelphia Beneficent Building Association. See James Borchert, *Alley Life in Washington: Family, Community, Religion, and Folklife in the City, 1850-1970* (Urbana: University of Illinois Press, 1980).

[14] Sanborn Map Company, Insurance *Maps of Philadelphia, Pennsylvania*, Volumes 1-2 (Philadelphia: 1916).

[15] U.S. Census Bureau, "1920 United States Federal Census", Ancestry, August 20, 2016, http://search.ancestrylibrary.com/search/db.aspx?dbid=6061

[16] Realty Pub. Co., *Assessed Values of Real Estate in Philadelphia* (Boston: 1917), at the Historical Society of Pennsylvania (UPA/Ph HD 1389.5.U6 A87). The utility of the economic directory in investigating alleys and infill is limited, as rear buildings and courts are appraised in the directory together with the street-front building, obscuring the individual rents of each building.

[17] See Images 4-7

[18] U.S. Census Bureau, *Fourteenth Census of the United States*, 1920 (Washington: Government Print Office, 1922).

[19] Amanda Lasmus, Lawrence Shapiro, Kelli Massa, JR, and Jeffrey Cohen, "Mapping Class in Late 19th-Century Philadelphia", *Places in Time: Historical Documentation of Place in Greater Philadelphia*, February 24, 2016, http://www.brynmawr.edu/iconog/redbk1878/RedBook1878.html

[20] The restriction of jut and bay windows to side streets has one precedent in Renaissance Florence; see Kostoff, *City Assembled*.

[21] See: Stanley Nadel, *Little Germany: Ethnicity, Religion, and Class in New York City, 1845-80* (Chicago: University of Illinois Press, 1990); Olivier Zunz, *Changing the Face of Inequality: Urbanization, Industrial Development, and Immigrants in Detroit, 1880-1920* (Chicago: University of Chicago Press, 1982); Nathan Kantrowitz, "Racial and Ethnic Residential Segregation in Boston 1830-1970," *Annals of the American Academy of Political and Social Science* 441 (1979): 41-54; and W.E.B. Du Bois, *The Philadelphia Negro: A Social Study* (University of Pennsylvania Press, 1996 [1899]).

[22] See Borchert.

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Image 2 - Sanborn Map Company, Philadelphia, Pennsylvania: 1916. Scale [1:600] 50 feet = 1in. "Sanborn Fire Insurance Maps" Volume 1, Plate 34 https://collection1.libraries.psu.edu/cdm/ref/collection/maps1/id/16010. Map from the Pennsylvania State University Maps Library.
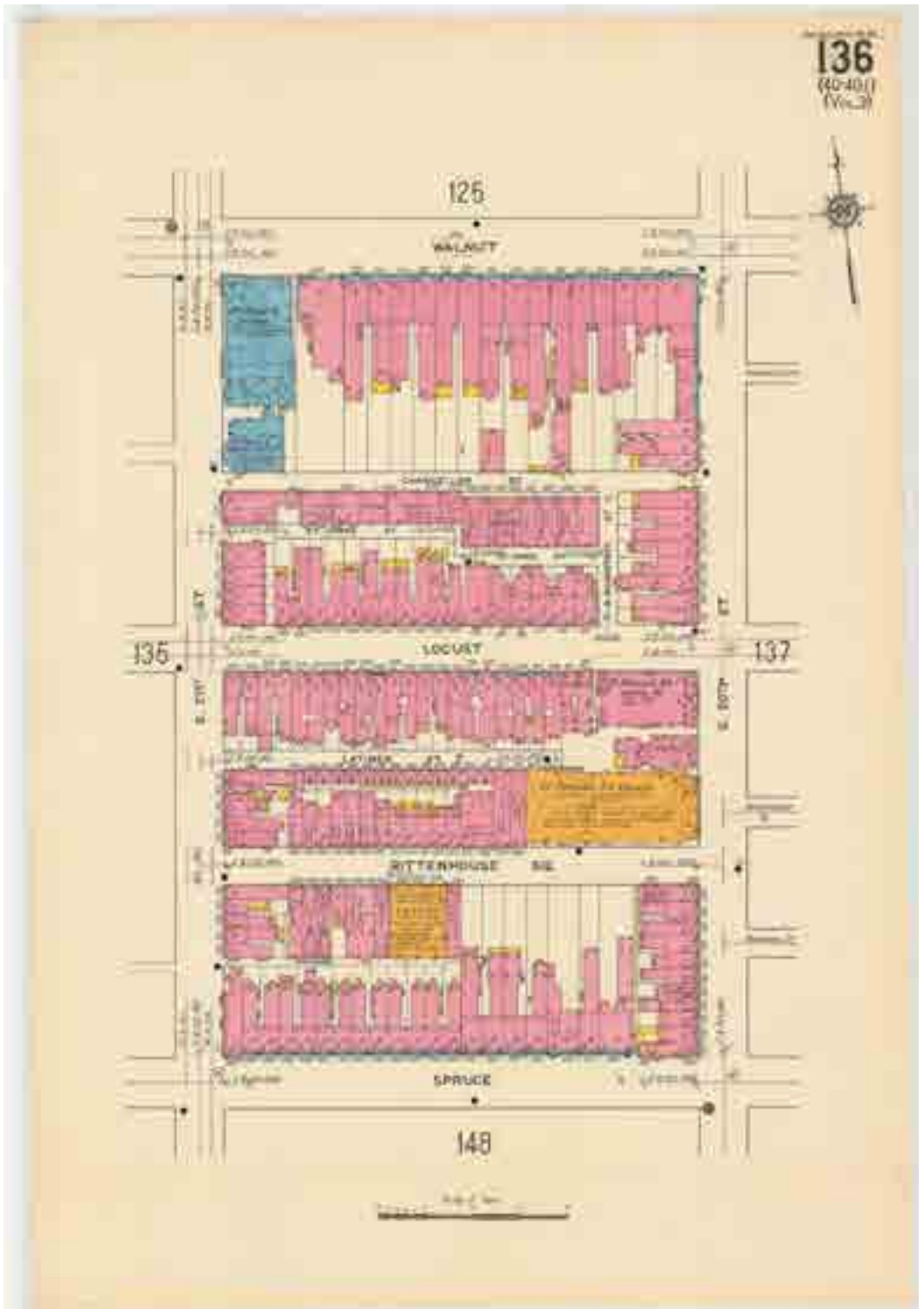
Image 3 - Sanborn Map Company, Philadelphia, Pennsylvania: 1916. Scale [1:600] 50 feet = 1in. "Sanborn Fire Insurance Maps" Volume 2, Plate 136
https://collection1.libraries.psu.edu/cdm/ref/collection/maps1/id/16399. Map from the Pennsylvania State University Maps Library.
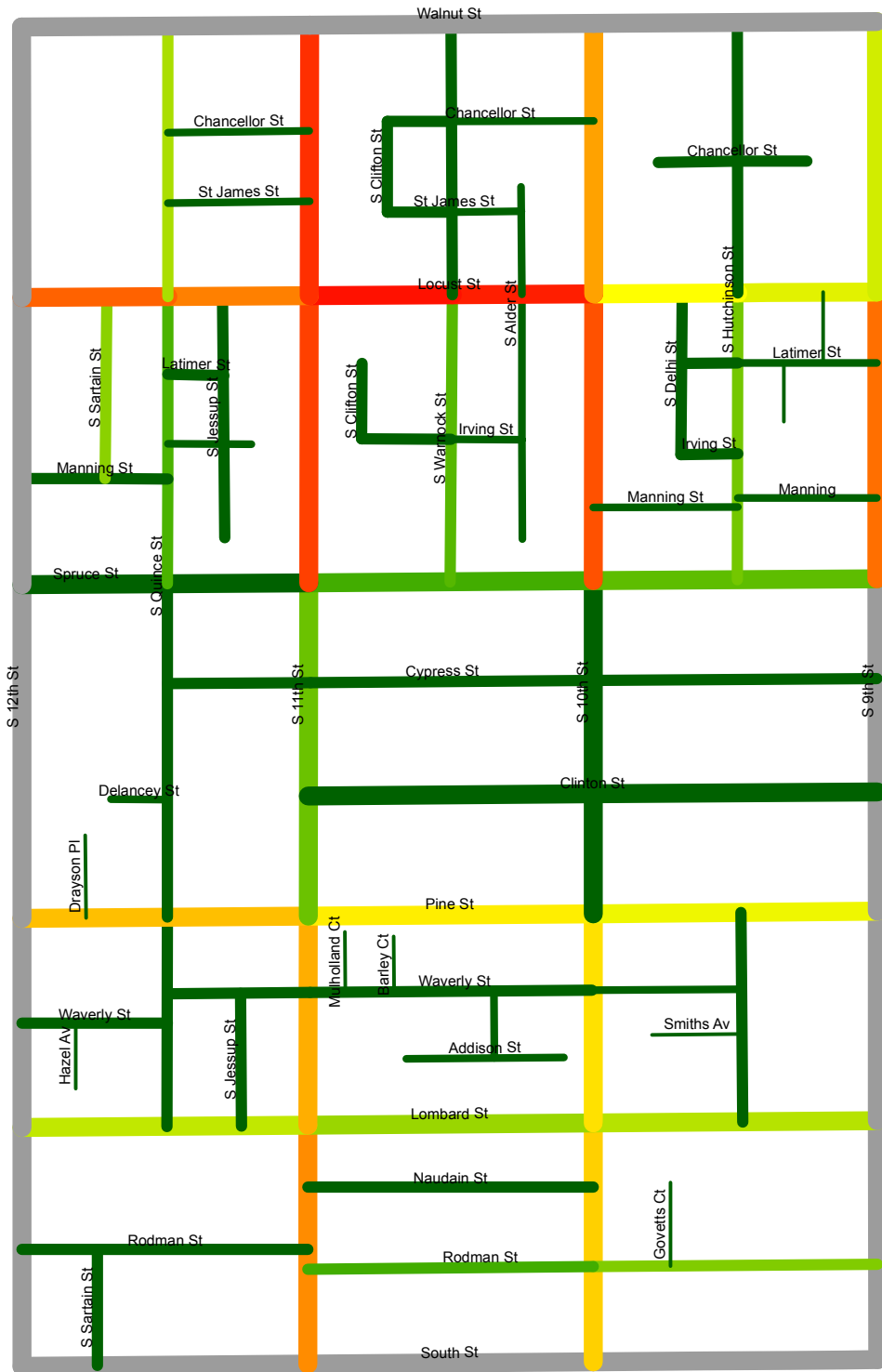
Image 4 - Proportion of Commercial Buildings, from dark green (low) to red (high). 1916, Eastern Sample. Map by Author, 2016.
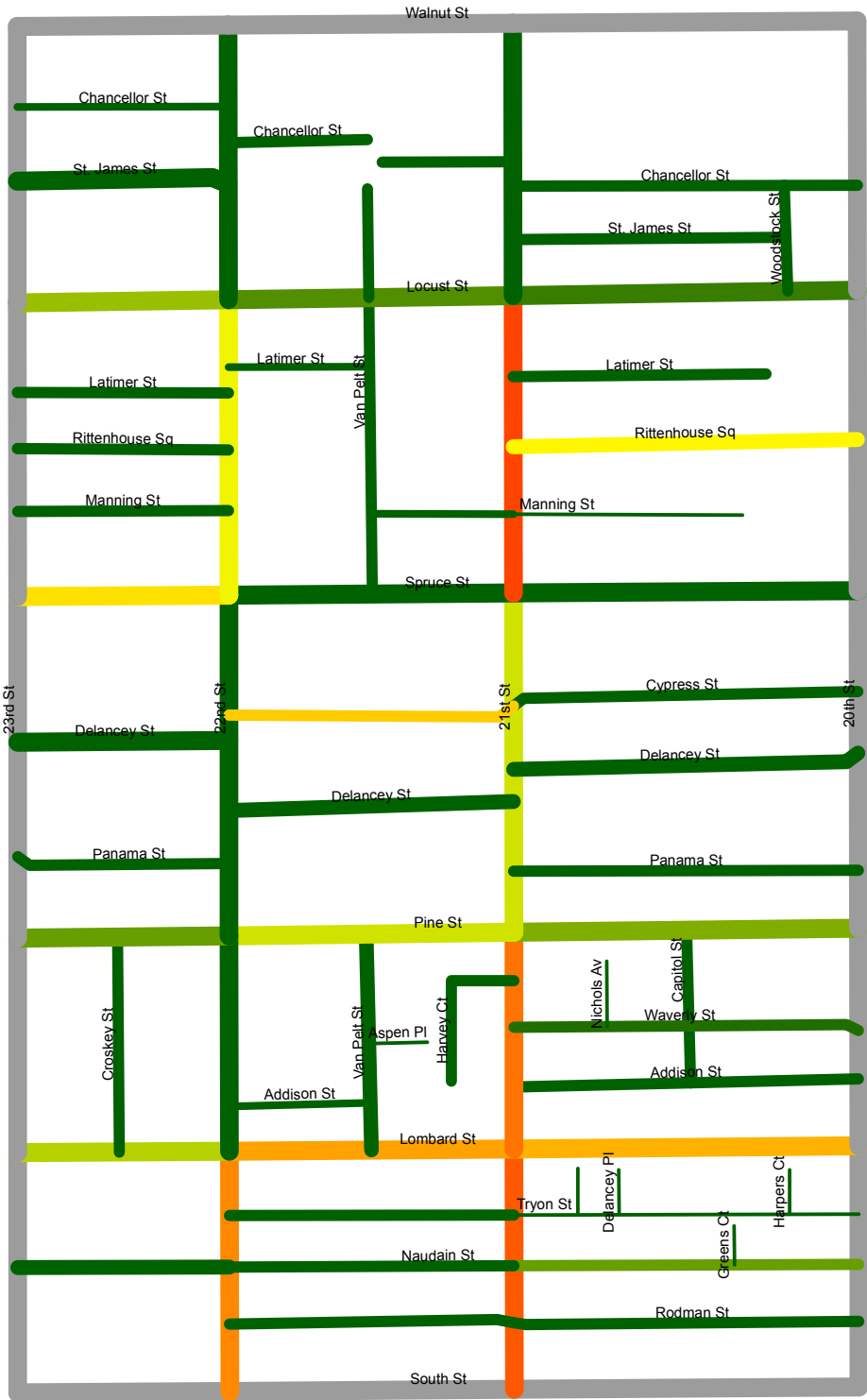
Image 5 - Proportion of Commercial Buildings, from dark green (low) to red (high). 1916, Western Sample. Map by Author, 2016.

Image 6 - Proportion of building frontages to rears, from dark (entirely fronts) to light blue (entirely rears). 1916, Eastern Sample. Map by Author, 2016.
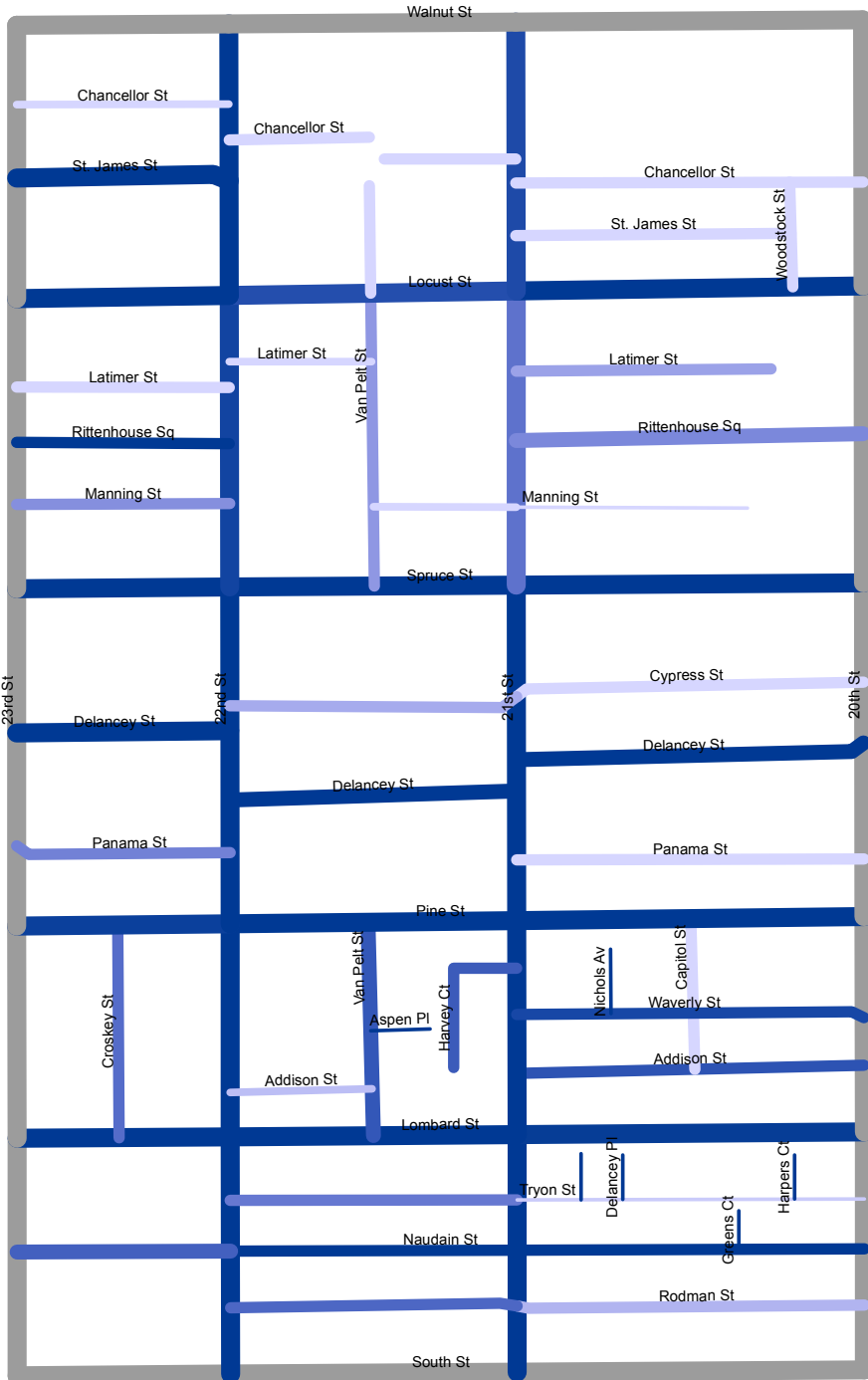
Image 7 - Proportion of building frontages to rears, from dark (entirely fronts) to light blue (entirely rears). 1916, Western Sample. Map by Author, 2016.

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Where the long shadows fall: urban archaeology in the early 20th century – standardizing methodologies, legislation, finance and publication

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Abstract: This paper discusses the process of archaeology and the standardization of methodologies specifically in an urban environment. We will consider the implications of legislation and finance on the creation of the archaeological record as well as how this is communicated to local communities as well as the wider public and ultimately the academic world. How can commercial archaeology change the planning of large scale developer funded projects, showing that a standardized format of city planning across Europe would raise the standards of recovery of quantitative and qualitative data. What are the possible effects and outcomes which standardization can enable? Or will a more flexible approach to field methodologies empower agency in the archaeological remains, permitting the archaeology to take the lead? While taking into account Britain potentially leaving the EU, this paper will draw on the authors' experiences working in European countries, particularly Sweden.

Keywords: Urban Archaeology, Methodology, Standardization, City planning.

Introduction

It feels strange to be writing a paper in which we argue for increased European integration of archaeological practice in the months after Britain has voted to opt out and retreat from the European project. Nevertheless, our intention in this contribution is to outline some thoughts on the quantitative and qualitative handling of archaeological data based on our experiences working in different European countries and how standardising practice would be of benefit to practitioners, academics, quantity surveyors, development control and the public.

The long shadows of our title are our common and specific histories as nations and as regions in the practice of archaeology. We have emerged all of us from the gentleman or gentlewoman private-income antiquarian of the 18th, 19th and early 20th centuries and across the continent of Europe we have, to greater or lesser degrees, embraced some form of commercial or contract – as distinct from academic – archaeology. This has generated a considerable amount of data since most European nations started to introduce pre-development – as opposed to reactive or rescue – archaeological programmes as part of the construction process; furthermore, it will continue to generate data, changing our view of the past. The report by Tim Phillips and Richard Bradley (2005) on the grey literature of Scottish prehistory being a prime example of how new data needs to be integrated into the current established narratives. Subsequent work by Richard Bradley, Colin Haselgrove, Marc Vander Linden and Leo Webley (2012) indicates the picture is made more complicated at an international level due to national differences in implementation of the Valletta Convention as well as different regional and local administrative and technical field practices.

Nevertheless, data recording needs to be embedded in a holistic programme that places fieldwork within a framework of

research aims reflecting period, thematic and regional questions at both national and international levels. Such a methodology would enable more equitable comparisons of both raw data and interpreted results. Issues of scale are crucial to enabling a good, comparative set of data. Such scalar tools must function in a similar way, to record data in broadly similar fashion rather than to be reinvented for each unique intervention.

In Archaeology from the Earth Mortimer Wheeler (Fig 1) wrote that 'There is no right way of digging but there are many wrong ways' (Wheeler 1956, 15). This holds as true

Fig. 1 - Mortimer Wheeler

today as it did then. Wheeler acknowledged both the contemporary diversity of available techniques applied to any given fieldwork exercise as well as the need for specific techniques for specific fieldwork exercises. Neither fieldwork practice nor the recording of results were as standardised in the 1950s as they are today.

In this contribution, we address some of the implications of the principle of the standardisation of methodologies in field-

practice using our own work at RIO Göteborg Natur- och Kulturkooperativ as a case-study. It is not our intention to formulate specific practices for specific exercises nor to address the full range of available methodologies. The primary reason, we argue, for a consistent methodology for the recording of archaeological remains is the collection of measured data. We argue that a standardised approach to single context recording using GIS should be an aim to which all field archaeologists should aspire, regardless of whether they work in the academic or commercial field.

Archaeological recording in the UK

Over the past 100 years both academic and commercial archaeology in the UK have produced a number of recording systems, some more relevant and more successful than others. In the 70s in the UK the single context system was developed. It owes much to Edward Harris and Patrick Ottaway. Following the publication of Principles of Archaeological Stratigraphy (Harris 1979), the Harris Matrix provided the groundwork for the later development of the single context recording system over the course of the latter part of the 1970s and into the 1980s by the Museum of London's Department of Urban Archaeology as well as York Archaeological Trust.

Moreover, the publication of the 'Little Red Book', the Museum of London's Archaeological Site Manual (Fig 2), in 1980 did much in the following decades to standardise recording across Britain and Ireland while going on to influence site recording elsewhere in Europe. The MoLAS manual, itself, was so influential that many British units have reproduced it in-house almost verbatim.

Archaeological recording in Sweden

In Sweden, the gradual evolution of Intrasis (Fig 3), a GIS program developed and run by

Riksantikvarieämbetet (RAÄ), the Swedish State Heritage Board, has similarly attempted to impose a template on how archaeology is recorded in the field. It was designed specifically for the use of archaeologists and has been in use since the mid-1990s when it became the standard tool for managing archaeological field recording within the state sector in Sweden. Its origins lie in an earlier program FFD (Field and Finds Database). Site data capture is mainly by means of total station or GPS and stored by Intrasis in an interrogatable, inter-related database. Output of data in either tabular or map format, is available in a variety of formats, many of which are accessible through shareware, freeware or open source programmes.

RAA assembled a team of archaeologists and GIS specialists to produce the system, with clear ideas of what they wanted out of the GIS. The program has been adopted by some County Museum Services, but not by all, as well as by some other archaeological contractors in Sweden, although again, not all. Historic England were early adopters of the system and it is used extensively by the university museum archaeology teams and by NIKU in Norway There has also been adoption in Iceland, Italy and Hungary.

Inspire and the standardisation of digital capture

The EU-funded project Inspire, which has the standardisation of spatial data infrastructure at its heart, has been an important influence on how we think about the recording of field archaeology. As the Inspire website states, the aim of the project is to "…enable the sharing of environmental spatial information among public sector organisations and [to] better facilitate public access to spatial information across Europe."

A further aim of Inspire is to facilitate policy-making across national boundaries, including, although not limited to cultural heritage both as protected sites and as buildings. We are currently in the process of opening up a

Fig. 2 - The 'Little Red Book', the Museum of London's Archaeological Site Manual
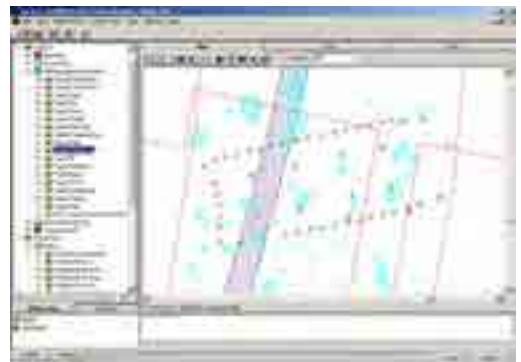

Fig. 3 - The Intrasis software interface

dialogue with a Norwegian colleague in the context of applying techniques of historic building recording used in Norway to building recording in Sweden.

The aim of this work is to harmonize building recording systems in Norway and Sweden; discussing points on how and why degrees of standardisation are crucial. This is a particular concern in the context of digital data. The increasing use, and indeed reliance on, digital means of data capture by archaeologists necessitates a move to single context recording. And yet not all archaeologists have made the move.

Within an archaeological GIS program, every context or layer is represented as a discrete point, line or polygon. The GIS requires breaking down the captured data in a dataset to its smallest unit in order to allow the recombination of elements in a distribution or other rendering of the data. It also requires a consistency of detail and, as with all GIS, an assessment and allowance for the 'uncertainty' of the data. Where a context is irreducible due to lack of clarity or detail, it will add increased uncertainty to the analysed and/or synthesised dataset or model. The acronym 'GIGO' should always be first consideration on the mind of any digital archaeologist.

At the same time the context – as we have said previously – has to remain a flexible unit which accords primarily with the archaeologist's requirements and the inconsistencies and uniqueness of every archaeological site. Therefore, at a microlevel the data has to be internally consistent. Nevertheless, that dataset has to have the potential to be externally consistent with comparable datasets in order that valid hypotheses can be tested at a macro levels. Detail of scale is an issue here to enable comparison and analysis of multiple datasets.

As an aside, at the same time, the increasingly widespread use of 3D model rendering such as Structure from Motion in Sweden, the Russian PhotoScan software in the UK and Norway or the Dutch Blender system requires us to consider how such programs and, more specifically their models, can complement the GIS recording. Moreover, one thing often overlooked is the potential for 3D models to be used for recording both as paper copy and as pdfs on smartphones. A crucial advantage of standardisation of methodological practice is that it makes work easily comparable across borders, across geology and – up to a point, indeed – across periods. Simultaneously such holding to account locates the ethical dimension in the real world of praxis. The work must be carried out to a standard which is measurable and which acknowledges all the unforeseeable factors, such as different levels of preservation; differentials within the dataset based on the level of recovery within a given technique. Such has a direct bearing on the qualitative as well as quantitative nature of the data, as well as how we subsequently proceed to handle that data in different contemporary archaeological milieux. Our scales of comparison can be reified and made more effective.

The single context method: Critique

The single context recording method has been adopted by many archaeologists across Europe. Nevertheless, a key criticism has been that it is part of the deskilling process of archaeologists, requiring them to do no more than to dig their 'context' divorced from the overall site. It doesn't encourage them to see their work as part of a whole. It is Anglo-Saxon in origin and almost Fordist in intent (Demoule 2011), which itself might be argued to reflect the origin of the critical position.

Further critiques extend to adding unnecessary work when, for example, it comes to certain feature types which only comprise a simple cut and fill event. A position that itself seems only a hair's breadth from the position of a former employer of one of us that, allegedly having experimented with single context recording in the 1970s, they did not think very highly of it.

We are both archaeologists who have worked consciously and unconsciously with the method since we began digging. As previously noted, the method finds its origins in attempting to address issues of archaeological relationships in urban archaeological excavations during the 1970s. The method is very simple, breaking any archaeological event into as small a sub-event as one wishes, in order to understand the taphonomic processes that caused that event to have the aspect it does. For example, a posthole can be split into the original hole excavated for the post, the post

itself, and the backfill or packing between the post and the edges of the cut. Alternatively, the post no longer exists as it rotted in place but there is a post-pipe, a post-pipe fill, the original post-hole and the backfill or packing between the post and the edges of the cut. The permutations are as complex or as simple as the archaeologist needs for the purposes of recording the event as a sequence of past actions.

Single context recording is used in Sweden, although our own experience of its implementation is limited to the form adopted on the Swedish west coast which goes by the name contextual archaeology. This form of single context recording privileges field interpretation over field description. This creates two inter-related problems: the first is that relatively inexperienced field-staff are required to identify deposits and features which are potentially outside their knowledge-base, all the while repeating field-interpretations with which they are already familiar; while the second is that post-excavation changing of interpretation – which frequently occurs, in any case – is made harder by a set of raw data gathered in the field, limited by what individuals choose to record rather than being guided into what the report author is going to want. In both cases, the Dunning-Kruger effect can occur.

Digital field recording: Critique

Sweden developed the original Intrasis programme and the adoption of Intrasis in various countries across Europe should be seen as a positive outcome, stress-testing the programme in different archaeological milieux, assessing its usefulness and adaptability. Nevertheless, when examined closely flaws start to appear. Key is the coding for features which pushes interpretation in the field to the fore, requiring people at different levels of experience to be equally capable of understanding what it is that is being investigated.

Basic Intrasis field recording across Sweden is not standardised and there is no control of the quality of the fieldwork by county archaeological officers. As a consequence, one site may be recorded in a spit excavation, another as a feature excavation and another using a more conventional single context system. Ultimately this can result in potentially wildly differing sets of data collected from different excavations, even when they are of the same period. The recording of any given feature follows the rule of the paradigm, rather than interpretation developing out of what was recorded. In Sweden, a feature is identified and interpreted in Intrasis before its characteristics are enumerated and described. This places a heavy weight on inexperienced and experienced shoulders alike, particularly when dealing with stratigraphic complexity.

It needn't be the case. Digital recording has been pioneered in Sweden and has the potential to enable a common approach to description, perhaps utilising a common glossary such as adopted by Intrasis users in the UK and Norway. The practice of interpretive coding at the point of data capture is also not universal and Intrasis has proven in both Norway and the UK to be quite adaptable. Historic England for example record only whether a context is a cut, fill or layer at the data capture point and leave all higher interpretation to the post-excavation stage. The Intrasis system has the potential to provide the evidence for interpretation, rather than relying on a field interpretation that merely guides the process of description.

Bringing theory into practice: A case study

Rio Göteborg Natur- och Kulturkooperativ, for whom we work, is a private archaeological contractor based in Gothenburg on the Swedish west coast. Over the past few years we have become a leading player in urban archaeology in the region. Our focus is on post-medieval and industrial archaeology within Västergötland. Like many other

contractors and institutions in the region, Rio's lack of a standardized methodology has been a cause for concern within the organization.

These concerns have led to the formation of an internal think tank, consisting of a team of 6 archaeologists who are experienced field managers, a GIS specialist and a former county archaeologist. In conjunction with our own team we consulted with a wide range of experts outside of the company; this was seen as a crucial step in the reorientation and development of Rio's long term future.

After a period of planning meetings, it was decided to go into cooperation with JJM Digital Dokumentation in the continued development of Arkeo, a digital program, which allows the user to record on-site with a tablet, automatically transferring a complete database of a project's records to the server at the office or to a cloud.

At the same time, we have been writing our own company field manual influenced by the Museum of London's recording system, which will run on Arkeo, creating Rio's first digital context sheet. This was the first step to standardizing our recording system, which has led to the development of our specialist Departments of Urban and Prehistoric Archaeology, which will be able to work side by side in an effective manner. This will enable colleagues to cooperate in multi-scalar interventions ranging from small watching briefs to larger-scale programmed interventions. The sheer scale of such projects can result in field archaeologists collating impressive arrays of data.

By creating our own recording system, we aim to enable staff to complete field work swiftly, prepare and publish reports to a higher standard. The work flow has been simplified leaving more time and resources to compare and analyse data. As a by-product, we have collected a more stable dataset for analysis, the overall goal of any research based industry.

As this is still an on-going work in progress, we are striving to bring traditional techniques and blend them with more modern up-to-date methods. Use of drones and SFM (Structure For Motion) is an exciting development in site planning and complements more traditional GPS/total station planning. These may only be small steps, but they go a long way in showing how bringing in a structured system, in this instance a private company revitalizing the way we look at urban archaeology in Sweden.

Due to the whole process following the same methodology, we can take this scenario and apply it over the whole of Sweden. All urbanized archaeology would have a compatible and methodologically comparable data sequence, which, for example, would make all Swedish urban excavations reconcilable with similar urban projects in the UK or other European cities where a single context recording methodology is embedded in practice.

If the whole of Europe adopted a standardised single context system how would that affect urban archaeology? This is a question we asked ourselves at Rio. The answer we have is that it would only be beneficial for all. As we said previously these are only small steps, but after looking at the difference made to just one archaeological practitioner, the ability to collect and process qualitative and quantitative data from across the whole of Europe is an achievable goal progression, which ought to be at the forefront of our profession.

An ethical argument for standardization

The ethical issue which we broach in this paper is specific to matters of the conduct of archaeologists within the practicing profession, including but not limited to appropriate methodologies and professional regulation. The British Chartered Institute for Archaeologists is an exemplar, in that it has prepared standards and guidance using the competences from a range of public and private sector archaeologists. Within the context of the profession, the standards have

not devolved from on high, but have and continue to be a dynamic process adapting to changes in methodological, technological and academic practice and knowledge.

Archaeological ethics, as studied in university, are a top-down process, directly but not always consciously embedded in practice, and frequently drawing on the colonial past informing contemporary creation and use of the archaeological record. The law frequently prescribes and proscribes methodologies and practices with clearly defined stakeholders and/or their official, usually legally-recognised, representatives. The ethics under discussion in such cases are primarily in the New World, Australasia and to varying degrees in Africa. This is not the area of our presentation which sees Europe as the focus. A one size fits all approach to methodologies and the associated ethics overlooks the contingent and context dependent nature of the remains and how they engage as agents with relevant stakeholders.

Notwithstanding graveyards which are a case apart, archaeological ethics, as practiced in commercial field archaeology in Europe, are more grounded in the process of ongoing negotiation between client, development control, archaeologist and how the archaeological record is going to be best served by the archaeological contractor, even in countries where the rule of law takes precedence over ethical questions.

This is not to displace the role of the public and other interested stakeholders. Indeed, public archaeology in Britain is an attempt to integrate the general public into that discussion in the context of development-led archaeology as much as non-professional archaeology, which has placed aspects of British archaeology in indirect conflict with the Valletta Convention.

Such ethical frameworks are directly but not always consciously embedded in practice: through standardisation of methodologies enabling transparency in data-recovery can we move towards an ethical position which accords best with agreements such as Valletta. Our interest stems from both anecdotal and better documented evidence of the outcome of poor standardisation and its knock-on effects on ethics as quality degrades. The systems for the delivery of development-led archaeology have been characterised as ''socialist' or 'capitalist' and 'regulated' or 'unregulated' (Vander Linden & Webley 2012, 1) and the critiques levelled at the actors has too often taken on something akin to an ideological witch-hunt, overlooking the common difficulties.

A frequent criticism raised in Sweden is that in a free market the archaeology will be sacrificed to the client's wishes for a swift and expedient job. The authors' own experiences of both British and Swedish systems have seen the same failings of insufficient funds for work, underqualified staff, over-stretched management and so forth, despite the marked differences in how each system functions.

Sweden operates a 'closed shop' where a limited number of contractors are assigned work by the archaeological officer at Länsstyrelsen – the local government body responsible for planning and development – either at a fixed price, or as a bid against a number of other contractors. Länsstyrelsen have also backed contractors to work in cooperation, such as the present Nya Lödöse Project excavations at Gamlestaden, Gothenburg (Fig 4).

This contrasts with the British system where the developer, or their agent, commissions an archaeological contractor, who provides costs according to requirements laid out by the archaeological officer at the county or city. The client makes a final decision on the contractor unless there is an explicit ban on the contractor operating in a given local government area.

Arkadiusz Marciniak (2011) writing about Polish archaeology after the collapse of communism describes a scenario of competing firms producing work to differing levels of quality and to different standards.

Fig. 3 - Nya Lödöse Project excavations at Gamlestaden, Gothenburg

Moreover, the history of the discipline, as well as the countries, in the case of Central European archaeolgy led to a degree of isolation: Marciniak cites both the Kossina syndrome and Soviet cultural domination as key forces (Marciniak 2011, 181), which

undoubtedly constrained and following the collapse in 1989 of communism created a strong reaction among other archaeologists. Predrag Novaković (pers. comm.) has discussed further how this was replicated elsewhere in some parts of Central Europe, such as Slovakia, while in others a centrist, statist narrative was the result of a continued 'national archaeology'. On the other hand, nations such as Slovenia and Lithuania have opened themselves up to a more open market, although only Slovenia would appear to have an integrated and complete system of quality control of both fieldwork and report submission.

Geoff Carver (2004, 2012) discussing German archaeological practice and theory draws out the underlying cultural differences which inform the discipline in Germany in contrast with Central European, Franco-British and Scandinavian traditions of practice. The separation of (classical) archaeologist from the local prehistoric, who themselves is an interpreter, rather than an active participant in fieldwork. As a consequence, field methodologies come second to academic knowledge in 'art history, classical archaeology or pre- or early history' (Carver 2004, 135). Furthermore, he addresses the fundamental issues of 'methodology, fieldwork, analytical scale and documentation technology' (Carver 2012, 25) and how these relate to questions of knowing and demonstrating and proving a hypothesis, but which in Germany 'are subjects for Techniker' (Carver 2012, 16).

The divide between regulated/socialist and capitalist/unregulated is largely a false one. Rather it is a question of methodologies and the appropriate techniques in the hands of trained archaeologists. Such methodologies and techniques must be subject to standards which apply to all actors, whether they are state, private or university, regardless of the method of funding.

Without explicit standards for each methodological approach to which any given competing body adheres it is meaningless to talk of standards between various organisations as there is no independent yardstick against which to measure either organisation or individual. Any comparison already runs the risk of the accusation of being partisan as it is inevitably self-referential. Predrag Novaković (pers. comm.) has observed that an unquantified and unqualified measure referred to as 'academic practice' is somehow seen to represent an appropriate and adequate level of quality and provides a benchmark of standards, without ever being measured or tested. Without independent measures of recording how can we compare across excavations? These are issues of scale which remain unexamined.

The success of the introduction of the MoLAS 'Little Red Book' was confirmed by the late 1980s to early 1990s when a number of other archaeological organisations started to introduce their own versions; while some have seen this as contributing to a deskilling of the workforce allowing a 'one-size fits all' approach to recording, others have seen the inherent flexibility of the system as enabling new staff, familiar with the system, to concentrate on the act of getting a grip on the archaeology and if relevant geology.

Furthermore, in both urban and rural contexts, such a methodological tool freed up time otherwise spent on learning new recording systems. Equally, as the basic toolkit for recording sites in the UK is broadly the same, assessment of timescales for budgeting, of recording for quality control, and so on and so forth. Furthermore, different datasets can be reviewed and compared and scalar differences between datasets can be weighted appropriately.

A future method for standardisation

Currently David Connelly of British Archaeological Jobs Resource has taken his previously piloted Skills Passport to an operational level where various archaeological contractors around the UK are assessing and signing off the training

and skills of trainee and early career field archaeologists.

That such a system is possible is in part a direct result of the pre-existing standardisation of practice in the UK whereby single context recording – as pioneered in the Little Red Book, building on Edward Harris' work – displaced a range of recording systems such as feature-based, quadrants or indeed planum – the removal of fixed thicknesses of archaeological deposits – which has never been a popular technique in the UK and only used usually for the excavation of ex situ Mesolithic flint scatters or similar.

While there have been accusations of Fordism in respect of the use of single context recording its advantages outweigh the disadvantages, specifically in that it gives each archaeologist responsibility for the excavation, drawing, photography and recording of their area. The nature or the size of the context can be subjective – they are for the most part cuts, fills, or layers with masonry and timber forming a smaller but significant quantity of contexts. Skeletons, of course, also figure – albeit as special context sheets – as do coffins. Nevertheless each defines an archaeological event.

We shall not go into detail here about it, suffice to say that each archaeological event which one identifies as significant is given an identity – a number from a running sequence – which is then located in the sequence of archaeological events on site.

This deceptively simple exercise avoids a range of problems, some of which dogged us in 2015 on the Staden Nya Lödöse Project at Gamlestaden, Gothenburg, where context numbers were a six-string random sequence, derived from the running number sequence generated by the total station or GPS in use. Switching of numbers, miskeying of numbers previously used were amongst the most frequent daily errors.

The comparative simplicity of single context recording as employed in the UK is due in large part to standardised processes of recording which the DUA refined over the course of the 70s, 80s and into the 90s. The previous situation of individual site directors using individualised recording system's referring to 'Phil's pit' or 'Jane's wall' in the recording system impeded the easy use of the archive by anyone apart from that site director.

When we compare the British application of single context recording with the system currently in use in Sweden, where a form of single context is widely used, the difference is marked. Although the architecture of Intrasis is, of course, standardised, the application of the program to single context recording drastically varies from project to project let alone from region to region. At Gamlestaden, over the last four years the standard recording system has been a form of single context using Intrasis, nevertheless how this has been used has changed format year on year. As a consequence, issues have been raised over an unbalanced set of results. At the same time, Slussen in Stockholm, is also being redeveloped, which whilst employing Intrasis, uses a whole different documentation system. The directors of excavation of rural sites largely eschew single context recording entirely. Each will adapt Intrasis to record what they anticipate to be significant.

Without a systematic recording standard, quality control ceases to matter. Assessment of the uncertainty factor in the GIS will always require a drop to the lowest level of quality and accuracy; conversely systematic control is meaningless if you have insufficient common ground to compare two different products.

Embedding results in frameworks for research

Standardising field methodologies is we feel the first step in the process. By making transparent our recording systems and methodologies as well as our sampling priorities and the underpinning motivations within the context of an explicit research

design – ideally informed by a local or regional research agenda, itself nested within the context of a national research agenda (which we would like to see embedded in a supranational, European research agenda) – then can we say that the quality of any given piece of work is assessable in comparison with any other.

We can ask whether it is addressing (not necessarily answering) specific questions on topics whether it be farming, transience, metallurgy, ceramic uptake or whatever as well as regional questions concerning the presence or absence of, for example, a Neolithic, Iron Age or medieval period and how these are defined, both qualitatively as well as quantitatively. Resulting questions, such as whether evidence is absent, or alternatively evidence of absence can be addressed from known points, rather than unknown.

We all feel that we know our area, our field; but of course that is not the aim of archaeology. Rather the communication of that known to people who know less or nothing is paramount. We must feel ourselves competent in saying we do not know something. A measured knowledge which can be shared is a first step in the extension of our limits. Transparency of methodology and technique allows both us to question ourselves as well as open our processes up to peer review.

The implementation of Regional Research Agendas in the UK has, we feel, been of immense value and we feel the lack of such documents here in Sweden. The coverage of the country is uneven and too frequently it feels that the archaeological significance is something that one should know implicitly and inherently, rather than being something which we as knowledgeable experts have agreed upon in this context, at this moment in time.

We believe that an absence of agreed significance inevitably prioritises an insular approach, divorcing the local from any hinterland, apart from that which confirms the uniqueness of the local. At a professional level, it creates a 'gentlemen's club' approach and excludes because 'you aren't local and do not understand our (material) culture', which rather undermines the universality of the discipline and can so easily lead to nationalistic and chauvinistic archaeology. Geoff Carver has commented 'One would not speak of a "German geology" or an "English chemistry" in the way that Bournemouth speakers mentioned the "German planum method" or some continental archaeologists call stratigraphic excavation "English methods" (Carver 2000, 10). Archaeology then becomes a weapon of oppression or at best social exclusion.

It would be reasonable to assume that academic standards are a guarantee of quality, but clearly there is no common standard across universities to measure outcomes in terms of fieldwork or research potential. They too have no standardisation of methodologies or research designs – indeed research at a university level is often (perhaps rightly) subject to the personal interests of individual lecturers, professors etc.

- Local Research Frameworks
- Regional Research Frameworks comprising an assessment and agenda
- National research agendas
- A European-wide overarching research agenda

Local, regional and national research agendas have to be scrutinised carefully where the recording standards and methodologies vary wildly across Europe. Nevertheless, the implementation of standardised methodologies and recording standards in the context of nested research agendas would enable one certain outcome. This outcome should be a digital and analogue system that standardises on-site documentation and benefits the presentation of qualitative data. Increased use of nested regional agendas in the majority of European countries would create a structured organization, both of

data-capture and also for the comparison of result. Such an organized structure and standardized recording system would lead to better integrated international cooperation on projects, increased opportunities for measuring experience and competences of archaeologists at a Europe-wide level enabling the movement of archaeologists within Europe. Individual archaeologists from a site assistant to project management would be better suited for working in environments outside of their country of education while employers would be better placed to assess the competency and aptitude of staff and clients in the construction industry be reassured of a product which has a qualitative measure against local, national, regional and EU norms.

Concluding remarks

The question which we asked of ourselves and which has lead us here today, is 'Can you take an internally consistent and simple recording system such as the Museum of London's recording manual and integrate it with Intrasis, with a view to creating a system that would work across the field of archaeology, from a rural Mesolithic site to a deeply stratified urban site?'

The simple answer is, of course, yes. The actual answer is, unsurprisingly, more complex.

Nevertheless, using a system which is standardised across Europe, will broaden perspective for the profession and result in the far more reliable collection of quantitative and qualitative data. For every layer created in GIS either using a total station or a GPS the user is creating a single context, which can be record using a recording system that has been used in an analog world for the past 30 years, to combine the two methods within a digital database, and implement that system in several European countries can only serve to take archaeology out of the shadows and into the 21st century.

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A Mithraeum for a modern city: rebuilding the Temple of Mithras in London

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Abstract: The discovery of the 3rd century AD temple of Mithras in September 1954 was one of the most important archaeological excavations in Britain in the 20th century, not only because of the quality of preservation of the archaeological remains, but also the public debate that it generated about preservation and conservation of archaeological remains. An unsatisfactory compromise at the time led to the temple being dismantled and relocated 100m from its original location. The current redevelopment of the site by financial information company Bloomberg has led to a re-evaluation of the archaeological remains and a new reconstruction, back in its original location. The recreation of an archaeological monument has led to multi-disciplinary debates about authenticity, messaging and the creation of a meaningful and accurate experience for visitors. Sophie Jackson, MOLA Project Manager for the reconstruction will talk about some of the challenges of rebuilding the London Mithraeum.

Keywords: Urban Archaeology, London, Temple of Mithras, MOLA, Reconstruction.

By the end of 2017 the London Mithraeum will be open to the public, the first new Roman ruin in London to go on display for 20 years. It is also one of the more contested archaeological monuments found in London, the cause of great debates when it was discovered, it now incorporates some of our contemporary concerns and interests in archaeology, conservation and display.

This paper provides a brief introduction to the story of the London Temple of Mithras and describes some of the practical and philosophical challenges and opportunities presented by the requirement to re-reconstruct this structure.

The ruins of the mid-3rd century temple were first discovered in September 1954 at the start of construction of a major new London office building. A fragment of the building had already been recorded in a trench in 1952 by archaeologist William Grimes, but it was only after the sculpted marble head of Mithras was discovered during the 1954 excavation that the function of the building was confirmed as temple to the cult god Mithras. A great frenzy of press and public interest followed, which led to tens of thousands of people visiting over a two-week period.

Debates raged in the press and in government about what to do with this ruin; save it for posterity and ask the developers to redesign their building or allow it to be removed and rely on the archaeological records and photographs for future study. The site owners diffused the argument by agreeing to dismantle the ruin at their cost, store the salvaged materials until the office building was finished and then reconstruct the temple in a more convenient location on the site, to their own design and standards of craftsmanship. By the end of 1961 the owners of the new building had started construction and in February 1962 the reconstruction was unveiled to the public. It was located approximately 100m from its original location, orientated north to south instead of east to west and it was raised above

Fig 1 – View of the temple of Mithras excavations underway in autumn 1954 (with thanks to Ivor Noel Hume)

Fig 2 –Visitors in 1954 trying to avoid the queues and peep through the hoarding (with thanks to John Christopher Pegg)

the ground, in contrast to the original temple which was partly subterranean; a reference to the mythical cave in which Mithras was said to have killed the primordial bull. There were other disparities in the reconstruction, the floor surface consisted of crazy paving and a lot of the architectural detail was left out. Worst of all the reconstruction was

Fig 3 – the first Temple of Mithras reconstruction located on Queen Victoria Street, 100m from its original location

built with very hard cement mortar and as some of the salvaged material had been stolen from the builders store in the years following 1954, they had to supplement the piles of roughly hewn Kentish ragstone with 'other stone from elsewhere'. William Grimes was not consulted about the reconstruction and dismissed the result as 'virtually meaningless' as a representation of the temple.

Despite being a pretty poor reconstruction, it was probably visited by more tourist and student groups that any other Roman 'monument' in London, partly because it was just off the street frontage and visible at all hours and also because it was all that was left of what was originally one of the most complete mithraea ever excavated in northern Europe. It is mentioned in most London guide books and even had a bus stop named after it. In 2007 English Heritage (now Historic England) gave it a protected status and added it to the national List of historic buildings and structures, for its significance as an example of early conservation and because it contained material from the original temple.

In 2010 financial information company Bloomberg bought the site for their new European Headquarters. One of the conditions for redevelopment of the 1.2ha site was that the 1962 reconstruction should be recorded, dismantled, the materials put into store and then re-reconstructed as close as possible to the location of the original Roman structure. The brief from the City of London (the Local Planning Authority responsible for the site) also said that the new reconstruction should reflect the original form of the ruin and use as much of the original fabric as possible and use appropriate and sympathetic new materials when necessary.

MOLA had already been involved in the archaeological assessment of the site since 2005 and had been investigating the temple of Mithras and issues relevant to its potential relocation and display. One of the first philosophical discussions to take place
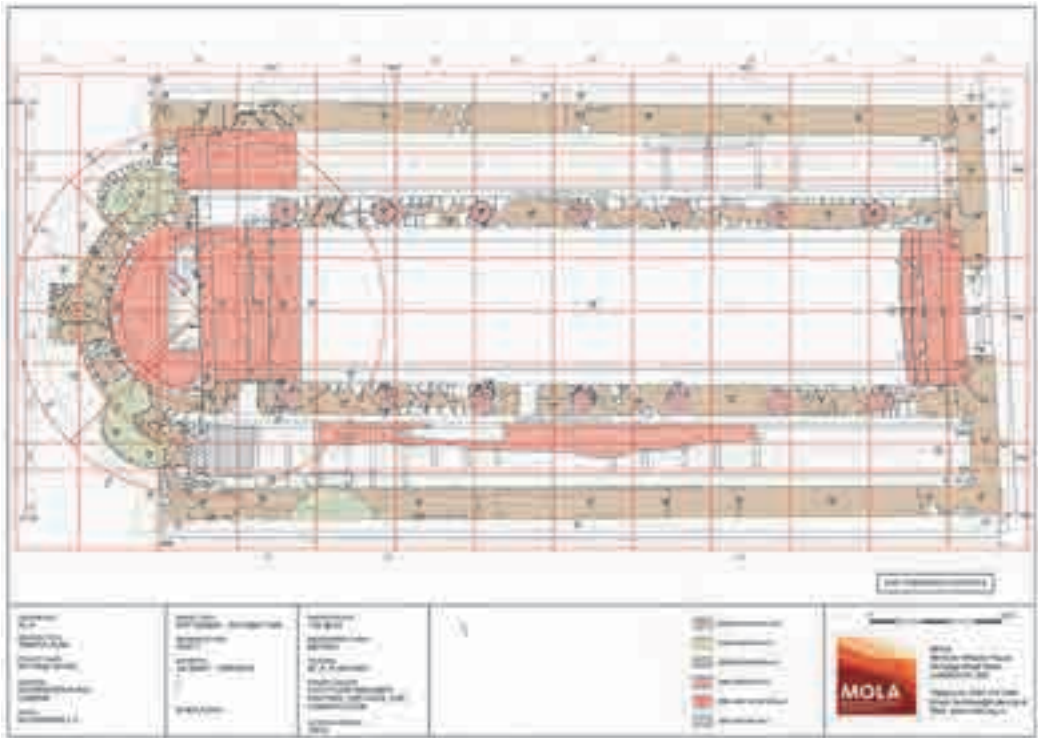
Fig 4 - MOLA Construction drawing based on Grimes's original excavation drawing of the ruins of the first phase of the temple, built AD 250 (c MOLA)

was about whether it was the right thing to re-reconstruct the temple at all. We couldn't find any precedents and examples of best practice for the reconstruction of a ruin that had already been altered and moved. There were many debates about what is the correct conservation approach to take and what is 'authentic' and did this matter. Could a new reconstruction be seen to mislead the public and wasn't it better to reflect what had actually happened to this structure in 1954 and represent it through an art work rather than a facsimile of the original site. There was talk of a conceptual approach, perhaps just piles of stone, or a sculpture rather than a reconstruction. In the end it was agreed that the lack of authenticity actually provided a great opportunity to be more creative with the reconstruction and if satisfactory mock-ups could be made, with an appropriate look and feel and that if it the ruin was clearly announced as a reconstruction, then it would be better in terms of the educational

value and the visitor's experience to present the structure as it was in 1954.

As with most reconstructions decisions have to be made about the moment in time that is to be reconstructed. The London mithraeum, first built in approximately AD 250, underwent many changes including a major structural failure after about 60 years of use which led to rebuilding and a possible change of deity, to Bacchus. Again after many debates the team decided that the most appropriate phase to reconstruct was the original build, or as much of it as survived. It was felt that this best illustrated the original designer's idea for the mithraeum and it also got us as close as possible to the site as it was on the last day of excavation in 1954; as if a different decision had been made by government and developer and the site had been preserved.

At the same time that discussions were taking place about what to reconstruct, the team were also investigating how to take the 1962

reconstruction apart without destroying the surviving masonry and Roman brick. Normal hand tools bounced off the hard cement mortar and it looked at one stage is if we may not be able to salvage much material intact. Options including moving the whole structure in one piece (and there were arguments that this would be more honest as we would have the faulty reconstruction), but calculations showed that lifting and moving a 20m long and 8m wide stone structure would cause the adjacent streets to collapse in on underground tunnels. Thankfully a successful method was found and in 2011, with the relevant consents in place it was possible for the 1962 structure to be dismantled using diamond tipped chain saws. Almost all of the original material was recovered intact. It was clear at this stage that there was not enough stone and brick left to build a full reconstruction.

As we neared the date for reconstruction in 2016, stonemasons PAYE were commissioned to build the new structure and they began sorting the stone in a warehouse in Woolwich. Quite a lot of 'other stone' including 19th century granite setts, medieval window tracery and miscellaneous rubble had found its way into the structure. This meant that new ragstone would have to be quarried and new replica bricks made. All of the new material was marked to make sure it could be identified in future. As the original building was partially rendered, it was decided to use the new stone in areas of render, allowing visitors to see 'just' original stone and mostly original brick.

All of the materials to be used in the reconstruction were trialled, mocked up and submitted for approval by the City of London and client. This included the hydraulic lime mortars, new brick commissioned from a brickworks in the Humber estuary, stone from the only remaining Kent ragstone quarry and oak, treated to look like waterlogged timber. One of the other major practical challenges

Fig 5 - Dismantling the 1962 reconstruction using diamond tipped chainsaws

Fig 6 – Sorting the original materials from the 1962 reconstruction (c MOLA)

for the project was where to put the new reconstruction. The brief was clear that it should go as close as possible to its original position and at original Roman ground level, approximately 7m below modern ground. When MOLA archaeologists investigated this original position, some remains of the original temple were found in situ. It appeared that a narrow single basement shelf had been left along the eastern limit of the 1950s development site. The majority of the temple foundations had been machined away in 1954, but the eastern third survived. Under national and local planning guidelines the remains of such a significant structure could not be removed to make way for a reconstruction, nor was it possible to display these remains as the ground is waterlogged. Again after much debate and many options it was decided that the solution was to shift the new reconstruction about 12m to the west to allow the real remains to be preserved and also give visitors access to and sight of the full ground plan of the building.

The other really key part of the design process was working out how to make this ruin atmospheric and evoke the feeling of being in a mithraeum. A mini-design competition was held and New York-based exhibition design company Local Projects won the commission. Their proposal was to put all didactic content in the spaces that visitors see before coming into the mithraeum display and then to create an atmosphere which gives visitors space to use their imagination. Local Projects' lead Jake Barton quoted Christopher Woodward as inspiration (In Ruins: a journey through history, art and literature).

'A ruin is an incomplete dialogue between an incomplete reality and the imagination of the spectator'

Local Projects worked with light artist Matthew Schreiber to create walls and columns of light that could fade in and out to an appropriate sound track. Light was thought to be the best medium for creating an impression of the superstructure of the original building as it was less intrusive than projection and more importantly because
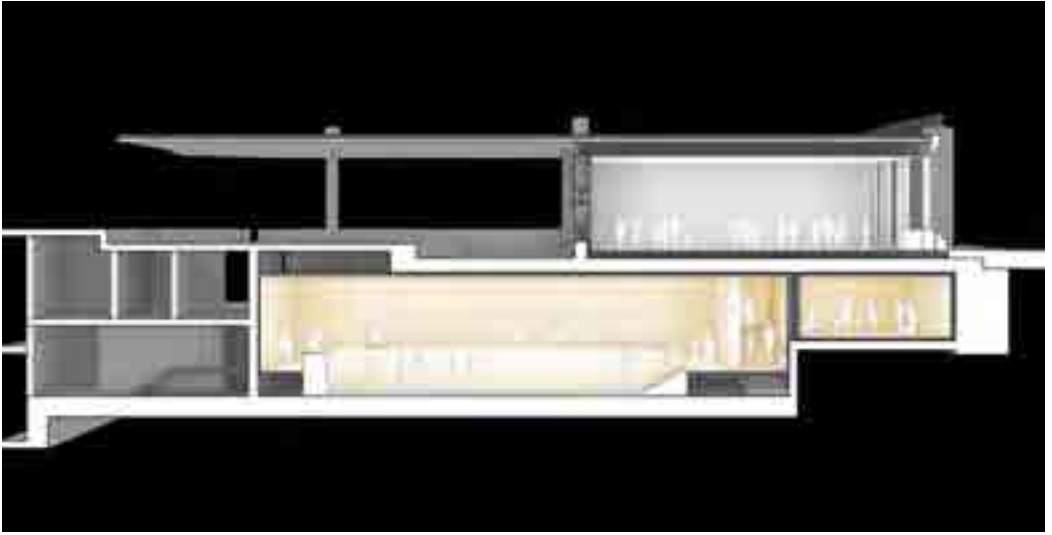
Fig 7 – Sectional view of the London Mithraeum display spaces showing the shelf on the eastern edge of the site and the new reconstruction at contemporary Roman ground level, but moved to the west (with thanks to Foster + Partners)

scholars think that mithraic rituals played with light. Mithras is sometimes equated with Sol the sun god and lighting props have been found on other temple sites, used to create moments of mystery and also probably dramatic effect.

An extensive programme of mock-up and testing at a warehouse in Battersea proved the concept would work. With most of the pieces in place construction work started in spring 2016 and the temple reconstruction was completed in July 2016. The fit out of the rest of the exhibition space continues and it will provide visitors with information about the discovery of the temple, its place in Roman London and explore some of the mysteries of the cult. The centrepiece will be the new mithraeum reconstruction, the subject of much debate and thought, it is hoped that the public will find a new Roman artefact and a space in which to use the imagination and to connect with London's past.

The reconstruction design team consisted of staff at MOLA, Catherine Woolfitt Associates (Conservation, mortars and stone), John Shepherd (expert on the London temple and interpreter of WF Grimes's archive), Tony Taylor Consultancy (structural engineering), masons from

Fig 8 – Mock-ups to test lighting and materials

Taylor Pearce, PAYE, architects from Foster + Partners and Studio Joseph, engineers AKT II, exhibition designers Local Projects.

Fig 9 – the reconstruction nearing completion

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A common ground: designing through archaeological tools

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Abstract: Architects and archaeologists often use the same medium to analyse and develop their projects through drawings and diagrams. Yet, archaeology is rarely mentioned as a creative art. Although both disciplines create narratives around objects, space and cities. For both professional figures everything starts from a site, which becomes an almost endless ground of overlapping information, references and fragments. The process, in both cases, is about connecting and curating ideas to grasp the understanding from the site to the context. These worlds are commonly understood as the past (history) and the future (the project). The first, being the realm of archaeology and the second, of architectural design. Every project starts from the smallest detail to reach the bigger picture. As in history, but as well in designing, it is only joining the points that it is possible to recognize the final outcome. And it is then, that it is possible not only to appreciate the context in which we live in, but to build on it. The aim of this paper is to challenge these dichotomies, proposing a conceptual and theoretical framework to understand archaeology and architecture as a collaborative field. Architects and archaeologists are trained to see beyond things. Their aim is always to give interpretation to symbols, forms, and materials. Dealing with the unbuilt to understand and give a new ground to the build to come. More specifically with the demolished and the yet to be built. This twofold strategy for understanding space is explicit in the technological tools used: 3d scanning and 3d rendering for example. New technologies allow to share and collaboratively create information on the built environment in a much easier way. This is the departure point for a collaboration between architecture and archaeology as disciplines. Those technologies are the common ground through which change the way a site is understood and analysed. Can archaeology be considered a creative discipline? How the methodology of working in archaeology can be applied to the design phase?

Keywords: Urban Archaeology, London, Temple of Mithras, MOLA, Reconstruction.

Material culture

This paper aims to discuss how the profession of Archaeology and Architecture share common theoretical grounds and methodological similarities.

The two disciplines are inherently linked by the object of their studies: the material culture. Material culture is the production and manipulation of territory, cities, buildings, interior and artifact. Ultimately, material culture is what architects call the built environment. The discussion revolves around methodology and tools that the two "professions" use in their own fields. The frameworks in which these two disciplines operate, are instruments to construct a common ground of "material knowledge".

The cover of "Dictionnaire Raisonne de L'Architecture Fracaise du XI au XVI siecle" [1] by Viollet Le Duc (Tome Deuxieme) shows an illustration which unfold the meaning of what architects consider the architectural discourse. The man in the middle, with pointing finger is the architect. The character is remarking that architecture production is a human activity and it manifest itself though the role of the designer. The compass, ancient symbol with whom architects get represented, is symbolising the tools that are necessary for the production of architecture. On the ground, the drawing of a pointed arch with its construction lines represent the medium and the process. The drawing is one of the most used tool that these two disciplines share. A drawing is always an incomplete and

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DE

L'ARCHITECTURE

FRANÇAISE

DU XIᵉ AU XVIᵉ SIÈCLE

PAR

M. VIOLLET-LE-DUC

ARCHITECTE DU GOUVERNEMENT
INSPECTEUR-GÉNÉRAL DES ÉDIFICES DIOCÉSAINS

TOME DEUXIÈME

PARIS
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Fig. 1 - The cover of "Dictionnaire Raisonne de L'Archi-tecture Fracaise du XI au XVI siecle" [1] by Viollet Le Duc (Tome Deuxieme)

imperfect diagrammatic representation of an artifact. It obliges the architect to deal with a representation of the artifact he is designing. Then, the drawing needs to be translated into a building. At the back of

the architect there is a fragments of a column. This object represents the existing artifacts, the matter of which architecture is made and a model. The columns represent the meddling of architecture with the physical world. Two further figures define the architectural discourse. The architect directs his argumentation towards a monk. The architectural project needs to be discussed through its intentions, its cultural meaning and its ambitions. An architectural projects needs to respond to a cultural and moral code impersonified by the monk. The knight, on the right, witnesses the conversation

standing composedly. He represents the power, the rule. Every architectural projects needs to deal with regulations, budgets and ultimately power.

Viollet le duc, portrayed the architect, as the human embodiment of the act of design. Although, he can never stand alone in this process: he needs the compass as a tool and other actors to create an architectural discourse. This is a extremely beautiful illustration to signify the complexity of what we can call "the stage" of the discipline. Both in its material and theoretical definition.
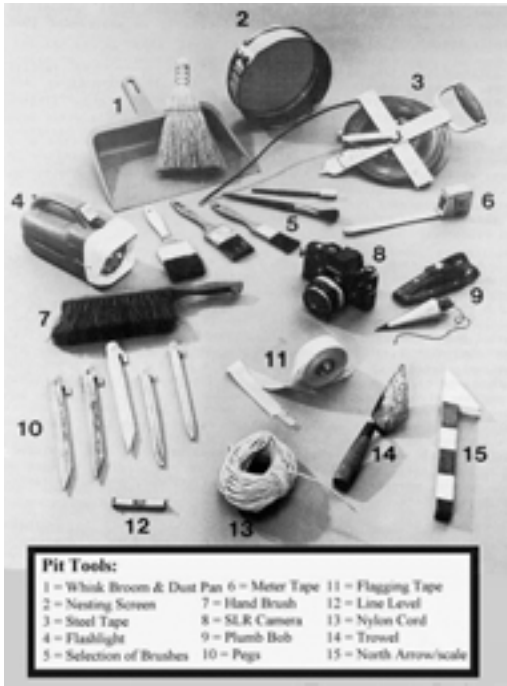
If architectural culture is not only constrained to designing buildings, archeology is not just the study of artefacts. Both disciplines are an interdisciplinary culture composed by theory, methods, tools. It is indeed, through this common methodology, that the two disciplines, provide instrument to think together.

The aim of this paper is to find a way to design through archeological tools. To set the conversation not between the architect and the archeologist, but with. Both figures are designers themselves, which need to establish a new way of enquiry.

Methodology and method: mindset and tools

Architecture and Archaeology thinks through making. Mostly the archaeologist, continually answer through the material with which they are working on. The field of the "ground", or what the architect calls "the site", is the starting point of any research. For the archeologist, this study of material culture, is focused on the objects, and their social interactions. In the study of visual culture, as architecture, the focus is not only on the relationship between the objects, but as well on their interpretations.

Post processual archeology dispute is what brought archaeologists closer to architects as mindset. In the late 50's and 60's processual archeologists advocated the use of a strict scientific method to enhance the relevance of the discipline with anthropology. In Frederic William Maitland's words: "My own belief

Pit Tools:
1 = Whisk Broom & Dust Pan   6 = Meter Tape   11 = Flagging Tape
2 = Nesting Screen   7 = Hand Brush   12 = Line Level
3 = Steel Tape   8 = SLR Camera   13 = Nylon Cord
4 = Flashlight   9 = Plumb Bob   14 = Trowel
5 = Selection of Brushes   10 = Pegs   15 = North Arrow/scale

is that by and by anthropology will have the choice between being history and being nothing." [2]

New Archeology was born and it shifted the paradigm of the profession. Archeology started to be seen as a scientific approach to reconstruct the whole society. Archaeology became like the materia-based/science-driven branch of anthropology. This meant that an excavation campaign was a project. Scientific evidence could be used to construct hypotheses that would drive the next excavation. Like a scientific experiment, a hypothesis would be tested through observation-formulation-test process.

The moment in which the excavation starts could be put in parallel with the construction process. If the excavation results in a negation of the hypothesis it is showing as unsuccessful design. In the exact same way, a building can show its bad design once built and used. Although, the importance is not on the final outcome but on the methodology of getting there. Both the architect and the archeologist attempt to construct a possible reality based on evidences and fragments of material and cultural information. Not all the results can be positive, but if the method is truthful and specific, the final hypothesis, although negative, can lead to something new.

The excavation research is a long process of assembling fragments together: this is what design is all about. Both architects and archeologists interrogate space through the assemblage of pieces. Like forensic experts they use drawings which shows trajectories of time. They create diagrams which connects fragments of ideas. The reconstruction that an archaeologist does is literally the construction of a narrative to rebuilt the past. No one action is complete, each action requires a further one, and each is dependent in another way on the original plan. Each fragment is meaningless by itself, in the sense of the use of the tool, it is meaningful only in the context of the whole completed set of actions culminating in the final product. This is exactly what architects do when they design.

The problem is that whenever archaeology encounters anything outside of itself, it wants to turn whatever it, into an object to be analyze. Grasping the deeper meaning of that artifact, but not making connections to anything outside it. This is why archaeology needs to become a practice with architecture. In combining those, there is the need to explore the creative processes that give rise to the environment we inhabit, and the way we live.

Architects and archaeologists, could be regarded similar in enquiry but primarily, as temporally opposed.

In order to do this, archeologist and architect share the main tool they use to construct, record, and communicate their knowledge: drawings. Robin Evans pointed out, in his essay Translation from drawing to buildings [3] that architects put forward their creative invention without having the opportunity to
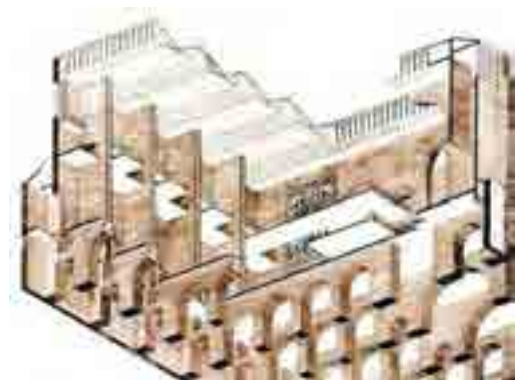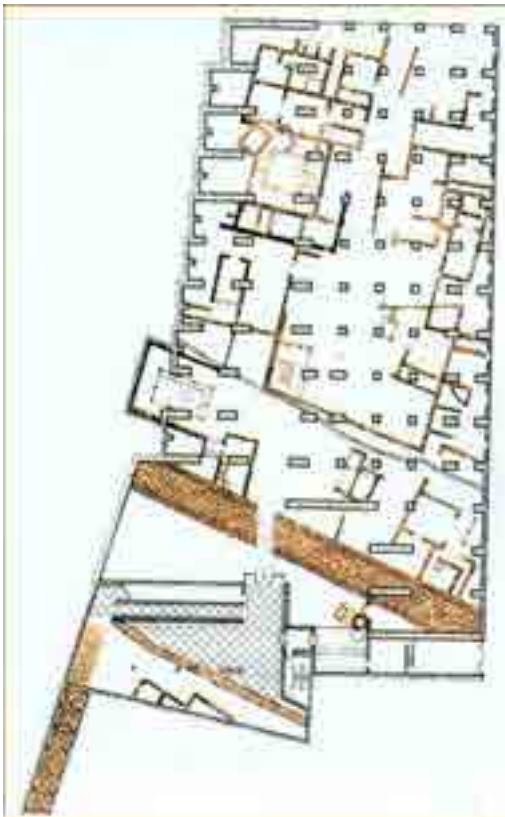
deal with the real artifact of their creation. A drawing is always a diagrammatic representation of potential realities. The visual communication provided by a drawing is a specific language as every line conveys a specific information. It is the architect's responsibility to know their language and be able to put it forward. Architectural drawings are always a description of a possible research question. Even when a building is realised, the original drawings are depository of a different, potential possibility. Drawings preserve the vision of the intention that the architect had in the moment he/she produced them.

Drawings are the medium of archaeologist too. The drawings are the most important instrument to record and analyse artifacts. Giving a specific reference systems and scales, in order to be recognized. In both cases measurements accuracy is a fundamental issue. The accuracy of an archeological survey drawing is essential for the scientific value of the data in the same way the accuracy of an architectural drawing its valuable because it makes the project buildable. However, It is in the

case of archeological reconstructions that the similarities of the two disciplines arises and converge into the design mindset.

The architect has a series of constraints and informations, pieces upon which the design is conceived. The archeologist has a series of data and fragments, which he puts forwards as a reconstruction. Those are the same intellectual design process. In both cases a subjectivity (the architect or the archaeologist) is proposing a vision that goes beyond material culture. There is a wider ambition of understanding how

society works as a whole. They both try to embody the ambitions of a collective. The architects and the archeologist are trained with a very similar set of skills: history, philosophy, anthropology, geometry, math are only a few of the disciplines essential for the creative process. The only thing that differentiate those two specular design processes is the timeframe. The architects is asked to understand the present. The archeologist is asked to explain the present, through its past. The essential difference the timeframe in which the professions operate. History for an architect is operative [4]. It is an instrument to understand the present and to argue for the future. History does not has value by itself. History somehow needs to be negated because its end is the design itself. A good project is a milestone in the history of
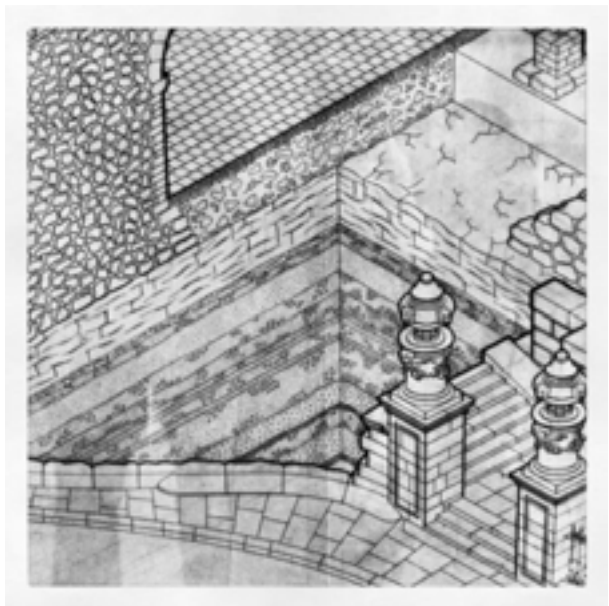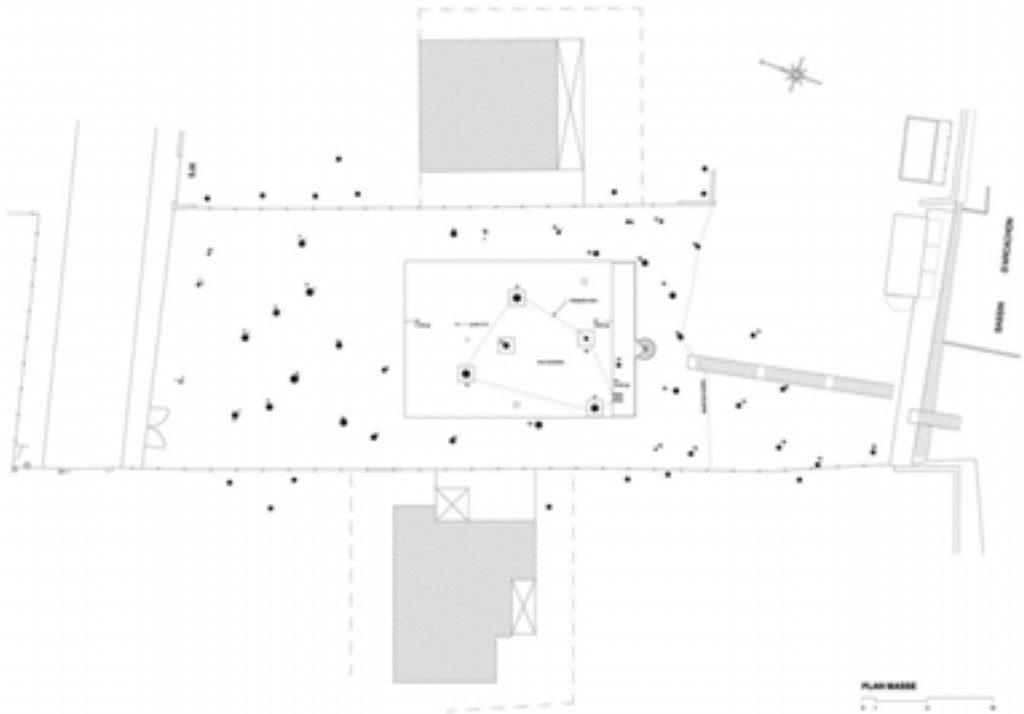
the site. An archeologist, on the other hand, challenges history. A good reconstructive drawing makes good use of established knowledge and historical accuracy. But the role of archeology is to create "that" history. It is one of the only disciplines able to change history. An archeologist has the power to understand what is relevant and what is not about the past. This action has the power to change history narrative, therefore the future. In both cases history has to be challenged. The architect and the archaeologist both design in order to do this.

In some cases, the use of similar drawings and attitude towards the medium emerges in an interesting mixture of archeology and architecture. Raphael Moneo, historian and Pritzker Spanish Architect, designed the National Museum of Roman Art in Merida. The museum is built on top of an archeological site. The museum is a

striking modern re-reinterpretation of roman architecture, both formally and materially, with the uses of bricks and arches. However, another interesting detail make readable is the connection between architecture and archeology. The drawing used by Moneo to represent and therefore argue for his project, is a cut out axonometric projection. This is a

style of drawing vastly used in archeological reconstruction. In this detail emerges the consciousness of the architect that is playing with this design, through a proposal and with time, through a stratigraphy detail. A project so delicate requires an archaeological understanding of the site.

It can be argued that the reason why this drawing technique (cut out perspective or axonometric projection) are used is because archaeological drawings are make for a wider audience than archeologists, while architecture drawings are usually made for architects and contractors. Drawings for architects and archeologists are more than a medium. (either in their traditional paper bidimensional format or in their 3D contemporary manifestation). Drawings are a tool for analysis and communication of artefacts. Drawings are a diagram, therefore a partial representation of reality [5]. Selecting specific information about an artifact is a curatorial process. Organizing in the visual representation pre-existing elements, informations and interpretations is comparable to write a story. In this case, colours, hatches and different line weights make the whole study and argument of the design itself.

Lacaton & Vassal, active contemporary French architects, produce simple drawings to illustrate their projects, those drawings use an archeological language.

But it is a language oriented purely towards the present. In some of their projects they did not put forward a proposal for a new building but rather an intervention on existing one.

Projects as FRAC Dunkerque and the social housing in Mulhouse radically rethink the space of existing public projects with simple operation of subtraction and addiction. The drawings they produced are a diagrammatic representation of existing elements, new elements and erasures. Those drawings resemble drawings for building restorations or archaeological reconstruction drawings. What differentiate them from archaeological drawings is the time span they are set in. Their agenda as designer is on the present society and they focus their intervention around the people living in the building. They are not reconstructing old civilization or interpreting a building. They are reconstructing a present condition and proposing a reconstruction that would create a different condition.

The act of interpreting, re-shaping and adding (with less) is the ultimate power of the architect.

Site, form and context; the elements of the design

What if the scale shifts from a single artifact or a building to an urban dimension? The formal creative process at the building scale does not differ from the design process at the urban scale. Thus, in this case the sociological and historical implications are much more relevant; for the architect and for the archeologist. The imaginative creation of urban spaces has a long tradition in architecture history; two examples that will clarify the methodology of thinking will be Piranesi and Osvald Mathias Ungers.

The famous etching of La Via Appia, is not a survey nor an illustration. It is a grandiose metaphoric representation of one of the oldest street in Rome. It is a project in itself, representing the importance and relevance of that street rather than the actual image of it. Piranesi's etches are ideologically driven

to create a specific idea of Rome, its history and its antiquity. It can be described as an ideological propagandistic image not different from the contemporary highly edited images that tour operators or developers produce as marketing tools to sell a "place".

This overwhelming vision was constructed through the accumulation of historical artifacts. Not all truthful to reality. Most of them work as general references to a "romanity" for their feature and appearance, but not in scale for instance.

Rather than an archeological method, Piranesi creative process towards the city is more likely to be compared to the one of an antiquary. An antiquary of imaginative object with a specific ideological agenda. This example show how a specific image of an urban context can be driven the understanding of the past, yet used to put forward a new idea, by design. Piranesi attitude towards history is propositional, for him history is alive and appetible for the future. Furthermore, he has no disciplinary restrictions on accuracy nor scientificity of his drawings. He is a designer, in this case a urban designer rendering his idea of the city.

In the context of modern architecture, the relationship with history has always been challenged and reframed many times. After the history's breakdown; usually associated with the first modernist avant garde, architects and theoreticians tried to restore this relationship [6].

Oswald Mathias Ungers, in a period of history when several architects tried to reconstruct a relationship with history (the 70's of the twentieth century), wrote down in a short article his view upon urban design and his methodology.
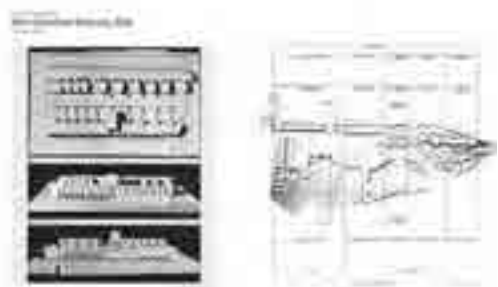
The article title Planning Criteria was published on the Italian magazine Lotus in 1976 [7]. He articulated his strategy for an urban project into 5 points:

1. The Dialectical Process: Every design project starts with the understanding of a preexisting set of conditions that are social, material and spatial.

2. Recognising the accident: There are two levels of planning and design. One is strategic, the other that is always an accident. Urban Planning is about accepting and embracing the unexpected results.

3. Plurality: Any architectural element can be interpreted in many different ways. Therefore, by definition there is not a single design solution.

4. Architecture is an environment. Planning is about going beyond looking at architecture as an object. It is about many different elements. Is not the sum of objects but their orchestration that creates urban space.

5. Adaptation mechanism: Designers always have to choose in between precision and adaptability. Design is the art of compromise with pragmatism.

There is one project in particular where Ungers seemed to best interpret those guidelines. A project developed in the years before the article, therefore the project probably was a tool to experiment and

develop ideas. With the project of Grunzug Sud we can literally talk of research by design. Grunzug Sud started as a competition project for a flower competition in 1965, then it evolved as an independent master plan for residential purposes. The neighborhood was an average peripheral area of the city. At that time someone could say without qualities nor downsides. For the first stage of the project Ungers went personally to take pictures around the area and the negatives of those picture are still conserved in the Ungers Archive in Cologne [8]. Those pictures are a subjective survey of the forms and the elements of the architecture of the neighborhood. Trivial and vernacular elements of a not-special place gained importance because of their repetition or their uniqueness. The shape of a courtyard, the corner window, the anonymity of a side street or the chimneys of an old industrial building became suddenly source of inspiration of the design. Ungers used the dialectical process of finding resonance in the existing elements, to give importance to something that for others was not important. His methodology was isolating and clarifying object giving them "an history." Exactly like an archeologist, he was creating a memory for something that otherwise would have been forgotten. The difference being an archeologist is to record discoveries and reconstructions through recording history. Architects, through buildings.

Regarding buildings, but as well architectural discoveries there is never a single design solution but only a good enough possibility for that specific moment. The urban environment is constructed by many different casualties and "accidents" as well. This could be the case in archeological reconstruction as well: among the many possible interpretation and reconstruction of an urban past, the one that would eventually become history is the most convincing one. This judgment is based on scientific data, known historical facts and ultimately by the archaeologist's training and subjectivity. Like any scientific and cultural process, knowledge evolves throughout adaptation, compromise and

pragmatism. Any archaeologist knows that history can be reshaped by new discoveries, new understanding and new material data. What we call history is nothing but the most convincing and informed interpretation of the past in a given time. For an architect that best interpretation of the past (and the present) is materialized in a design, a design that inevitably will be interpreted, misinterpreted and changed by the time.

The professional responsibilities of the two disciplines lie in this form of reasoning. The common ground of creative interpretation yet driven by scientific and material data is what allows architects and archeologist to collaborate and put forwards their idea of the city. For both the history of a city is a secret to be discovered, either the secret is underground or it is visible but going unnoticed. The reading of material culture, its interpretation and the proposal for new ways of reading it is the epistemological tool of both disciplines.

For Rossi "The Architecture of the City" is an accumulation of collective labour and knowledge that human beings inherit one generation after another [9]. This process is part of every human society since the beginning of civilization. Our point of view is that in the contemporary world the two professions that share the burden of shaping the understanding and the narrative around the material culture are Archeology and Architecture.

Understanding the two disciplines as complementary is not the same than understanding them as collaborative. It is easy to be describe their fields as an interest for the past of material culture (archeology) and its future (architecture). This simplistic way of describing it can be extremely dangerous because it creates cultural and disciplinary clashes. A good example of this risk is what recently happen in La Valletta, Malta. This piece of recent news exposes the risks of certain understanding or urban image and how architecture project and the idea of an urban image and/or identity are correlated.

In 2013, UNESCO put in doubt the status of Valletta as World Heritage Site. The historical centre of the city was declared worth of this status in 1980. What created this controversy was an architectural project; the Renzo Piano's new parliament building [10]. Let's put aside any kind of political criticism around the function of the building or how the project was economically managed. What is interesting in this case is how a single building could affect the status and the identity of a whole urban reality. The UNESCO's world heritage sites are the product of modern culture; modern society realized that certain artifacts are extremely important to describe the evolution of human civilization and, more importantly, they are unrepeatable. It is this understanding of time and society into pre-modern and postmodern that created the cult of a past to be protected, to the extreme of fetishization.

The unrepeatable past was an alive present when those urban forms were shaped. But the paradox is how this mindset could actually limit the evolution and development of a city that is still inhabited. With this paper we do not want to enter into the critical details trying to argue if Piano's project is good or bad. However, we can witness how the design of a single building by one of the most acclaimed and respected international architects, could affect the cultural identity and definition of a whole urban area. (The project is actually not in the actual center of the town but in its border, the controversy exists since la Valletta does not have a planning buffer zone.) The main problem in this case was a bureaucratic one: the UNESCO regulations state that major developments in proximity of heritage sites shall be declared and submitted to UNESCO before for evaluation. This never happened in Malta. This impasse is not to be discussed in terms of regulation and political responsibilities, but can be used to make a much more general point. This controversy shows how two different point of view, the "architectural" and the "archeological", can be in competition. This does not necessarily mean that they

are in contradiction. As we discussed, the mindset and the tools used by architects and archeologists are already shared. What is not accustomed to those mindsets are the institutions and the way projects are developed, marketed, discussed, planned, analysed etc… There is the opportunity for a deeper collaboration: a project should already have internalised an archaeological understanding of the site. This vision should be part of the projects development at every stage. In the U.K. as well in Italy and other countries, there are regulations around the archeological and historical considerations that a designer have to take into consideration when operating on a "delicate" [11] site. We argue for a collaborative mindset that goes beyond those restrictions and regulations. We think that no design innovation really exists without a broader understanding of a site, and that the responsibilities of architects and archeologists overlap in deciding which form the future and the history of build environment is going to have. With this attitude in mind, it is not difficult to imagine archeologist working in architecture firms and designers working in conservation institutions or archeology firms. In a world where data and informations are more and more relevant, the disciplinary boundaries should constantly be challenged, especially when the set of tools used, the mindset and the responsibilities are part of a common ground.

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Landscape transformation between Port and City
An integrated design approach

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Abstract: For centuries, the coastal cities evolved with their port weaving expansions and transformations of urban space with those of the productive space and producing identity and recognisability. Since the mid-twentieth century, however, the evolution of international maritime trade led to a jump of spatial and functional scale of the ports that altered the balance and the relationship between urban and port landscape. Today more than ever the implementation of the commercial and cruise ports of historic port cities, especially in highly stratified urban areas such as the Mediterranean, must be able to harmonize the functional needs of the contemporary port systems with those of active protection of the landscape heritage without contradictions and erasures.
"Acknowledging that the landscape is an important part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas" [1].
To this revolution, the ELC adds a second one, giving the landscape an economic value. Therefore, the Port becomes "Landscape" to all effects and, from the moment it is a quality bearer, it assumes an economic value equal to its productive one. This does not limit transformations, but provides an opportunity to retrain and enhance territories with large ports. Today many ports, especially in Europe, pay attention to the issue of integration with the consolidated city. Starting from the combination of a quantitative and a qualitative approach to the theme of sustainable integration between Port and City, this short essay aims to provide operational tools to create a common language and establish design criteria to enhance landscape quality.

Keywords: Landscape quality assessment, Visual landscape analysis, Design, Urban heritage, Mediterranean ports.

Material culture

The evolution of the relationship between city and port. Yesterday, today and tomorrow

Ports and Mediterranean cities of the past were all in one both functionally and in landscape. The commercial trade of the port was functional to the development of the city. Conversely the inland products and goods were the lifeblood of the ports.
This socio-economic symbiosis was reflected in the same shape of the city-port. Therefore the port landscape.
In the past, urban and port buildings had comparable size. Even the spaces between the buildings were similar. The stocks of goods took place within city buildings as well as in docks on the waterfront. To the stratigraphic complexity of its architectural, artistic and cultural heritage and its dense communications network, the Mediterranean city in the twentieth century adds a strong conflict. The one between a city in which the sea is the dominant hierarchy in the cognitive perception of the citizens and a city in which the economic role and the strong demand for transformation (both of the interior space both of the coastal area) to maintain competition; completely overturn this hierarchy, often denying the relationship with the water. From the middle of the '900

with the advent of the Global Shipping Trade, the bond begins to break down.

The ports started becoming more industrial and logistical. The "Emporium Port" switch to "Hub Port". With this change the needs of space changed as well (Fonti, 2010; Gras, 2013). Many cities dotting the shores of the Mediterranean have witnessed in recent years a large increase in their ancient harbour structures, so as not to know today if consider them a resource or in some ways a threat.

The modern commercial port is increasingly becoming more a productive structure cut off from the urban context and voracious, mainly because this one increases day by day the extent of traffics and the speed of its flow eroding new spaces for tree principal reasons: logistical, manoeuvring of ships and cargo handling. Its facilities and structures have become progressively off-scale compared to the city. Also for safety reasons, the common areas and access doors are minimized (Gras, 2013). The areas

in close contact with it in fact are experienced as conflict areas whose deep incisions, visible on the cards, are translated live in walls, large infrastructures and barriers of all kinds. In fact, new competitive international ports are located far from the cities so that they can expand freely. These only retain a functional context, not related to history, identity, or space.

All this in the Mediterranean area is more difficult. The main causes are the coastal settlement density and the difficulty in developing new infrastructure in densely built areas (Gras, 2013).

The link between the port and the city, which had been the base of success for many places for centuries, become in global competition a restriction to development. Many northern European ports are still able to expand the ports along the river mouths where they stand. This is the case of Rotterdam, Liverpool and Hamburg. This, along with their Atlantic location allow them to be competitive globally. In contrast,

Fig.1 - Historical Photo of the early twentieth century of Marseille. The port is still an Emporio and has a close relationship with the City

Mediterranean ports were connected to "hometowns" occupying neighbouring land since the war. This territorial expansion phenomenon, directly related to the economic and business growth of the Port Hub, has caused quite a few frictions between cities over time. Considering the set of governments and civil-society and Ports -intended not only as Port Authority but also as the joint of private enterprises such as transportation intermediaries (shippers), shipping companies, forwarders, terminal operators etc ... - it led to compromises by which the city on the whole of its shape and image, has always been crushed. In a context in which the territorial transformations become ever more important and fast (therefore compromising the ancient equilibrium of European coastal landscapes and not only) and the genius loci of the globalized economy replaced disastrously that of individual places, matures at European level the firm and unanimous belief that it is necessary to put a stop to these dynamics.

Only in 2000, with the signature in Florence of the European Landscape Convention, it completely recasts the concept of landscape on a new basis.

European Landscape Convention. The landscape: from "postcard" to development opportunity

The first important contribution is the explicit recognition of the importance of the landscape for the quality of life of European citizens. Already in the preamble it recognizes that "the landscape is an important part of the quality of life for all the peoples of the world," which, "has an important role in the general interest, in the cultural, ecological, environmental and social aspects", and that "it is a key element of individual and social well-being". For the first time is exceeded the aesthetic or heritage dimensioni of the landscape to get to interpret it as a key element in the quality of life and even better as a right of citizens, as well as the right to

Fig.2 - View of the port of Rotterdam where the structures and productive activities of the port prove to be incompatible with the city
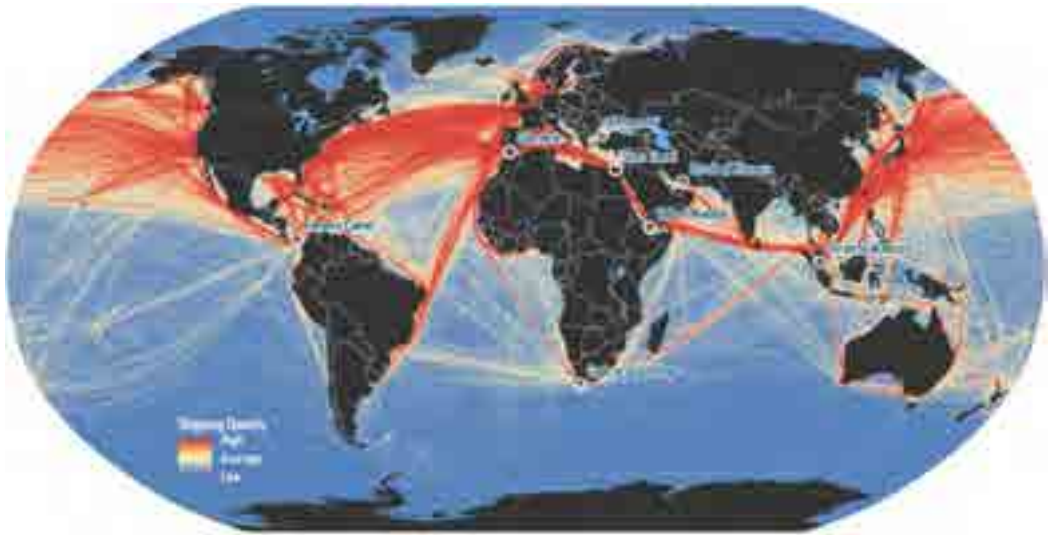
Fig.3 - The change of scale of traffics in the global economy. Italy must be taken to build new hubs on the basis of world trade

breathe clean air. Also it ceases to be an "indeterminate concept" and become "a matter of right" by the fact of being included in an international agreement that obliges states to its normative translation and the fact of integrating the landscape into local and regional planning tools, preferentially those of territorial and urban ordering. Another basic idea is to break with the traditional equation landscape = exceptional land portion. It is one of the great innovations of this document, clear in the preamble where it is stated that "the landscape is everywhere an important element of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as in those of high quality, in areas considered exceptional, as in those of daily life;" Article 2 goes back to this concept when it states that "this Convention applies to the entire territory of the Parties and covers natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that might be considered outstanding as well as everyday or degraded landscapes." Therefore, it applies also to port landscapes, urban fringes to those

areas of conflict that we talked about earlier. The European Landscape Convention starts from an actual photograph of the geographical realities of contemporary Europe: the majority of Europeans live in urban centres and in cities, whether big or small, and the quality of these landscapes, often low (especially that of peri-urban landscapes), directly affects their lives.

The thus heightened tensions between the great new harbor enterprises and the community combined with growing interest and awareness of citizenship of their right to enjoy a healthy and quality landscape (as well as an environment), has seen the emergence of various associations on both fronts: on the one hand those of citizens in defense of the territory and the environment, on the other those of the ports and port authorities who are beginning to understand the importance of a mediation with civil society. In the wake of these major changes arise international associations such as the AIVP (Le Réseau Mondial des Villes Portuaires, based not surprisingly in La Havre- The Worldwide Network of Port Cities) to promote the growth of the ports with an eye to the city

and the territory, issue also felt at the local level, where the individual AP They begin to equip themselves with offices for relations with the territory and to be open to the public with different initiatives.

The context of the planning and the missed challenges in the Italian port cities.

In the last 20 years so the attention to the design of the city-port has increased internationally, is a case in the design guide "Plan the City with the port" of AIVP in fact, that gives some examples along with general guidelines the approach to the topic. Redesign the port city is certainly more complex than designing the mere port, but the benefits in socioeconomic term and for the image of the city and the hinterland can be much larger. Barcelona, Valencia, Genova, Marseille are port cities models, each to a different extent, who converted the ancient harbour waterfront into a public place of excellence charming and characteristic, however, shifting the operational part in new areas. In fact, no measures integrate the two realities in the period of productive activity of ports, determining fact especially for

the many cases in which the port remains and grows on its former seat continuing to incorporate even any listed buildings. In the latter case, even more so, the transformation operations should take account of this presence. Therefore, a general design quality for the port and for the city is not enough; it is also necessary to protect the city parts and the historic buildings that blend with the port in transformation. The Mediterranean-and Italy in particular- hosts the most problematic cases due to the high stratification of the coastal fabric, in which the contemporary port facilities blend into an urban matrix rich in historical architectural emergencies. This is the first reason why the development of its ports did not occur with the speed and effectiveness of other European states. The Italian ports are all born with the city when it was not the same cities to grow and prosper thanks to their ports (just think about the Maritime Republics, for instance). The revolution introduced by the intermodal system, adopted throughout the world, has made it increasingly inadequate structures and spaces, which for centuries had made the fortune of the city-Italian port. The separation between the port and the city

Fig.4 - Current view of the port of Livorno. We note how the structures of the "Port Hub" break the relationship with the historical elements and also no longer have a relationship with the city

has been an ongoing process, especially since the war. Even if they were adjacent at spatial and geographical level, ports and cities in Italy have gradually detached on other levels. The main ones are definitely those of governance and planning. The first, especially articulated, involves the Ministry of Infrastructure, the regions and the City, with all the red tape that results. The excessive complexity of the processes of governance, among other reasons, in fact, did not allow the Italian ports of turning quickly and therefore to be competitive. Because of the slowness in preparing the Port Plans in many cases, the facilities, once approved, were already obsolete by the dynamic needs of international yachting. Therefore, they proceeded with the plan variants that had the fatal contraindication to also undermine the coherence of the overall design. This modus operandi has meant that the majority of Italian ports have adequate port facilities using adjacent free spaces, regardless of the overall picture, with the sole aim of satisfying the present need.

To make them functional and globally competitive the water and land areas of ports should be redesigned in full preserving the operation and this seems impossible. So we tend to think that the solution to incommunicability between these portions of the city is only possible when the productive function ceases or is moved. This implicit is rooted in modern urban planning theory, which interpreted and administered the territory through the Zooning and mono functional specialization. The turnaround promoted by this approach that in the European Landscape Convention finds valid theoretical references, is based on the concept of a fruitful and peaceful coexistence between the two systems, finding new methods of integration expressed through new formal languages appropriate to the context and to contemporary needs. The Italian ports are now "embedded inside the compact tissue".

Fig.5 - Recovering a relationship between port and city. The case Study Of the Port of La Spezia. In green degraded landscapes, in gray landscapes of everyday life and in dark green exceptional landscapes
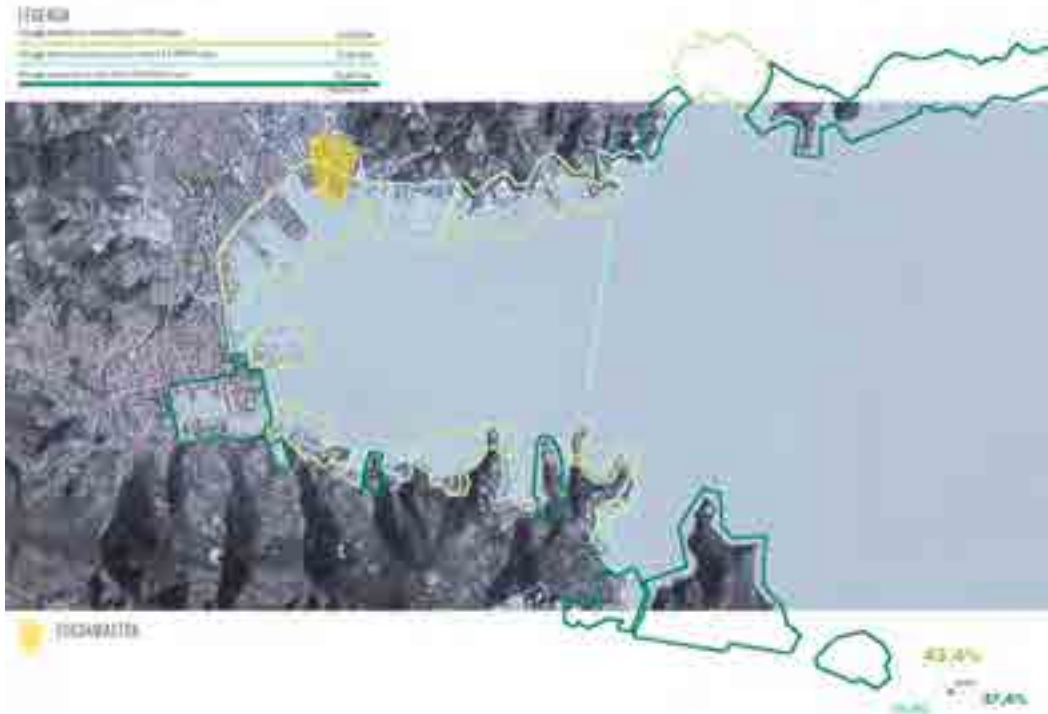
Fig.6 - Livorno. Map Of view management framework

The way in which they try to meet the pressing demands of the globalized economy, has exhausted its possibilities of success and indeed, it is today not compatible with the other requirements presents on the territory, which equally contribute to the creation of the variety, beauty and the uniqueness of Mediterranean cityscapes. The current structural order of these urban landscapes must be completely revolutionized as well as we must revolutionize the analytical and design approach. According to the rules of the global market, the new transformations of Italian port areas should operate radical changes with fast lead times to bridge the gap with other European and world ports. The risk is that the little time and few resources do not allow taking into account the landscape characteristics of the Italian port cities.

The two integrated approaches: quantitative and qualitative. Some useful tools

Consider the problem of the future of the Ports and the "form of their local presence" is important today because it is a vibrant and dynamic economic sector, on which converge many interests and investments and that is acquiring in fact increasing territorial weight. Nowadays no strategies allow modulating the shape of these productive landscapes and adjusting their functioning according to geographical contexts in which they occur. The projects of port expansions, even today, are based only on the logic of the profit maximization which do not take into account the geography and heritage of the places in which they occur, instead of applying standard employment patterns of territory borrowed from northern Europe or Asia that have nothing to do with the identity of the Mediterranean landscape. It is to date a field unexplored by the landscape design that gives rise to reflections and multiple experiments but especially that opens the door to new types and categories of jobs, and create new skills, opportunities for

innovative multi-disciplinary team in which the landscape is flanked by 'economy of the sea and transport. In short new frontiers and prospects for future career, not for "relievers" but for designers. The integrated approach proposed here has the main objective to make all the changes that Mediterranean ports must necessarily deal to implement their structures and revitalize the role they seek, with the port landscape understood as a systemic unit of environmental, territorial, urban, cultural and historical heritage, through two complementary methods. The first can be considered as a quantitative method aimed to address the two major problems of the Italian context:

1. The need for a simple and flexible tool that overcomes the rigidity of governance and Italian port planning.

2. The need for quantitative analysis tools that allow the calculation of visual impact of the changes and enable the assessment within environmental and economic matrices.

The answer to these two problems as apply to Italian experience is incomplete. In Italy, there are experiences of quantitative visual analysis but only on a regional level. In particular, we recall the Landscape Plan of the Piedmont Region, and the experiments regarding Turin, and intervisibility maps of the Regional Landscape Plan of Tuscany. Unfortunately, in both cases, the scale is larger than that of the Port therefore only useful for the definition of visual basins and definition of panoramic views.

This has necessitated widening our research to foreign cases and applications; in particular Anglo-Saxon and Dutch. In these, we find cases of application, very useful methodologies and tools to address the problems revealed. The task of this research is to test them and adapt them to the Italian context.

The View Management research helps in response to the first problem. Anglo-Saxon projects used in both Liverpool and London. It is very useful in planning. It consists of a supplementary document that supports the development plan. Being distinct from the main plan configured as a flexible tool that can be implemented during the transformation process.

As we noticed, governance and planning of the Italian port authority are very rigid. The View Management methodology allows us to solve this problem. This methodology provides a reference framework for the visual design analyses and for the evaluation of the transformations.

For each of the visual categories identified on the map, we are looking for the best representation and IT tool.

The most distinctly qualitative methodology that makes up this integrated approach is the use of a consultation tool introduced in 2000 by the European Landscape Convention and specifically designed for spatial planning: the objective of landscape quality (LQO's). The art.1c of the above-mentioned Convention, define it as a tool that *"means, for a specific landscape, the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings"*. It stands as an element of territorial analysis synthesis conducted by specialized knowledge by integrating all the heterogeneous complex of bottom-up data, essential to understand the dynamic nature of the sites and their Zeitgeist. The European Landscape Convention places great emphasis on the issue of landscape quality objectives, understood as the expression of landscape preferences of the society, once known the state, values and risks of its landscapes. They guarantee citizen participation and act as a meeting point between the experts, the administration and the civil society, thus becoming a way of consensus of the landscape policy and the related priorities. The innovation of this approach, compared to the intentions of the ELC, is to use the landscape quality objectives not only as active instruments for the analysis, interpretation and landscape design (as an

input) but also as innovative tools to monitor the quality of the transformations taking place in the landscape and the relative level of citizen satisfaction.

"Landscape quality Objectives as vectors of transformation" summarizes the intention and the potential of this innovative methodological approach, which gives the project a dimension of process rather than intervention, a systemic dimension rather than punctual. This methodology overturns the canonical way in which we try to impart or restore landscape quality and its own definition, breaking up the logic based on "landscape quality indicators" and undermining the dominance of the disciplinary fields of ecology and technical sciences in the field of "landscape quality assessment" in favour of a fair weight of sociological and anthropological disciplines. For their own definition and by the intrinsic reference to the process dimension that also etymologically, the landscape quality objectives are suitable to be the only true landscape "indicators" to refer to, because they provide the flexibility adaptability requirements necessary to understand the complexity of the landscape. The method, applied to the case of port landscapes, thus becomes of particular interest since it allows overcoming obstacles caused by the different jurisdiction they are subject to the port areas than the rest of the city without the need to create an additional higher-level planning tool. Even from a legal and institutional perspective, they are thus powerful and flexible synthesis tools, ie capable of establishing bijective relationships between

different subjects favouring the evolution of the needs of the parties involved.

The first step is the agreement between the competent Port Authority and the city administration, safe in the knowledge that an accurate definition of the quality objectives landscaping for each frame of reference (or landscape units) considered, would ensure appropriate and shared design choices, thus streamlining the approval process of projects and ensuring positive economic impact on the area. The precise definition of landscape quality objectives is a process that requires a high degree of coordination and cross-disciplinary skills because, as anticipated by the definition given by the Convention, combine specialist and popular knowledge, technical requirements based on measurement and analysis with aspirations, visions and desires of the population. A full-bodied participatory process involving all the major actors and stakeholders presents on the territory in relation to the scope and subject matter therefore complements the work of scientific analysis. An emblematic example, as well as a pioneer in this field, consists of the Landscape Observatory of Catalonia that over the 11 years of its activity through the creation of 7 Landscape Catalogs of Catalonia, has defined the landscape quality objectives for the whole catalan territory Catalan, using public participation processes [2] among the most articulate and fruitful in the international scene. Since this best practice dictates the manner, in which the landscape quality objectives should be defined: with reference to LQO's framework valid in general for the Mediterranean port city (whose definition is

Fig.7 - Fossamastra A walled Neighbourhood, looking for a waterfront. First step: Analysis and transdiciplinar studies as bases for the LQOs definition

one of the research thesis results: "Designing in Emerging Landscapes. Changing image and identity of Mediterranean Global Port Cities "L. Marinaro, still in progress) and then switching to a precise formulation of objectives for specific case studies, in which the proposals made by the team of experts in charge of drafting the objectives are compared, refuted or supplemented by the contribution of citizens and stakeholders in the public participation process. The examination of results of the process precedes a final formulation of the objectives that will make up the shared framework for territorial policies of the city and port in the mutual interests. The list of the LQO's is essential to proceed with the definitions of actions and specific measures to satisfy them. The actions and measures can be multiple and related to different areas. They can relate to physical territorial transformations or promote cultural initiatives; they can be isolated interventions or interventions programs, provided they are consistent and especially viable in the agreement envisaged transformation times that coincide with the times of the LQO's and stood roughly on the five-year period, a period compatible with the mandate of an administration. Therefore, they represent a "collective program" that prefigure scenarios of wellbeing and satisfaction in short time, thus giving full effect to the principles of the E.L.C. Their formulation return a snapshot of the current quality of the landscape as not only perceived by people, but also is also able to anticipate future possibilities for sustainable processes, to direct them and at the same time to be monitoring tool.

Notes

[1] European Landscape Convention, Florence, 20/10/2000, Preamble
[2] See the book: Noguè J., Puigbert L., Bretcha G., Sala P., (2010) Paisatge i participaciò ciutadana. Observatori del Paisatge de Catalunya, Documents. Olot

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Formation of a medieval urban planning process using the archaeological knowledge base to interpret the urban space through landscape architecture and art

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Abstract: The project "Kv Valnötsträdet" is a collaborative project in which the various competencies Archaeology, Art and Landscape Architecture have cooperated from the beginning of the project, and contributed with equal value to the knowledge bank during the work process in its various stages. The project has given us greater understanding of the need to protect our public spaces as part of a valuable cultural heritage, based on a view of the site's inherent versatility and diverse significance over time. The project has also raised new working methods and procedures to enable the cultural heritage and archeology impact on today's urban development. The project, which started in 2008 is now in the final phase with an ongoing construction. Creation and contemporary interpretation of the medieval square has always been the focus in the design process. The aim has been to show the social and political arena that was in use for over 400 years old, but that ended with a brutal show of power as the demolition of the medieval city and the Storkyrkan (the medieval Cathedral) shows. We do not want to emphasize a "frozen moment" of history, but show a context and a stage in the development of the city, a link from the medieval city to the urban development that occurs today. We want through the design and interpretation of the medieval urban space make the continuous urban development readable, from the Middle Ages to the present. With this paper we would like to discuss the visualizing of the medieval urban planning through a design process of a square. Can archaeological knowledge be transformed into design? Is it possible to make a contemporary interpretation of a historical urban process?

Keywords: Archaeology, Landscape Architecture, Art, Urbanism, Timelayer, Design

Introduction

At the AACCP meeting in Florence in 2014 we spoke about our unique collaboration between archaeologists, landscape architects and artists at an early stage in the project plan for "Kv. Valnötsträdet".
"Kv. Valnötsträdet" includes remnants of the medieval city center which was from the beginning of 1200 AD until the end of 1600 AD, a time when the city of Kalmar had a central role in Sweden's east coast defense and trade with other countries. Only three cities in Sweden during the Middle Ages had a curtain wall: Visby, Kalmar and Stockholm. Kalmar was during the Middle Ages, one of Sweden's most important trading cities, and was a major player in the network around the Baltic Sea.

The plot is located in an area of great cultural and historical value, and includes 19th century institutional buildings, (former Kalmar's Hospital), adjacent to the medieval cemetery from 1200 AD. Kalmar Renaissance Castle located south adjacent to the area, and low wooden buildings from the 18th century faced the plot from the north. Within the area there are archaeological remains of the medieval city center with its square, town hall, cathedral and lavish stone houses.

The project started in 2008 when the municipality sold the plot to a private

Fig. 1 - Map showing the area marked in red

Fig. 2 - The medieval churchyard

developer in order to turn the former public buildings to apartments. The work with the new detailed town-development plan started, where archaeologists and artists in the early stages were connected closely with landscape architects.

From the archaeological excavations we got additional knowledge on Kalmar's medieval history. The archaeological knowledge showed that the public land has been continuously in place since the late 12th century, with the result that the medieval square was changed from private land to public land.

The archaeological knowledge was available for this project parallel with the work of the detailed town-development plan and not, as is customary, in the later development stages. We got a chance to let the medieval archaeological history affect today's urban construction process, and along with an artist's critical eye that questioned the current working methods, we were able to create a unique design based on archaeology, art and landscape architecture.

Fig. 3 - The area

A shared vision has been to highlight the story of the city's development from the Middle Ages onwards, in order to better understand our own present and context. A story that focuses not only on actual buildings and archaeological remains, but wants to show human social life and the power struggle that took place between the church, monarchy and the bourgeoisie, and how this affected the design and use of the city's spatiality. The urban space as a political arena. Urban development process is visible through the medieval city's foundation from the 13th century. Its demolition was ordered in the late 17th century and the subsequent reconstruction of the grid city from the 17th century.

During the designing process that has been ongoing since 2014, we have worked with a focus on contemporary and modern design, where we highlight the medieval history while looking to the future.

"Kv. Valnötsträdet" in Kalmar is a collaborative project in which the various competencies Archaeology, Art and Landscape Architecture have cooperated from the beginning of the

Fig. 4 - Planteboken, 1610, Calmare Slott och Stadh

Fig. 5 - Spionkarta (Spymap), Långemåla dhen 3 junij åhr 1611«, Kalmar läns museum »Afritning på Calmare belagringh

Fig. 6 - Stefan Larsson, urban archaelogist explaning the archaeolgical remanings

project, and contributed with equally value to the knowledge base during the work process in its various stages. The project has given us greater understanding of the need to protect the public space as part of a valuable cultural heritage, based on a view of the site's inherent versatility and diverse significance over time. We also want to highlight new work methods and procedures to enable the cultural heritage and archeology impact on today's urban development. "Kv. Valnötsträdet" highlights one of Scandinavia's most accomplished, monumental places. This is surrounded by thick stone buildings with few parallels in the Nordic area, which has given a new image of Kalmar old city. The knowledge acquired gives significant contributions to the continued research on urbanization in the Baltic and Nordic countries, and has lifted Kalmar role model for recent and contemporary urban development.

The design process

2010 started the work on the "Guidelines for Art and Design of the outdoor environment '. Our work was one of 11 pilot projects in "the Collaboration on the Design of Public Spaces," a government assignment between 2010 and 2013, where the future of Sweden's public environment was in focus. The project was a collaboration between the National Public Art Council, The Swedish National

Fig. 7 - "Guidelines for Art nd Design of the outdoor environment"

Fig. 8 - Proposal for a new design

Heritage Board, The National Museum of Architecture and The National Board of Housing, Building and Planning. The purpose was to improve the quality of public spaces. 2014 the document was presented to the City Planning Committee. It included our archaeological knowledge base as the basis for the guidelines of the design.

Fig. 9 and 10 - Sketches

Fig. 11 - Proposal for a new design

Since then, design work has continued parallel with further archaeological investigations. The interest from the public has been great, and the archaeologists have been visible for the public through open sites, which have been very well attended. They have been able to relate for the public about the medieval city of Kalmar and its importance and impact on the Baltic Sea.

Design work has been a process with a focus on storytelling and urban development. "Kv. Valnötsträdet" contains important time layers from the 13th century onwards.

Our work has included an evaluation of the different historical epochs, which part would we in our design highlight? The medieval Kalmar from the 13th century until the late 17th century, with the Kalmar Castle and the adjoining medieval cemetery remaining visible elements? The surrounding farmland, road structure and buildings from the 18th century? Or the more visible 19th century institution buildings, together with the adjacent Alley and the City Park?

We have chosen to highlight and expose the medieval history as an approach and a basis for the subsequent urban development. The medieval history in today's Kalmar has been a hidden history. By lifting the medieval city center with its medieval squares, we strengthen an historically important area, both as a visitor center and as a knowledge base for the future urbanization process in Sweden. In the design phase, archeology, art and landscaping have had the same value and prevalence. The same people have been in

Fig. 12 - Proposal for a new design

Fig. 13 - The only remainings of the stones, the paving of the medieval square

the team since the start. This is a deliberate approach from the municipality, which admittedly means a larger project, but maintains an unique knowledge base, which can be worked into the project.

The guidelines / design program highlighted art's further role in the project, the purpose of art to make visible the invisible and at the same time highlight and refine the existing materiality. The guidelines also raised the need for an integrated graphical program and the need for a beautifully designed lighting of the place.

Interpretation

Kalmar medieval city consisted of a lavish square that served as a political arena in the Middle Ages. The city could also be seen as a medieval showroom out towards the Baltic Sea, "the city as an idea," with a desire to show off a well-functioning and lavish ideal city. The square was surrounded by rich stone houses, with the Town Hall and the Cathedral as two opposites. From the square led paths towards the royal castle and down to the harbor which was a major center of trade. The medieval square in the city center was not primarily a commercial plaza, but served as a common monumental symbolic place and which also lifted the city's identity. It should be mentioned that the square's paving has gradually been built and put on end, to give an added pondus to the room in front of the town

hall and church.

We had ongoing joint discussions as to how the design could tell the story of Kalmar's development. We interpreted the archaeological investigations of the town's history as a tale of power. A power struggle was manifested by the physical general historical sites and buildings. The site consists of a physical room at various time stages, more or less visible. The adjoining medieval cemetery has a strong character and atmosphere. How do you lift and reveal the archaeological footprint whilst converting the space into a residential area, with residential buildings? We sought a strong spatial bearing design with a focus on materials and craftsmanship. We developed different values that we wanted to incorporate into our design: Scale, time layer, topography, power, identity, social life and craftmanship.

Materials

Our design does to some extent require a material grammar, an interpretation of the different values traded in carefully selected materials. We have worked mainly with local materials from the area and the location. Granite - the square. Here we have used stones which are carved by hand, in various sizes and colors. A lavish floor, which shimmers like a real rug, where each part is unique. It has taken several months to carve

Fig. 14 - The churchwalls and the pavings from the street towards the church

the stones into there unique and varying sizes. A greater part of the stone comes from used tombstones.

- Local artisans have placed all the stones, and demonstrated great skill.

- Limestone - the church walls. The limestone are from the island Öland nearby, where much of the medieval stone comes from.

- Outlines of granite - the medieval building structures. The granite comes from the municipality's own stock, so we have recycled old stones and materials.

- Iron- used as the material for the Church and the "Path door" (the gateway between the church and the square), and as a pattern around the only tree planted. These are the spaces where our artist has had her main focus during the design process.

Added value

Starting with the underlying cultural-historical narrative of a city when we create new environments should be a prerequisite. What we build today is a continuation of an ongoing story of our habitat, our physical space and about ourselves. We should weave in all the layers of time to create the fabric that forms the backdrop to the current ongoing urban development process.

We have throughout the work had to reflect and re-evaluate our previous habitual stance and working methods. The subject pointless to ask each other questions which has meant an expanded field of knowledge and to be ones own critic within ones area of competence. Several issues we carry with us, with a desire to develop this process further.

Historically valuable environments and urban archeology are resources for sustainable urban development Time layers and the relationship

Fig. 15 and 16 - Test of hte material, different sizes and colours.

between past- present- future is important to have as a starting point for the city's spatial development and design on different scales and levels. Areas of cultural heritage and values should be seen as a resource in urban development, both in economic, ecological and a socio-cultural perspective.

Through a visualization of the city and the landscapes layers of time creates an understanding of the topographical conditions and the city's emergence. An awareness of holistic perspective which clarifies the relationship between man and landscape, the built structure, technological developments, politics and economics. In the late 17th century, Kalmar's medieval city, was demolished and moved, a radical intervention against one of Sweden's most powerful city center. Today, the same process is in progress in Kiruna, but for other reasons. Through knowledge of our history, creates an understanding and a platform for the urban planning process which takes place today, and the society in which we live.

Archaeological knowledge brings greater quality and impact in the planning and design

Fig. 17 - The intepretation of the medieval square

Fig. 18 - The intepretation of the medieval square

process. It has been of great importance that the archaeological investigations have been carried out parallel with the planning process, rather than as is customary, in connection with the exploitation phase. This is a prerequisite for the archaeological knowledge to be able to influence the detailed town-development plan and the following design process The archaeological knowledge traditionally comes in too late. Archaeological investigations should be done in conjunction with the detailed planning so that urban archeology is an obvious early part of the urban planning process. Urban Archaeology can provide vital contributions to urban development and deepen the relationship between past-present-future in design work. The artistic knowledge contributes to a broader approach and process work. Artists should be lifted early into the planning and design work and their expertise used for process work, and not only as is customary today for artistic creation. The artistic quality contributes to an investigative, critical and

Fig. 19 - A piece of stone from a used tombstone, with still visible letters

creative approach and challenge the traditional way of thinking and ingrained working methods. Furthermore, it could mean that one perceives meetings between the material and its tactile poetic dimensions ect... The artist has a freer role and can easily move across the otherwise specific work disciplines.

Fig. 20 and 21 - Outlines of granite, from the citys own supply of old stones

A city planning process based on knowledge of the cultural values and urban archeology create a more interesting, attractive and unique city. In the long term it can create growth through an increased amount of visitors and increased occupancy. In many smaller cities in Sweden's cultural environment, the countryside and the cities unique identity are the attraction agent used to boost the tourism industry and create an attractive city to attract new residents. A follow on effect of this, is that it becomes an attractive environment for companys and can create new jobs.

Identity and memory. Areas of cultural heritage, or their parts preserved and woven into the city built today, creating a curiosity and an interest in the local history of the site. As an individual you are put in context and form a stronger local identity.

Reflections

The collaboration project "Kv. Valnötsträdet" has given us a greater understanding of the need to protect the public space as part of a valuable cultural heritage, based on a view of the site's inherent versatility and diverse significance over time. It has also caused us to reflect on the importance of public space. For whom was the public space formed? For what purpose?

Work on the design of the site of the medieval square and its meeting at the intersection of church, monarchy and the powerful bourgeoisie, has strengthened us in our belief that the public space carries stories that constantly need to be activated and discussed. In today's meeting between featured and fragmentary pieces of the past, in the ongoing struggle between privatization and the public space in the development of the city, worn these issues further.

Locations also need to preserve its mystery and not be programmed with our ideas. An artistic approach which incorporates archeology critically challenges our ideas, thoughts and suggestions. Through our ongoing discussions between our three disciplines our preconceptions and aesthetics have given us another approach - which led to a reduction and complete programming to the benefit of the site's inherent potential.

Our aim in the design is to link our interpretation of the translated material with authentic fragments, where the whole is not given answers or raise a medieval specific single frozen moment or manifests a national event ("Kalmar Unionen"), but instead maintain an evasive, fragmented reflection of the time as a stream of time-depth. Visual clues to the medieval square, gives the visitor possibility to experience the space, with the support of art and architecture and archeology. It opens up for the individual visitor and gives them the opportunity to interpret, to perceive and analyze, through a direct experience of the place.

Our mission was to create a story, which also

meant great liberties. What story would be lifted? How do we convey it? How we add together the different parts? How readable is the story for the visitor? We found no obvious answers, but our work process and design work has involved a search, which has been the equivalent of a research project. The Walnut tree district is not a frozen moment, but part of the ongoing story.

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Maps

The National Archive

1610 – 0414:0011:0009 1610 8. Band 11: Svenska planteboken (Örnehufvud): Calmare Slott och Stadh. Anno 1610. lantmätare okänd/ej identifierad.

1611 – Spionkartan: 0425:01:033 Kalmar 1611 -/5--/8 "Med annan hand "Calmars Belägring 1611" Kalmar slott och fästningsverk. Svenska och danska sjöstyrkorna. Danska arméns befästa läger och fältverk.

Rethinking urban density: archaeology, low density urbanism and sustainability
Lowland Maya Landscape Regionalism

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Abstract: For several decades, the archaeology of ancient cities in the new world has been tightly tied to tests of nineteenth and early twentieth century definitions of urbanism. These tests, while useful, over emphasize 'urban traits or qualities' derived from demographic thresholds and deemphasize city form and the influence of region. Population densities and total populations quickly became measuring sticks for comparing archaeological settlements and time periods. Functional studies of cities were rare, which relegated archaeological data to site based cultural historic narratives. Simply, archaeology contributed little to urban theory, while relying heavily on testing a specific subset of urban theory.

These studies were common in Mesoamerica and especially in the Maya lowlands beginning in the 1990's. Archaeologists compared the cities of the Maya to early urban centers, like Teotihuacan in Central Mexico, attempting to develop Mesoamerican typologies to explain variations in city form as interpreted from settlement patterns. Early work advanced critical thinking about urbanism, but subsequent efforts limited the use of archaeological information in architecture, planning and landscape architecture. Perhaps more importantly, such evaluations undervalued the functions of region. Most studies relied on archaeological data from site centers and assigned rural communities and resources within the catchment of the nearest large settlement. More recently, functional studies of urbanism are transforming the way we think about ancient cites, especially in Mesoamerica. Building on this, my paper offers a qualitatively different approach to studying the design and planning of Maya cities, by emphasizing the role of household, region, and landscape and de-emphasizing normative models of urbanism. To do so, I introduce some thoughts about landscape regionalism and compare and contrast what we know about settlement patterns and landscape from two Classic Maya centers: Tikal, Guatemala and Caracol, Belize.

Keywords: Settlement Patterns; Urbanism; Anicent Maya; Landscape; Regionalism.

Introduction/Overview

Archaeologists in the Maya lowlands have spent the last three decades investigating the shape, form and structural density of Classic Maya sites, testing anthropological and sociological conceptualizations of urban (Sanders and Webster 1988; Chase et al 1990). What began as a comparison of city form informed by comparative anthropological theory (see Fox 1977 and Sanders and Webster 1988), quickly transformed into a single focus and hotly debated comparison of site population density. Essentially, comparison of which Maya city was the biggest became a common debate. Through this process, Maya cities, were perceived and portrayed as cross cultural anomalies, i.e., highly dense and normatively functional urban places thriving in an environment that was perceived to be challenging and unsustainable. Moreover, the diversity of settlement patterns is overshadowed by the search for a single Maya urban pattern. Recent work pivoted to questions of how the Maya engineered their environments and landscapes to provision these high densities (Dahlin et al 2005).

What if Maya cities weren't as densely populated as they have been portrayed? What if Maya cities were urban in a different manner? Leaving behind demographic benchmarks, this paper offers a qualitatively different approach to studying the design and planning of Maya cities, by emphasizing the role of household, region, and landscape. I also de-emphasize demographically derived and normative models of urbanism for understanding Classic Maya settlements. I also suggest that there is no single Maya urban pattern, but that Maya cities are best described as regional expressions of place.

To do so, I rely on comparative descriptions from regional research at two archaeological sites: Tikal, Guatemala and Caracol, Belize (Fig 1). I briefly describe the structure and distribution of settlement as it compares to evidence for past agrarian activities through landesque improvements, distribution of resources and analysis of soils. To conclude, I introduce a new archaeological survey project my colleagues and I are developing that may transcend site specific studies in order to further develop an enhanced perspective of Maya urbanism derived from landscape regionalism (see Golden et al 2016). Simply, I comment that the development and evolution of Maya cities were place based regional processes heavily influenced by physical landscape and best understood from the bottom up. By beginning with flawed and excessive population estimates, archaeologists have positioned regional research in a challenging context and thereby limited the role of regional information. For example, by defining Maya cities as urban in a classical sense, archaeologists assumed that there must also be a rural counterpart.
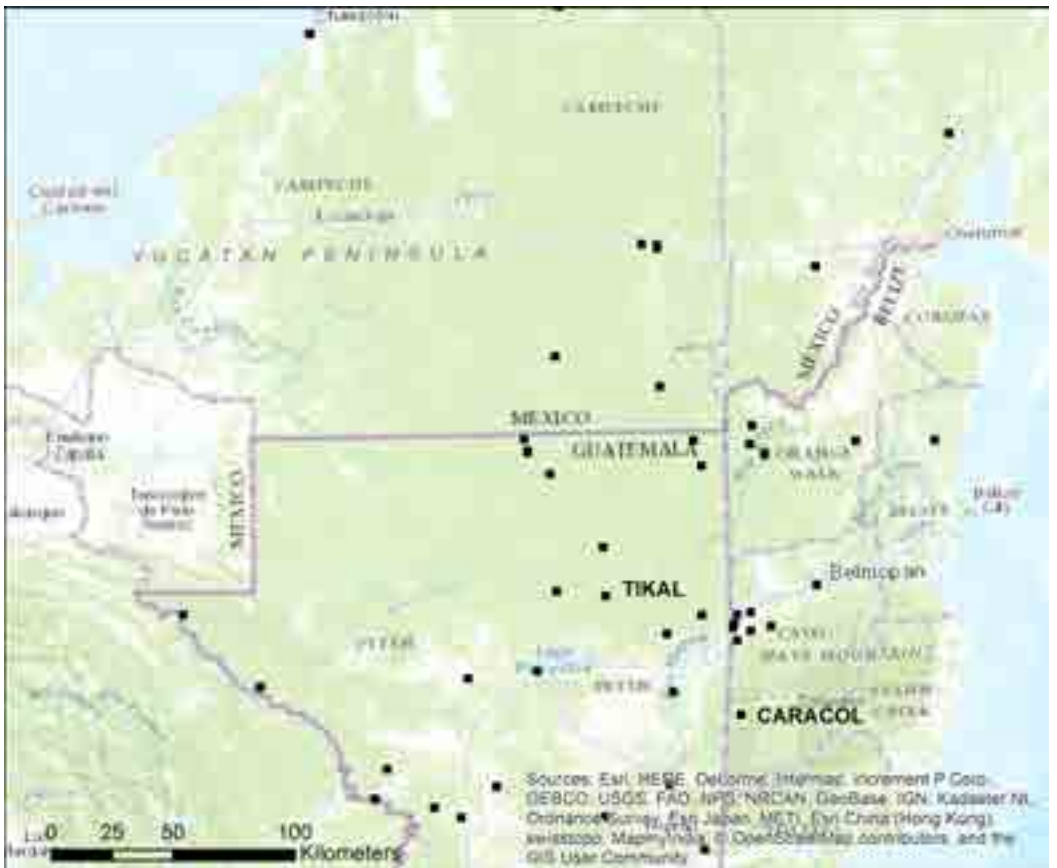

Fig. 1 – Map of Belize, Guatemala and Mexico, illustrating the location of Maya sites, including Tikal and Caracol labeled

Regional research indicates that it may be even more challenging to identify truly rural Maya. Simply, because excessively dense estimates, the non-surveyed region must support the city. But if we put demographic estimates to the side, regional research can better address fundamental questions about how Maya settlements adapted to regional patterns of landscape and resources.

Part of the challenge of such an approach derives from decades of early studies that assumed Mayan civilization as limited, due to their location in the neo-tropical lowlands. Beginning with the earliest explorations in the Maya region, archaeologists, historians and architects were fascinated by the mystery, monumentality and challenges of Maya cities embedded within the lowland tropical forest. First portrayed as overgrown, abandoned and mysterious, archaeologists suggested that the Maya couldn't possibly live in dense urban centers. The low density implication was that the Maya were mobile, living in dispersed settlements with empty ceremonial and essentially non-functional urban centers. Today the pendulum has completely swung in the opposite direction. Maya cities are viewed as urban, but the degree, form and character and dynamics of what 'urban' means is hotly debated and often focused on site centers and site specific interpretations. Moreover, even advanced approaches offer a single model for the Maya, such as agro-urbanism (Isendahl and Smith 2013).

Urban descriptions of Maya centers emerged from heavy debate in the 1990's raised concerning the 'urban' character of Maya centers and was followed by a series of formal and normative interpretations of Maya cities, focused on typologies and functional analysis of architecture, space and landscape. For example, many formal models were advanced about how Ancient city form expressed administrative authority and control over people and resources at this time. While these studies increased the information we collected for Maya settlements, they have always been constrained by the normative ideas they embraced and the demographic thresholds they depended on. Most emphasize top down principles of organization, power and authority, potentially not fully capturing how the majority of Maya society were integrated into these systems.

Importantly, these normative models also don't embrace the spatial and temporal messiness that must have played out in Maya settlements and landscapes. From a methodological and an interpretative stand point, archaeological research in the lowlands started at the city center and at the tallest building, inherently leaving the region in a supporting role. So, interpretations started at the tallest building too. For example: Maya population estimates are traditionally calculated from a very simple formula. Counts of architecture from surveyed areas with intensive mapping are converted into 'per kilometer' structure estimates. Estimates for structure use are distributed relatively, based on ceramic phases and a number of people are assigned to each estimate (Murtha 2002). The approach is simple and on their own, these estimates are little more than a number. However, the estimates became tightly linked to theories and interpretations of social, economic and city organization, inherently making the Maya, 'Too Big to Fail'. Extensions of second level interpretations rely on the big estimates. For example, many scholars argue that Maya cities must have had bureaucratic administration and markets for the exchange of basic goods, because such large estimates necessitate bureaucracy. Peeling back the argument, big estimates can't be enough. A 'dense population' doesn't provide the evidence necessary to support these interpretations and more importantly obscures the adaptive and sometimes sustainable strategies employed by the Classic Maya (Murtha 2009).

Having worked in two well studied lowland regions, I argue that what we observe in Maya centers often offers a very different perspective of what we observe regionally (Murtha 2015; Webster and Murtha 2015).

For example, intensive reservoir systems found at Tikal are impressive engineering efforts, conveying water away from plazas for retention in and around the site center (Scarborough et al 2012). In a vacuum, these impressive features offer a demonstrative and centralized perspective on water management. However, when these reservoirs are coupled to regional observations, where water can be abundantly distributed, a more fragmented, distributed and perhaps more enduring perspective of bottom up water management emerges (Marken and Murtha 2016).

Turning away from critique, one element is clear. Maya cities and settlements are complex expressions history, human agency, climate, environment and region. How then can we study them in order to derive valuable perspectives for community and city planning, urban design, architecture and landscape architecture? The approach I offer here is rather simple, one of landscape regionalism. What I am advocating for is an explicit settlement ecology approach (or cultural ecology approach), building on the ideas of Bill Sanders, introduced some 50 years ago. Sanders first set out to answer three basic questions about the cultural ecology of the Maya (Sanders 1962:79):

1. What are the interactional patterns between the environment and the subsistence system?

2. In what ways is the latter related to population history and settlement patterns?

3. What relationship exists between the subsistence system and the birth and decline of Maya Civilization?

Two decades later, Sanders refined his approach, writing (1981: 352-3):

> I believe the major determinants [of settlement patterns] lie in the complex interrelationship between agricultural technology, the natural environment and sociopolitical organization …Variation in the distribution and density of an agricultural population is the aspect most conditioned by characteristics of the physical environment, particularly those that effect agricultural security and productivity. The most significant are rainfall, temperature, topography, hydrography, and zonal soil patterning… soil and topography were major variables in the Peten and soil should be a significant variable all over the Maya lowlands…The cultural factors that affect settlement location maybe subsumed under one factor, the location of other settlements…The principles involved here are those of attraction (e.g., need of assistance in cooperative tasks, social needs, and so forth) and avoidance (competition over resources, for example). The location of the settlement is the product of the balance between these two opposing forces (Sanders 1981: 352-353).

Perhaps this is an oversimplification, but the essence of Sander's questions and assumptions are:

1. How does landscape influence settlement and community patterns in the lowlands?

2. How does that influence play-out regionally?

These questions and assumptions are striking similar to the very same questions posed by regional planners and landscape architects in the 1960's and 1970's, especially Ian McHarg (McHarg 1969). McHarg (1969) emphasized the importance of the scientific study of core (natural and cultural) regional systems in order to design sophisticated and sustainable approaches to city and settlement design and planning. This is precisely the same model that Sanders advocated was most important for understanding past cities and settlements. He argued that Maya settlements first responded to core regional natural systems.

To better illustrate these ideas, I turn to the settlements of two large lowland Classic Maya centers, separated by only 70 kilometers, but with very different regional expressions of settlement. For Tikal, Guatemala and Caracol,

Belize I rely on observations from not only settlement pattern survey, but also from coupled environmental studies, including soil analysis, vegetation surveys and our recent efforts at Tikal to use design and planning tools for understanding the past (Balzotti et al. 2013; Murtha 2002, 2015; Murtha et al. 2016; Webster and Murtha 2015).

Caracol, Belize

Caracol is located on the western border of Belize, in the foothills of the Maya Mountains (figure 1). The center of the site is composed of a few hundred structures, centered on a large Classic palace. The site has a long history of use and occupation including a recorded dynastic history from at least the fifth until the ninth century (A. Chase and D. Chase 1996 and 1998; D. Chase and A. Chase 1990). Household remains or plaza groups are rather evenly dispersed and even almost predictably across Caracol's landscape. Walking the region, there is a regional sensibility to landform, household location and the distribution of other features, like terraces.

I've argued that a smallholder-like settlement pattern is present with the majority of households having access to between 2-4 hectares of agricultural land directly surrounding each household (Murtha 2009 and 2015). Much of this land is improved and carefully, if not artfully curated agricultural land. There is also a strong correlation between household size (as quantified by volume, number of structures and areas) and the improved land surrounding each household, suggesting that the larger the household (perhaps evidence of not only household size, but the longer it is occupied) the greater quantity of land to support that household.

Terraces integrate households within the regional landscape, constructed in almost every inhabited locale in the region. Conversely, where terraces are found, households are always interspersed among them. There are no households without terracing and there is not an area with terracing without households (Murtha 2015). Terrace distribution is relatively well organized throughout the region but there are no indications that it was centrally coordinated. Placement and construction are highly correlated to local environmental factors, such as soil, topography and slope. Intensive gardens were cultivated in the immediate area adjacent to each household enriched by household waste. These gardens, probably no larger than one half of a hectare may not have contributed substantial caloric intake of households year to year, but provided an important annual buffer against shortfalls in productivity (Murtha 2009, 2015).

In addition to households and terraces, several long-distance causeways have been documented throughout the plateau (A. Chase and D. Chase 1998). The causeways vary in size, form and distance, extending as far as 12 kilometers from the site center. These causeways, combined with the clear household and terrace dominated region signal efforts to integrate households regionally. However, the fascinating element of the causeways is how carefully responsive the causeways are to regional topography and landscape. Simply, the causeways carefully navigate the karstic landscape of the Vaca Plateau. Dispersed households with terracing were a regional response to the availability of resources, while the causeways offer a regionally designed and locally implemented effort to reconnect settlement regionally.

Tikal, Guatemala

Some, seventy-seven kilometers west of Caracol, Tikal is located in the Central Petén, north of the modern cities of Flores and Santa Elena, Guatemala (Fig 1). For the past several decades our collaborative team of archaeologists and environmental scientists have been focused on studying Tikal's region and landscape from both a cultural and ecological perspective, relying on archaeological settlement pattern survey,

soil sampling and analysis, all coupled to remote sensing, forest monitoring and hydrological modeling.

In contrast to Caracol, settlement beyond the center is not evenly dispersed but fragmented and clustered around bajo margins, toe slopes and upland landscapes (Burnett et al 2012). Because households are distributed in fragmented clusters throughout the Tikal region, there is less space immediately surrounding each household. However, that leaves large tracts of uninhabited natural landscapes and agricultural areas interspersed between settlement clusters, even directly adjacent to the urban center. Large regional sites are always adjacent to slightly higher densities of households, perhaps illustrating an important intra-regional variation in

settlement densities as related to both cultural and natural networks (Murtha 2015).

There are no long distance causeways, but there is a regionally integrating feature that has been described as a defensive earthwork. While its specific purpose can be debated, it is a clear physical boundary on the landscape (Puleston and Callendar 1967; Webster et al. 2004, 2007 and 2008). Prior to our recent work, the earthwork and large wetland landforms flanking the site center were perceived to be definitive boundaries of Tikal's polity and urban settlement. As described by William Haviland (1981:89):

"[Tikal] was bounded on the east and west by bajo and on the north and south by artificially constructed earthworks running between the bajos. There is a direct and significant
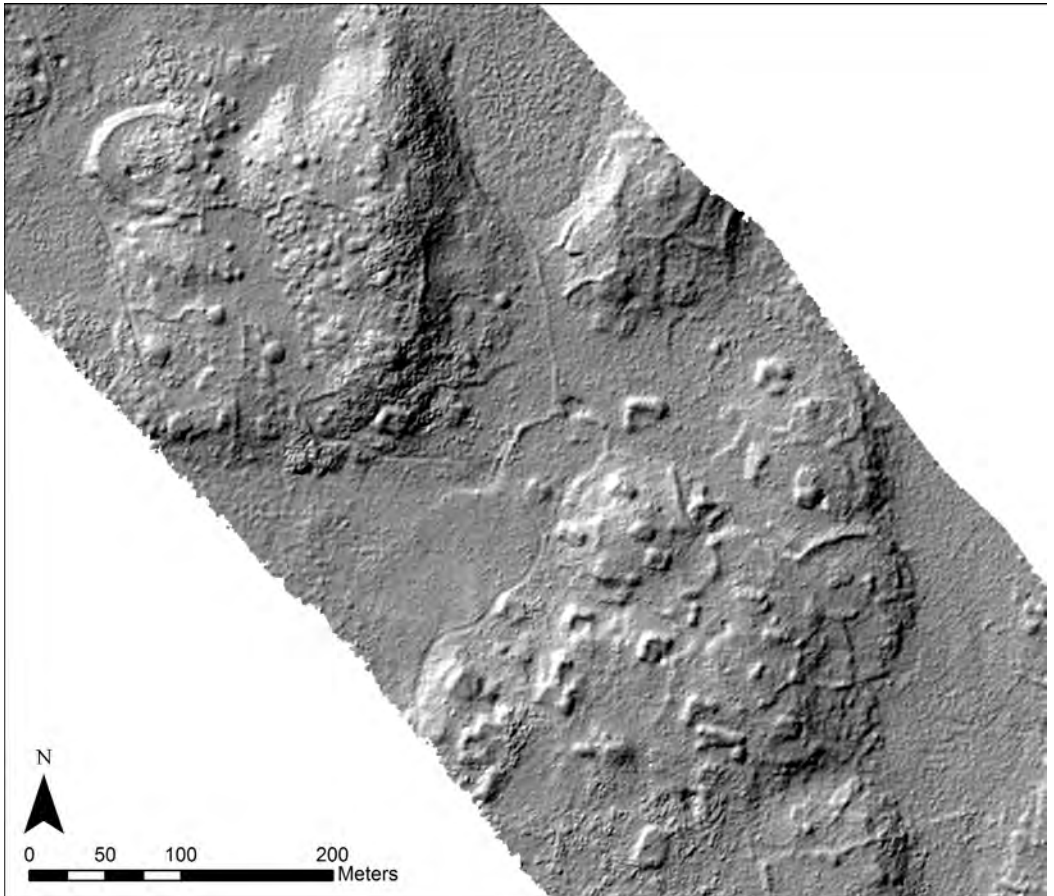

Fig. 2 – Processed image of LiDAR (see Golden et al 2016) revealing intricate patterns of prehistoric settlement and land use far from a known Maya site center

correlation between these two boundaries and settlement density".

But our work in the past 12 years has documented a far more complex and fragmented regional arrangement (Webster et al 2007). The earthwork exhibits significant variance in form from place to place that cannot simply be explained by differences in preservation. It appears that construction was unfinished, and while perhaps planned centrally, the feature was constructed locally. Similar to Caracol's causeways, the earthwork carefully responds to landform and landscape. Simply, the city isn't defined by the boundaries in the same way we would expect western urban centers to be circumscribed. At Tikal, regional communities of households are found in overlapping pockets adjacent to important natural resource areas.

As a city, Tikal is the center of a regional landscape that is best described as an overlapping and negotiated distribution of communities where clear boundaries between the beginning and end of the city were not static and where the line between residential areas and agrarian areas was not clearly defined. Despite substantial evidence erosion, there is no evidence of terracing at Tikal. Recent soil studies (Burnett et al. 2012) confirm other recent work by Scarborough and colleagues (Scarborough et al 2012; Dunning and Beach 2011) that the earliest residents of the Tikal region had the most significant impact on their landscape through erosion. This transformation shifted a rather well distributed natural resource (productive soil) to large contiguous tracts of productive land at the bajo margins, footslopes and toeslopes (Balzotti et al. 2013).

The dense urban core of architecture, the earthworks, densities of households and natural features like the wetlands surrounding Tikal offer a bottom-up perspective about how a complex system (or network) of household integration evolved in the Maya lowlands in response to regional opportunities and limitations. The arrangement of larger local sites, plaza groups and the earthwork (as

incomplete as it is), suggests a pattern of negotiation and perhaps competition between communities within the region and not a system where the region is a one-way supply chain for the dense urban center.

Perhaps a new approach to archaeology of cities in Mesoamerica

Building on this work I've embarked on a new approach to study Maya landscape regionalism borrowing techniques from environmental science for archaeology (Golden et al 2016). Working with earth and environmental scientists studying above ground carbon stocks through remote sensing, we are processing small samples of remote sensing that are broadly distributed and not focused on site centers. Our purpose is to investigate settlement and landscape patterns as related to soil, topography and water (Golden et al 2016). And while our collaborative project is very early on, we have already produced some promising results. The data and samples cover all major physiographic, topographic and edaphic region of the lowlands, stretching from eastern Vera Cruz to the Northern tip of the Yucatan. Small samples and vignettes of landscapes only 300 meters wide, these data may demonstrate the coupled cultural and natural history of Ancient Maya landscapes from a regional perspective (Fig 2).

Summary and Concluding Remarks

It has become popular in archaeology to retroactively analyze the sustainability or resilience of past human settlements. From the perspective I am advocating here, such tests may be less informative than they appear to be. As Puleston (1973:479) wrote, "Surely the brilliance and magnitude of ancient Maya achievements are a reflection of an entire network of stable and harmonious adjustments to the special conditions found in the tropical forest environment." Four decades ago, Ian McHarg (1969) advocated that the key to sustainable planning and design begins

and ends with regional analysis of physical environmental factors. By de-emphasizing demographic models and analyzing regional cultural and natural systems archaeological investigation of ancient cities may provide a more complex, sophisticated and nuanced perspective of sustainability.

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Archaeology For Sustainability

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Abstract: For the contemporary archaeologist, one of the key factors in understanding the historic environment is the interaction between individual people and sites. These experiences, of course, also impact the role of heritage in city planning and new-build architecture, as planners and developers struggle to create space for individual experience within accessibility to a mass audience. These lessons of the individual, as applied in and arising from modern development, can be challenged and made problematic when people, or companies, or even ideas move from context to context, in different cities, countries and times. This paper will examine the heritage experience of the individual at multiple scales. I will ask whether we become conditioned to certain kinds of heritage experience in the places we live and work and what happens to these 'modes of engagement when we expose them to international influences. In collaborative, international study of architecture, archaeology and city planning, should try to think the same, to each know everything, or to take up more agonistic positions and hope to be challenged?

Complicating the term

The ideas in this short paper have arisen over the last year since a discussion at a previous conference on what exactly we mean when we talk about sustainability. The term is a common one, used especially widely over the last decade or so. In archaeology and heritage in particular, the term often appears as the unspecific goal of good planning and development. Even the shallowest dip into available literature, however, will reveal that there are a number of different sustainabilities, each with its own specific meaning, goals and practitioners. It is the premise of this paper that when we examine each of these different kinds of sustainability, we find that they all use archaeology and heritage in distinctly different ways. Can or should archaeologists try to work in such a way that they, as individuals or organisations, contribute to or work with a range of sustainabilities, or can they specialise? Perhaps some forms of sustainability are more compatible with the aims of archaeological investigation than others. Lastly, if different sustainabilities have different practitioners and need different archaeologies, how can we as archaeologists and heritage professionals relate better to the non-archaeologists who will inevitably be closely tied to these varied archaeologies for sustainability?

It is no secret that there are a number of different archaeologies, different heritages, different histories that co-exist through the built environment and our engagement with it through academic research or the planning system. How those different understandings, not mutually exclusive, are used by different people in achieving their aims are the subject of this short paper. Archaeology is both the thing you do and the thing you find; the subject and its objects. It is the study of the relationship between people and things over time and it is the material of the built environment viewed in a particular way. We might also say that 'archaeology is what archaeologists do', but this is only useful up to a point. If we make archaeology the way of thinking and the thing that is thought about, defining it also by the self-identification of its practitioners is too limiting. This is clearest

in the planning system where archaeology forms a physical and legislative baseline with which all must work. Archaeology here is the reason for professional units to record material before its destruction, but may also be part of the jobs of any number of other individuals who we should not perhaps think of as not doing archaeology, purely because they do it in a neighbouring discipline or under a different job title.

What I will do here is explain briefly environmental, social and economic sustainability and how they relate to archaeology. What we will see is that each has a slightly different relationship with the material remains of the past, but also that there is potential for archaeology to take advantage of that diversity to spread our knowledge around and learn about new forms of archaeology in the process.

Archaeology for economic sustainability

Economic sustainability in a development is its ability to keep producing the right sort of income over time. The time scales involved vary according to the kind of development, but in general we might think of a development dedicated to economic sustainability to be one that has been funded through speculative investment and that aims to produce substantial enough income and projected income for it to be used as the basis for securing further investment. At the other end of the scale, economic sustainability might be simply the ability to profit after sale of a site or building.

Increasingly, there is a realisation among developers – equity driven developers especially – that historic buildings, historic areas, and new developments that are sensitive to heritage assets within them or in their vicinity are key to attracting funding, especially, at this point in history, from the Middle and Far East and Russia. This means, in short, that developments aiming for good levels of economic sustainability will commonly have a smaller amount of new

build attached to listed buildings and historic or conservation areas. They will often involve extensive and early public consultation (closely linked with social sustainability) and be broadly 'sympathetic' to an area.

As mentioned above, there are different kinds of developer involved in economic developments; some seeking the kind of long-term return on investment that requires sympathetic development and some working on a simpler purchase-develop-sale-profit model, where instead of the softer kind of approach described earlier we see something more akin to over-development; the maximisation of floor-space for profit. Here, we will concern ourselves only with the former, although the question of whether there are, therefore, distinctly good and bad developers is an interesting one for the private sector to consider.

This kind of economic development makes use of archaeology and heritage in a recognisable way, namely the identification of significant buildings, sites or landscapes and their use in the design and marketing of the new development. This kind of archaeology-heritage is one where information is easily available in advance, through databases like the English National List, and there may be minimal 'new' archaeology to be done (mitigation aside). In essence, the archaeology needed here, for the more purely economic models of development, is that which exists in current legislation and guidance, the identification in advance of development of significance heritage assets and their appropriate treatment through the development process. What has happened to make this distinct and worthy of discussion here, is that certain developers have realised that working with rather than simply within this legislation and guidance is of benefit to them and their aims.

Broadly, this situation is a good one for archaeology and heritage. Not only does it mean heritage assets being well preserved, re-used and incorporated into new developments, but also that the long term 'life'

of heritage assets and historic areas is being considered as a contemporary concern.

Archaeology for social sustainability

The kinds of development that centre on social sustainability are often fairly similar to those driven by long-term economics, but with some subtle differences. We might, for instance, find social sustainability in a developer working with local communities to determine the nature of development, or perhaps even local communities being the driver for development themselves. The latter is, of course, harder to achieve because of a lack of shared financial resources, but Neighbourhood Planning and other similar schemes outside the UK incorporate aspects of both.

Social sustainability is not something archaeology is typically concerned with, it being commonly thought that this is someone else's responsibility. However, there are ways in which archaeology can make a distinct contribution to defining how social sustainability relates to the material of the built environment. I will very briefly outline two here. Firstly, when socially sustainable development is receiving its impetus from local communities there is a need to express the significance of parts of the built environment of that community in ways that may not be available through the usual sources of listing and historic environment records. Here, the way that archaeologists can apply their understanding of the relationship between people and things over time can be invaluable, as we work with people to not only locate and describe what is important to them in the changing places in which they live, but to have the confidence to use this material evidence base to intervene directly in the planning system, whether this is at the early stages as consultation or later as representation to the planning committee. When the impetus is coming from developers, the same knowledge can be sought, but there is an additional space

for archaeological knowledge in using the investigation of spaces and places to begin to define the people-material relations that will be sought out and explored through consultation. There is a tendency to think of 'local people' as a coherent group of people with common concerns and although at one level that will always be correct, a true understanding of how a community relates to its local built environment will always take into account how discrete sub-groups of people relate to specific areas or sites.

Thinking in this way is of benefit to the built environment, partly because of the recognition of new kinds of heritage significance that developers can recognise then try to incorporate into their socially sustainable developments, but also for its potential for a kind of public archaeology wherein archaeological knowledge can be passed on to people in such a way that they can use it autonomously, without archaeologists watching, to intervene in the planning system as they see fit. That these interventions will be evidence-based in a way that can be understood, appreciated and of use to others through the planning system is extremely useful.

Archaeology for environmental sustainability

It is a little tougher to bring in environmental sustainability to a discussion of its relationship to archaeology because of the three kinds of sustainability being discussed here it is perhaps the least archaeological, the furthest away from the concerns of archaeology as currently practised. However, environmental sustainability is a major concern across the world and with a little further thought we can find a distinct role for archaeology therein.

Environmentally sustainable developments are those that seek to only make use of renewable resources, to not cause any pollution, and to do so indefinitely. Essentially, they aim to be net contributors to a healthy environment rather than a cause

of its degradation in any way. This will seem to be a quite unarchaeological concern, but there are ways in. For instance, when we talk about heritage conservation, we are generally concerned with the conservation and preservation of significant historic material as the primary object. When, for instance, that material is a listed building, there can be conflict between the preservation of heritage significance – through the retention of fabric that contributes value to that significance by, for instance, being original – and energy efficiency. Double-glazing could stand in for a number of examples where doing the efficient thing will cause a lowering of the aesthetic value of a building and, by extension, potentially its significance. On a wider landscape scale we might think of the need to create open or green space in an area where none exists. There is clear potential here for development to change the character of an area, which is likely in part historically derived.

I will mention two ways in which archaeology and archaeologists can be involved in this kind of development. Thinking about ourselves, we might give further consideration to what we think heritage conservation and preservation are doing when they are at odds with environmentally friendly practices. Of course, heritage and archaeology are different things and professional archaeologists are rarely directly involved in policy development at the levels required for change, but alongside the scientific and technological development of new environmental technologies we can at least begin to consider those ways in which archaeology might seek to use its knowledge of the relationship between people and things over time to think differently about value and the ways in which it is materially derived. Away from designated assets, or those which would be the subject of conservation or preservation efforts, we can also use archaeological approaches to the contemporary built environment to understand better the nature

of, for instance, urban green space, taking current definitions and redefining them.

Where can archaeological knowledge go?

We can identify a number of different kinds of sustainability and perhaps appreciate that archaeology or archaeologists or archaeological thinking and practice have something to add to the successful practicing of them all.

But it is the premise of this paper that these different kinds of sustainability cannot all happen together, or at least it is unlikely that they will all feature equally in the redevelopment of an existing, complex urban space. In general they all involve different kinds of practitioner. Occasionally, as in the case of the economic sustainability, that practitioner is defined by external needs, but the difference may be as simple as the preferences of individual architects or similar. As well as involving different kinds of practitioner, all of these kinds of development see distinct uses of archaeology and archaeological thinking, not all of which need professional archaeologists to be present. Given the complexity of this situation, different kinds of sustainable development using archaeology and heritage in different ways, requiring different kinds of archaeological thinking and not necessarily needing archaeologists at all, we could easily conclude that effective collaboration across these different kinds of development is impossible. To be a responsible archaeologist within this scenario is not necessarily to be able to work with all practitioners and with all kinds of archaeology. Perhaps instead we need to let go of archaeological knowledge and allow it to spread itself through the planning and development system.

What this means in practice is that instead of seeking to be the professional individuals 'called in' to 'do archaeology' where a need for it arises, perhaps we can teach others to access archaeological knowledge and to undertake archaeological practice in ways

that do not require us to be there. There is a hint of this in some of the socially sustainable models mentioned above. If archaeologists can train non-archaeologists to think archaeologically, independently and for their own ends, as a mission towards social responsibility, can we not also do it for other forms of sustainability? Admittedly, the idea of training non-archaeologists to be more archaeological in pursuit of financial gain is in the realms of the unpalatable, but there are clear benefits to heritage and the built environment in certain kinds of responsible developer producing certain kinds of development. Environmental sustainability is easier to imagine oneself involved in.

Ultimately though, this is a situation in which archaeologists stand to benefit greatly. When we allow non-archaeologists to do archaeology, by their own terms and to their own ends, as long as we have trained them responsibly (and ignoring for now the possibility of nefarious uses of archaeology by the unscrupulous), we will come to understand the historic built environment in new and interesting ways. Seeing our contemporary archaeology reflected back at us is an important way to learn and to develop professional and planning archaeology in ways that could eventually become reflected in academic discussions of the development of archaeological thought too.

Within all of the above planning scenarios, there is room for archaeology to continue to practice as it does already, with scope for development and expansion as described. But if we can let go of some of the responsibility we feel to the entirety of the historic environment, so much so that we have to be the people responsible for it all and non-archaeologists 'do it wrong' more often than not, then perhaps we can collaborate effectively. It won't be in business terms, with individual organisations working widely and being responsible for inputs to many different kinds of scheme, but in working as part of a wider world of archaeologists and non-archaeologists, all practicing

forms of archaeology and making use of archaeological thought with a goal of making sustainable, responsible developments.

This is not merely suggesting that archaeologist should be doing different things within the planning system; many of these different things may already have their own established practitioners. Neither is it simply about passing full responsibility to others; professional archaeologists are a key part of the transmission and development of archaeological thought and practice, of course. Archaeology is a big thing, and there's a lot of it, and we can afford to work collaboratively with people who do archaeology in different ways to us. And archaeology it most certainly is. Although there are no detailed case studies presented here, archaeology is still archaeology if the person doing it doesn't call themselves an archaeologist and there are ways of thinking and working that are distinctly archaeological regardless of whether they're being carried out by a master-planner or an architect.

Is the future about success or failure?

At the World Archaeological Congress in Kyoto, after part of a session full of people talking positively about sustainability of different kinds, Cornelius Holtorf of Linneas University raised his hand and asked us whether archaeology's relationship with sustainability isn't really about failure. Is it, he asked, more for archaeology to be ready to react to the failure of sustainability than to try to be part of it? It's worth touching on this to end this short paper because it is right that we don't take the good we can do with archaeology for granted.

Certainly, the traditional sites of archaeology embody failures of vision in different ways; the falling out of use, the death, the breaking or objects. Professional archaeology too operates around the margins of failure, at least insofar as problems keep being found in the built environment and addressed with more, newer, different development that

requires archaeological intervention as part of its process.

In our unique archaeological understandings of the contemporary built environment, we are clearly able to do something when efforts towards sustainability fail. As with any other archaeological site we can work out what happened and why, and we can do this in terms of material signatures but also, it being contemporary archaeology, in terms of the relationships between people and things. In understanding these failures archaeologically, we can begin to direct the responses to failure or, if we are so inclined, to assign blame. It is all part of the contemporary archaeological mission to understand the human-material transition from today to tomorrow.

Cornelius was right to raise this, certainly, but it is not a counter-point to what I have outlined above. There is room here for archaeologists to both work for sustainability, disperse their own responsibility and expertise, and to plan to intervene in the failure of sustainable visions. What is key, what we need to bear in mind to stay sane, is that archaeological organisations and individual archaeologists cannot do anything. We cannot and should not try to collaborate with everyone. What any of us can do as an archaeologist who is also a responsible citizen is to do our best to let go of a little bit of authority and let others do things that look a little bit like we do. They will do it differently, but it is there that we learn. And, as Cornelius reminds us, we will all come together again to address the inevitability that the future will not be as we imagine today.

3D Florence representation starting from historical maps: Yesterday's eyes, today's tools

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Abstract: The effectiveness of an urban representation depends largely on the techniques used for its realization. To obtain an adequate level of quality you need to choose an appropriate setting of the work, which also put into account a non-superficial reflection on graphical methods and tools to be used. For these reasons, the objective of the research is to define a valid method to create urban views, effective scientifically and visually. This method is based on the study principles and expressive graphic rules, placed in a summary table, through the analysis of five historical maps that changed the way of depicting the city. The five urban representations are: *Veduta della Catena* (Francesco Rosselli, about 1472); *Venetie MD* (Jacopo de' Barbari, 1500); *Nova pulcherrimae civitatis Florentiae topographia accuratissime delineata* (Stefano Bonsignori, 1584); *Plan de Turgot* (Louis Brètez, 1739); *Nuova pianta di Roma* (Giovanni Battista Nolli, 1748).
The identified graphic rules were subsequently exploited through the use of modern software. In our test we chosen to use as the main software Esri CityEngine. This procedural modelling software is based on an own programming language that it allows, through the insertion of parameters (like building's height, urban density or roof's inclination), the automatic 3D modelling of the city. It is usually used for 3D representations and urban analysis of the cities. Furthermore, it has often been used in the virtual archaeology. It has been used, for example, in the historic reconstruction of famous cities, like Rome, Pompei and Bologna.
In fact, we can create a hypothetical city or, through the use of vector data (shapefile) or raster maps, we can rebuild a real (ancient or modern) city.
The proposed method, with the aim of assessing its validity, was used to produce some views of the 3D model of the Florence's historical centre, realized with modern tools but with ancient pattern rules.

Keywords: Cartography, Urban Representations, Urban Analysis, 3D Modelling, Virtual Archaeology

Introduction

The objective of the research is to define a valid method to create urban views, effective scientifically and visually. For these reasons, we have chosen 5 maps that have changed the way of depicting the city, to identify the graphic rules thanks to which have become so important, in order to study them, to insert them in a summary table and, finally, using them for our representation.
At the same time we have chosen as an urban representation technique the procedural modelling, through the use of the software called Esri CityEngine. Trough the union of these two paths we created the procedural representation of the historical centre of Florence.

Five maps that have changed the way of representing the city.

The urban iconography since the Middle Ages

Over the centuries the method to represent the city has changed dramatically, evolving according to the known techniques for surveying, for the design and for the needs of the historical moment.

Medieval iconography symbolic

Initially, cities in maps were only localized with the name. Afterwards, they were represented through the design of the walls, always using the octagonal or hexagonal shape (and not the real one), inside which were placed, randomly, the most important buildings. In some cases, cities were depicted in proper works of art (like frescoes and paintings), with scenes of daily life related to the socio-cultural situation of the place (Fig. 1).

perceived it, when they were coming from the sea. Even this type of representation was realized without any survey becoming only a pictorial and indicative representation of the cities (Fig. 2).

Perspective map

Over the years, to allow a more comprehensive and fair view of the city, it was raised the point of view adopted for images. Initially it was the real one (as Monte Oliveto in the *"perspective*

Fig. 1 – Ambrogio Lorenzetti, 1338-1339: The allegory of good and bad government (Copyryght: www.clubpittori.it)

It is evident that, in this period, the purpose of urban iconography is to give an ideal representation of the city, and not a precise and real description, through the design of the most symbolic and popular elements.

Urban skyline

The birth of the "urban skyline" took place in northern Europe thanks to the sailors, who began to draw the image of the city how they

view" della Catena), it later became imaginary and hypothetical ("at bird's eye"), thus creating the "perspective map" (Fig. 3).

This happened because: *"The observed ways known and practiced till that time were prove deficient. Sticking to a preset model compromises the globality of the true; the map and the plan are confined in two-dimensionality, the profile in the evidence of the first floor"* (Nuti, 1996).

Fig. 2 – Michael Wolgemut & Wilhelm Pleydennwurff, 1493: Venice (Copyright: commons.wikimedia.org)

Icnographic plan in vertical projection

During the eighteenth century, due to the new requirements of organization and management of cities, it took place the transition from the "perspective map" (considered, by now, just a work of art) to "icnographic plan in vertical projection", with the order to provide a real scientific and administrative document (Fig. 4).

Veduta della Catena by Francesco Rosselli, about 1472

The work was at first attributed to Venetian author Jacopo de' Barbari; the elaborate paternity is now acknowledged to Francesco Rosselli, Florentine painter and mapmaker. From the original view it was obtained, a few years later, a woodcut xylograph in six sheets (for a total size of 58 x 134 cm) from Lucantonio Uberti. It was at this time that the view was named "della Catena", due to the frame depicting a chain closed from a lock near the left corner of the map. In addition to the outline, it seems that the engraver has also added the figure of the artist in the lower right corner. The latter, with pencil and a blank sheet of paper, is portrayed as he prepares to draw the view (you can see the sketch of the walls). This feature was typical of the Nordic representations and especially Flemish, where it was thought that the presence of a designer on paper (often portraying the author himself) could help to identify and emphasize the main point of view (in this case the tower of the church of *Monte Oliveto*). Since it was adopted a real point of view, it is considered a "perspective view" and not a "perspective map" (Fig.5).

Inside the picture it is interesting to note some special details, crucial to the dating of the view, for example:

- The square-shaped fortress of Porta San Niccolo (then demolished as a result of Poggi Plan for the modernization of the city in 1865);
- the façade, not yet in the Renaissance

Fig. 3 – Cornelis Anthonisz, 1544: Perspective map of Amsterdam (Copyright: commons.wikimedia.org)

Fig. 4 – Francesco Vallardi Editore from Atlante Geografico dell'Italia, 1868: Map of the city of Bologna (Copyright: www.danielesquaglia.it)

Fig. 5 - Francesco Rosselli, about 1472: Veduta della Catena (Copyright: www.ornamentalist.net)

style (finished in 1863) of the *Basilica* of Santa Croce;
- the ancient façade of Santa Maria del Fiore, dismantled in 1589;

- Palazzo Pitti, still in its original shape with the three entrance doors on the ground floor and the seven windows in the two upper floors;
- the column of the Dovizia statue by Donatello, made in 1431 and collapsed in 1721, which stands in the middle of the city;
- the ball and the cross on the dome of the Duomo, placed in 1471;
- the façade, completed in 1470, of the Basilica of Santa Maria Novella;
- the absence of the domes of the church of Santo Spirito and of Palazzo Strozzi (completed respectively in 1482 and in 1489).

All these elements, especially the last three, have allowed us to date the work in a period between 1470 and 1482 (presumably 1472).

Graphic rules

Analysing the work by a technical-chart view, you can see a number of special details and typical features, such as the representation:
- of scenes from everyday life just outside the walls (boatmen, fishermen, a muleteer, etc.);
- of shades through fine and parallel lines (hatchings), with increasing frequency in the more shaded areas (being the light source in the map from the left);
- of hills and plains through parallel curved lines (hills) or more straight perpendicular lines (plain);
- of the Arno river, through small parallel wavy lines to the banks, in order to highlight the direction of the watercourse;
- in Florentine-style, of the folds of the clothes and the trees and, in the Venetian style, of the hatching realized with a long fine and curved strokes (this feature, along with toponymy, was one of the reasons why it was thought for a long time that the author was the Venetian de' Barbari);
- of walls of the city, with the simplified form of perimeter walls, with all the towers and gates;

- of the toponymy of all the Doors, the four bridges (Carraia, Holy Trinity, Old Bridge, *alle Grazie*), and of some small areas (such as, for example, the Sardigna, intended for storage of waste) and convents, hospitals, churches and the most important buildings both inside and outside the walls;
- of private buildings, such as:
- "[...] *Inarticulate agglomerations of stylized houses, like small cubes*" (Schulz, 1990).
- Some of these walls are dotted with points and/or very short lines, showing a typical trait of Florentine depictions. The warping of the roof is highlighted through continuous parallel lines;
- of buildings of greater importance: off-scale, more detailed and, in some cases,

Venetie MD by Jacopo de' Barbari, 1500

The first city represented using the method of the "perspective map" was Venice, shown in its entirety (including the islands) in the Venetie MD map, by the painter Jacopo de' Barbari in 1500 (Fig. 6).

Initially conceived as a wall paper, it was finally engraved on six pear woods of about 66 x 99 cm each, for a total size of 135 x 282 cm.

The de' Barbari's view was probably the first paper commissioned by a private contractor, the German publisher Anton Kolb.

Within the design the figures stand out, positioned on the main axis of the city, as long as the deities Mercury (God of commerce) and Neptune (God of the sea).

Fig. 6 – Jacopo de' Barbari, 1500: Venetie MD (Copyright: ww.tridente.it)

The first, holding a caduceus (present in other paintings of de' Barbari who was for this called "Master of the Caduceus"), is surrounded by clouds and by the writing "Mercurius pre ceteris huic fauste emporiis illustrate" ("I, Mercury, shine propitious on this emporium which passeth all others"), while the second, riding on a triton, has an inscription in a sign stuck to his trident, which reads *"Aequora tuens portu resideo hic Neptunus"* ("I, Neptune, live here keeping calm the waters in this port"). The purpose of the press, then, would seem an exaltation of the Venetian Republic, especially its maritime and commercial vocation.

The fictive point of observation adopted is over the island of San Clemente.

Graphic rules

Analysing the work by a technical-chart view, we can see a number of special details and typical features, such as the representation:

- of everyday scenes in coastal areas, in the canals and in the sea.
- Of shades through fine and parallel lines (hatchings) with increasing frequency in the more shaded areas, being the light source from roughly from the lower-right corner of the map;
- of mountains (the Alps): "*[...] As a single, unbroken, mountain range, unified morphologically and from a pictorial point of view"* (Schulz 1990).
- In the underlying lowland areas it is outlined the morphology of the terrain and of the coast with light shading, and, in addition, are roughly displayed without many details the various cities (Mestre, Treviso, etc.), trees and other isolated buildings;
- of the canals and the sea through long lines or by small symbols in a semicircle;
- emphasized of the main pedestrian routes, thereby rendered visible, even though they were not in fact from the adopted point of view. In Piazza San Marco is also reported the design of the

flooring;
- of toponymy in Venetian language of all the islands, the winds, the other towns and all the churches;
- of the trees, the morphology of the fields (always with the shading) and the type of use of the soil;
- the main elements of street furniture;
- fairly standardized of the façades with real shapes and volumes of almost all the private buildings. The warping of the roofs is just highlighted with a light and discontinuous shading directed by the slope of the cover;
- of the most important buildings, minutely detailed and, in some cases, even emphasized.
- of allegorical figures with a strong figurative meaning, such as the aforementioned Mercury and Neptune and the eight heads of *puttis* symbolizing the principle winds.

Nova pulcherrimae civitatis Florentiae topographia accuratissime delineata by Stefano Bonsignori, 1584

For the realization of his map, the monk Stefano Bonsignori used the Veduta della Catena as a reference. For its representation, in fact, the author decided to adopt as place of observation the same Monte Oliveto:

"[...] *The traditional point of view of the Florentine iconographic tradition, however definitely raising it along the vertical: in this way it is obtained an axonometric representation of the city, integrated, as one moves away from the central board, by a series of perspective corrections*" (De Seta 2011).

Another analogy with the previous work is the presence, within the drawing, of the author's figure, sitting on a rock with the measuring instrument in hand. However, unlike the *Veduta della Catena*, the designer is not placed on the site of the main point of view, as it was usual in the representations of the Flemish tradition.

On the small hill to the left of the one where it is placed the figure depicting the Monaco, you can see the arms of the order Olivetano, a cross with two olive branches, one of which is twisted to form an S and a B (for Stefano Bonsignori).

The *Nova pulcherrimae civitatis Florentiae topographia accuratissime delineata* consists of 9 sheets for a total size of 125 x 138 cm, it was engraved in copper by the Florentine goldsmith Bonaventura Billocardi. The map was dedicated to Francesco de' Medici, with the aim of highlighting, and so enabling him to observe, all the works and embellishments made by his father Cosimo I in previous years (Fig. 7)

Fig.7 - Stefano Bonsignori, 1584: Nova pulcherrimae civitatis Florentiae topographia accuratissime delineata (Copyright: commons.wikimedia.org)

Graphic rules

Analysing the work by a technical-chart view, you can see a number of special details and typical features, such as the representation:

*   of shade through fine and parallel lines (hatchings), increasing the frequency in the more shaded areas, being the light source in the map from the left;
*   of the wind rose, placed in the upper left corner, indicating the North;
*   of the hilly area through light shading, to highlight the morphology and contour of the terrain;
*   of lowland through the absence of shading (being the base completely white) and with the detailed representation of agricultural warping mesh;
*   of the Arno river through small wavy lines parallel to the banks, more densely at the points where the river bed narrows, so as to highlight the direction and pressure of the stream;
*   of the city walls with all the towers and gates;
*   of the Fortezza da Basso, both internally and externally, accompanied by an index of 17 numerical references indicating the different parts and places;
*   of a numerical index of 225 entries divided into five columns, located at the lower right, attributing the "notable points" of Florence,

related to buildings placed in view by way of scattered numbers in the map;
*   of the main elements of street furniture;
*   of the private urban fabric through a homogeneous drawing of buildings and no characterizations and special details. The warping of the roofs is highlighted with a directional shading according to the slope of the roof;
*   of buildings of greater importance: off-scale, much more detailed and, in some cases, rotated respect to the surrounding urban fabric, so as to be visible from the front. A striking example is the Duomo, visibly drawn out of scale and in a modified isometric projection to allow a general and complete view.

Plan de Turgot by Louis Brètez, 1739

The most famous representation of Paris is probably the Plan de Paris, view *"a vol d'oiseau"*, by Louis Brétez (Fig. 8).

The head of the municipality of Paris, the marquis Michel-Etienne Turgot, realized that the French capital did not have urban maps and views complete and qualitatively satisfying, as for other major European cities. This is why the Parisian officials decided to commission a "portrait of the city" in order

to celebrate and exalt its beauty and power. Not with an elaborate geometric and scientific nature, rather a play and propaganda of Paris. In January of 1734 Turgot commissioned to designer Louis Brètez the realization of the view. Because of Brètez's death (in 1738), the view was then finished in 1739 by the engraver Claude Lucas, who added to the original design the decorations and inscriptions.

The title is written in a box, surrounded by a small allegory of the city of Paris, located at the bottom centre of the map. The complete work, considered by many experts as the last real urban "perspective map", was engraved on 20 copper planches (about 50 x 80 cm each), on scale of 1: 400, for a total size of 250.5 x 322.5 cm.

Subsequently, the map became famous not with its original name, but as *"Plan de Turgot"*, from the commissioner of the work.

Graphic rules

Analysing the work by a technical-chart view, you can see a number of special details and typical features, such as the representation:
- of shade through very fine and parallel vertical strokes (hatchings), with increasing frequency in more shadowy areas, being the light source in the paper from the right;
- of all the main mills present on the territory;
- of the wind rose, placed near the upper right corner;
- of the plain outside of the city through the absence of shadows and through a detailed depiction of agricultural warping mesh (trying to illustrate the various types of culture);
- of the Seine river through wavy lines parallel to the banks, with darker shades closer to the shore;
- of the toponymy of all the streets, squares, bridges, the Seine River and its islands and river ports, palaces and important monuments, churches and suburbs;
- of detailed design of gardens, parks and other crops;
- of the main elements of street furniture;
- of private urban fabric through a homogeneous and standardized drawing of buildings, with no particular characterization. The warping of the roofs is highlighted through continuous parallel lines;
- of the buildings of greater importance through a high level of detail.

Nuova pianta di Roma by Giovanni Battista Nolli, 1748

In 1736 it was commissioned to Giovanni Battista Nolli the construction of a new map in Rome, which could be used to understand and analyse both the current city and the ancient one.

The work includes the large map (printed on 12 sheets in scale 1:2,910 for a total size of 176 x 208.5 cm) with annexed 4 sheets of indices (Fig. 5); the small map (scale 1:10,950); the map of *ancient Rome* (reworked version of the 1551 map by Leonardo Bufalini); the title page and a Notice to the reader.

In the first illustration, located at the bottom left, there are many ruins of imperial monuments (Colosseum, some temples, obelisks) and the She-wolf sculpture with twins reduced in bad condition. These items should indicate the ending already occurred of the style and culture of secular Rome, which continues today to exist only through the memory brought by these monuments.

Fig. 8 - Louis Brètez, 1739: Plan de Turgot (Copyright: commons.wikimedia.org)

Fig. 9 – Giovanni Battista Nolli, 1748: Nuova pianta di Roma (Copyright: placesjournal.org)

To remember, however, the past great glory of the city, a symbol of an immortal and victorious Rome on time despite all the changes, it is represented the goddess Roma with her sword and laurel horn in very good conditions, almost contrasting the poor state of the rest of the scene.

The second picture, instead, wanted to showcase the magnificence, strength and splendour of Christian Rome, portraying impressive new civic cultural (Capitol) and religious (St. Peter's dome and façade of St. John's Cathedral) monuments.

The fact that both illustrations are the corners of the card is a feature of the transition that takes place at the beginning of the eighteenth century between the medieval and baroque cartography to the Enlightenment.

In the latter case, in fact, because of the Enlightenment goals of a precise and accurate representation of reality (or even the celebration of order over chaos, of reason against superstition), it tends more and more, as time goes by, to clearly separate the technical information part from the ornamental one.

All those decorative and allegorical characters inside of past maps are moved to the edge of the cards, often integrated into the spaces dedicated to titles, dedications and legends.

In addition, to the "perspective map" is preferred the "iconographic plan vertical projection", of which the *Nuova mappa di Roma* was one of the first and most important pieces of history.

The author was able to obtain all the map of the churches and buildings thanks to the intervention of Prospero Lambertini from Bologna, that is Pope Benedict XIV (also known as the "Pope of the intellectuals"), which was

in fact mentioned in the dedications found in various parts of the work.

From a purely graphic point of view, the paper depicts the private buildings through a dark grey pattern (with horizontal dashed lines) and the churches, palaces and their internal spaces instead in vertical projection, highlighting thus the spatial relationships between public and private.

The graphic output plan for buildings and public spaces is the most distinctive and innovative aspect of the work, as it shows a conception of the public interest in urban land-definition (uncommon until then) through the exact distinction its parts and, potentially, its functions, stressing that the same interest and, consequently, public space had become one of the cornerstones of that century.

With this type of urban representation in "light/dark", Nolli will become a precursor of the analytic and interpretative technique of the "figure/ground" ("full/empty" in Italian). This technique provides a graphic reproduction of the city by drawing in black its enclosed or full spaces (built-up and/or private areas) and in white those open or empty (public and/or open areas).

Graphic rules

Analysing the work by a technical-chart view, you can see a number of special details and typical features, such as the representation:

- of shade through fine and parallel lines (hatchings) of homogeneous frequency, being the light source from above;
- of the wind rose, inside the city walls, indicating the magnetic North;
- the plains outside the city through the absence of shadows and through a detailed depiction of agricultural mesh warping (differentiating the vineyards from other crops);
- of the detailed design of the gardens, vineyards and other crops;
- of the Tiber River through wavy lines parallel to the banks, more densely closer to the shore;

- of the toponymy of all the streets and the main squares, the Tiber with its islands, the hills, the villas with their gardens, the vineyards, buildings and public works, the city wall with its Doors and the fourteen districts;
- of all the elements of street furniture;
- of the partially disappeared ancient monuments;
- of private buildings through a dense horizontal patterning;
- planimetric of the buildings and public spaces, with a level of detail based on importance.

Summary table of the identified graphic representation rules

- From the study of the 5 historical maps were extrapolated graphic rules, many of which were then used for the representation of the historical centre of Florence.
- The identified rules have been divided into three main groups:
  - technical-visual elements (type, point of view, deformations);
  - information elements (toponymy, shading, morphology, suburban areas, water elements, gardens, street furniture, roads, private and public buildings, monuments);
  - symbolic elements (scenes of life, allegorical figures, legends).
- For each category were described the principles and the methods using the shell by the various maps, so as to have a schedule of the various graphic rules.

Modern techniques of urban representation

3D modelling

The term 3D modelling indicates the computer process to define and create three-dimensionally, in a virtual space, any geometric shape. The 3D models, in order to make perfect and realistic end results, usually need to be supplemented with additional

steps, such as the assignment of materials or the inclusion of lighting effects, or real "simulation techniques" (rendering).

In general it can be summed up the 3D modelling process into three stages, namely:

- planning: selecting and preparing items and essential data for the creation of the 3D model, like two-dimensional drawings, shapefile, sketches, photographs;
- modelling: the actual generation of the model, through various steps;
- finishing: assignment of texturing (materials) and lightning (lights), to perform the rendering of the final product.

Depending on the kind of the final product, are provided two different types of modelling:

- organic modelling: it is used to reproduce "living creatures" (humans, animals) or the "natural" ones (plants, trees, rocks, etc.);
- geometric modelling: it is used for the realization of "artificial objects" (buildings, roads, mechanical parts, etc.), or objects of more rigid form.

Based on the characteristics of the final product, it is possible to choose between three different modelling methodologies:

- manual or interactive modelling: it creates 3D models through a series of commands that can be given only by the user himself;
- modelling by data from real models: it creates three-dimensional models by acquiring data and information (usually form and colour) directly from the objects to be reproduced digitally, using a number of methods and tools;
- procedural modelling: it generates 3D models automatically or semi-automatically, based on parameters, editable by the user as well as by preset probabilistic processes.

Procedural modelling

Procedural modelling is the process after which, based on algorithms that contain graphics and geometric rules, the software automatically generates the three-dimensional model. With this method, compared to the manual operation, it is possible to significantly lower the time required for the realization of the final product, while keeping a good likelihood and precision. It is particularly suitable, therefore, to generate models complex and large in size, composed of repeated self-similar elements, usually randomly, repeatedly in space.

Esri CityEngine

This program stems from the *CityEngine System*, conceived by Pascal Mueller and Yoav H. I. Parish, who presented it in their paper "Procedural modelling of the cities" in 2001.

This text describes the various stages and procedures to be performed to create a generic virtual city.

Other than to create hypothetical cities, lately this software is been used mainly for the entertainment and Virtual Archaeology, like the historical reconstructions of cities (Fig. 10).

In the CityEngine Graphical User Interface (GUI), there are a *Navigator* (where can be found all the necessary files to modelling), an *Inspector* (where you can view and edit the information and the object parameters), a *Viewport* (in which it is visible the model in processing), the exploration windows *Scene* (in which are listed and selectable all the various layers within the scene) and *Rule* (where the geometric construction rules of the models are present, in the form of alphanumeric language and diagrams, respectively visible in the textual and visual screens). The software is based on a computer language called *CGA shape* (in which CGA stands for *Computer Generated Architecture*), which consists of a series of alphanumeric instructions that the program will use to automatically generate the models.

Procedural Representation of the historical centre of Florence

Building process for 3D modelling of the Florence's historical centre

To make a precise and accurate 3D modelling of the city of Florence has been necessary to use

cartographic files (scale 1:2000) with useful attributes to modelling. Three-dimensional modelling of buildings and roads was carried out for only the historical centre, identified as the area within the Florentine avenues.

To represent the morphology of the land it was decided, instead of using shadows as in historical maps, to take advantage of the software's ability to develop a three-dimensional model of the land equal to the reality, being based on quoted points and contour lines. Depicting the areas outside the city centre (agricultural knits and other buildings), the design of parks and gardens and the Arno was assigned to the orthophotographs DTM (Digital Terrain Model).

The trees were represented in a standardized way, as a rule, choosing one of the most common types of trees in the Tuscan capital, which is the *Platanus occidentalis*.

To roads it has been decided to assign the same colour tone as used in all the cards analysed in which they were visible, the white. The street

Fig. 10 – Historical reconstruction of Medieval Bologna (Copyright: www.cineca.it)

furniture (with the exception of three statues in *Piazza Santissima Annunziata*), as well as toponymy, because of time and technical reasons, was not reported in the 3D model.

In the representation of the buildings of the "minor urban fabric" it has been followed the principle of the five cards, so all the buildings were depicted graphically in a standardized way with just a few architectural elements characteristic of the listed façades. To do this, they were selected two typical façades in the centre of Florence, from which the textures

Fig. 11 - Views of the 3D model of the Florence's historical centre

have been obtained and then repetitively assigned randomly to solid faces. For the roofs only one type of hedge and a single texture used, that highlighted the warping of the roofs.

The height is the real one, because for the extrusion it was used the information in the table attributed of the shapefile (Fig. 11).

For public and most important buildings they were used ready-detailed models, so as to distinguish them from the rest of the urban fabric. Unlike the analysed papers, however, they were not rotated nor varied of scale.

Considerations about graphic result of the 3D model

From the three-dimensional model made some images have been obtained, then put qualitatively in comparison with the maps. For example, by comparing the view of the Bonsignori Cathedral with that obtained from the 3D model, it can be stated that although the second image is more realistic and geometrically correct, the first is in any case a more "real representation" of the city as, probably for the greater subjectivity in its realization, it manages to portray the human perception of space (Fig. 12).

This is also due to some technical limitations of the software used and, especially, the time and resources available. The excellent results obtained by the authors of the study are due to years of work and significant investments for the time, often with the support of specialists in the various phases of the work (documentation, surveys, etc.).

The model produced, considering the short time it took, is still interesting for the accuracy of its information, and for the visual effect obtained. The software also offers additional potential that would enable a significant improvement of the final result.

For example, CityEngine allows procedural modelling of façades through a grid system, by inserting typical constructive rules of Florence.

Fig. 12 - View of the Cathedral of Santa Maria del Fiore in the Stefano Bonsignori's map and in the 3D model

Therefore, the model built is not a final product but a starting point. With adequate time and tools, it will be possible to set up a quality equivalent to the five historical maps, thus demonstrating that the defined method, with which you can rework with a modern twist graphical representation rules of the past, is a good method.

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Digital recording and archaeology at Knole
'More town than house' (Virginia Woolf, Orlando 1928)

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Abstract: This short paper will present the techniques used and results of the recent MOLA metric survey undertaken at Knole in Sevenoaks in Kent, one of England's largest country houses, on behalf of the National Trust. Of this vast property around thirty percent of the spaces have now been accurately surveyed, helping us to better understand the development and complexity of the site. In addition to its archaeological and historical value, this data is also being actively used to help inform property management decisions and conservation aims.

Keywords: Digital survey, Built Heritage, conservation management, facilities management, collections management.

Knole: historic background

Knole, near Sevenoaks in Kent, is one of the largest and most complex historic mansions in England, its current form having evolved over many centuries. Early in the 17th century, Thomas Sackville, the 1st Earl of Dorset, transformed the late-medieval archbishop's palace, into a Renaissance mansion. In the late 17th century, the 6th Earl, as Lord Chamberlain, acquired an unparalleled collection of Stuart furniture and textiles (Sackville-West 1998). Now belonging to the National Trust, part of Knole is still lived in by the Sackville-West family. Since acquisition by the National Trust in 1946, parts of the building complex and grounds have been open to the public, and some areas have remained private, although parts of Knole have been 'on show' since the early 19th century. After acquisition the National Trust continued to show only those the rooms that had historically been open to the public over the preceding two centuries. The National Trust's current conservation programme has a Project budget of £19.4

million which includes £7.75 million from the Heritage Lottery Fund. The Project is due to be completed in 2018. This phase of work was preceded by a £3 million programme of urgent repairs ('Knole in Flux') from 2011-13. . The objectives of the conservation projects are to secure the building envelope, improve existing showrooms, conserve the collections and to open new areas to the public. This includes converting the medieval Barn into a conservation studio, turning the Hayloft into a new education room, and improving existing tea room facilities in the Brewhouse.

Existing survey

Prior to MOLA starting survey work at Knole in 2012, several earlier surveys (by architects and commercial survey companies) had been carried out, partially recording the building complex, and using different techniques, to varying levels of resolution and accuracy. Methods used included rectified photographic elevations, laser-scans and CAD plans. One

Fig. 1 - Knole House viewed from the north (© MOLA)

initial objective of the new MOLA survey work was to evaluate the potential reuse and integration of the existing survey data. In addition to metric survey, MOLA's built heritage archaeologists were commissioned to carry out extensive recording and analysis of the timber structures and roof timbers of the east and south wings, during conservation work. During this phase, MOLA surveyors established an accurate permanent control network around the whole house, tied into the Ordnance Survey National Grid using GPS, and then carried out some preliminary survey around the house exterior, against which to test the accuracy of existing survey plans. It soon became evident that these were not sufficiently accurate for the forthcoming refurbishment and conservation works at Knole, and that only some of the existing data (for example laser-scan data) could be directly integrated with the new MOLA survey, whereas the existing plan data could only be used indirectly, in order to help inform the survey strategy, and identify areas which required further understanding.

Survey methodology

The daunting scale and complexity of structures of Knole, mean that metric survey, and creating plan and elevation data of the complex will always be a compromise between cost, accuracy, and covering prioritized areas.

Earlier surveys had been required to cover the whole of the complex in plan, and were most probably created from hand measurements taken on site, and then later orthogonally reconstructed in CAD, in order to fulfil the brief cost effectively, but with the minimum of required accuracy. Use of this orthogonal reconstruction method needs to be assessed against the individual requirements, and objectives of the current survey, and this technique of reconstructed, rather than 'as built' survey works best when applied to modern orthogonal buildings. Due to its extremely long and gradual historic evolution, Knole is an especially non-orthogonal building, consequently the existing Knole plans created using this method highlighted many problem

areas where walls appeared extra thick or spaces didn't fit together satisfactorily, and it was clear that new survey needed to accurately capture the irregularities of walls and spaces, and their true relationship to each other, through implementing a survey control framework throughout the complex, and then using it to carry out a much more accurate and integrated 3D survey.

Primarily for reasons of cost, and because of the existence of laser-scan survey data for some of the most complex rooms, it was decided that highly selective 3D total station survey was the best methodology to adopt, for most of the surveyed areas, in order to produce the CAD elevations and plans required by the National Trust and their contractors for the refurbishment programme. The challenges of carrying out survey with zero impact to the historic interiors and collections were considerable, in addition to which, some showrooms had to be surveyed whilst still open to the public. Laser-scanning everything was considered, but due to the complicated nature of the interiors, and the necessarily low-level lighting (for textile conservation) it was decided that it would be more be more efficient in terms of overall time, and as an archaeological recording methodology, to make the important interpretive decisions of what and how to represent, whilst surveying on site. This method prioritized highly selective data capture at source, on site by total station, rather than having to make these critical interpretations later back in the office, dealing with large volumes of laser-scan derived point-clouds, with low-lit RGB values, and having to refer constantly to supplementary photography to comprehend details. The selective survey method also reduced the time needed off site to produce the final products (2D plans and elevations).

Most of the MOLA survey work was carried out between February and June 2013, and involved creating a 3D record of forty six spaces, including showrooms, attics and private rooms. The majority of the work was on the first and second floors, with only the

Fig. 2 - Total Station survey traversing in the vestibule to the Brown Gallery, 1st Floor (© MOLA)

Great Hall, Screens Passage and Kitchen Lobby surveyed at ground floor level. All of the rooms in the project were recorded in plan, and the majority of them also included wall elevations. Rooms with moulded plaster ceilings also required reflected ceiling plans to be created.

In order to create a highly accurate record within a reasonable time frame and at an affordable cost, selected areas of the whole complex were surveyed. Prioritization was based on the spaces surveyed being existing showrooms, spaces intended to be newly opened up to the public, and any other spaces affected by the enabling works for the conservation and refurbishment programme. Since the completion of the main body of work, (Fig. 3), MOLA has carried out further survey work in additional areas, as the need has arisen, so that currently approximately thirty percent of the building complex has been recorded.
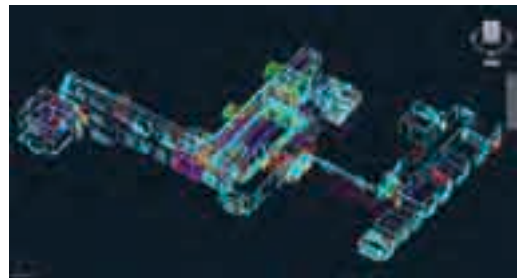

Fig. 3 - CAD wireframe showing all of the raw 3D vector data recorded by total station during the main four months of work (© MOLA)

Additional survey methods

Subsequent work undertaken by MOLA surveyors at Knole has involved different methods of data capture, sometimes in order to record the same spaces, but in different states, as they were revealed during the enabling works of the conservation and refurbishment programme. For example, the Ballroom has been resurveyed by laser scanning, following the removal of the early 17th century wall panels, (Fig. 4), in order to record in detail the exposed underlying medieval masonry and timber superstructure, , which would have formed part of Archbishop Bourchier's solar (SACKVILLE-WEST 1998).

Fig. 4 - Laser scanning of Ballroom during enabling works: removed panelling can be seen stored on the floor and exposed stonework of late medieval solar walls (© MOLA)

Ortho-photography was used to record the elevations of the walls enclosing the Brewhouse Yard, the images being rectified using surveyed 3D targets to produce detailed elevation drawings. Drainage groundworks In Stable Court required a 'stone by stone' detail plan to be produced before works were carried out, in order to replicate the layout when replacing the cobble surface. Consequently digital photogrammetry related to surveyed ground control was used to produce detailed photographic orthomosaic plans (Fig. 5). Some areas, for example, the Old Laundry, were surveyed using the same selective 3D total station survey method

as the main body of survey work. In all of these cases, the survey method was tailored specifically to meet project requirements, whilst using the most efficient and most cost-effective method possible.

Plans and elevations

Individual plans and wall elevations were produced for each of the spaces surveyed, indicating doorways, steps, fireplaces and windows, and also reflected plans of decorated plaster ceilings as necessary. Room plans included a sample of the floorboards to show alignment, in order to inform the planning of enabling works (Fig. 6). Rooms were recorded at a cut plane level of around one metre high, with additional floor level and ceiling level features recorded where necessary. Spot heights were marked at key points on each plan showing floor and ceiling levels, and door and window heights Plans were delivered both as separate room plans, and also as whole floors, in order to show different wall thicknesses throughout the surveyed areas, which could be used to help identify different alignments and phases of the building, and show hidden areas between spaces (Fig. 7). Knole has many historic deliberately hidden spaces (e.g. hidden doors in paneling leading to passages or storage areas, for unobtrusive domestic or private use) as well as other less intentional 'voids' which are more artefacts of the complex historic structural sequence, and subsequent remodeling.

Survey informing the refurbishment and conservation programme

One of the key objectives the conservation programme is to stabilise environmental conditions within the existing show rooms, particularly with regard to conservation of the historic textile and furniture collections. The MOLA survey was therefore commissioned in advance of this work programme, in order to both inform the works as a planning tool ,and also to maximise on the unique opportunity to record the historic building
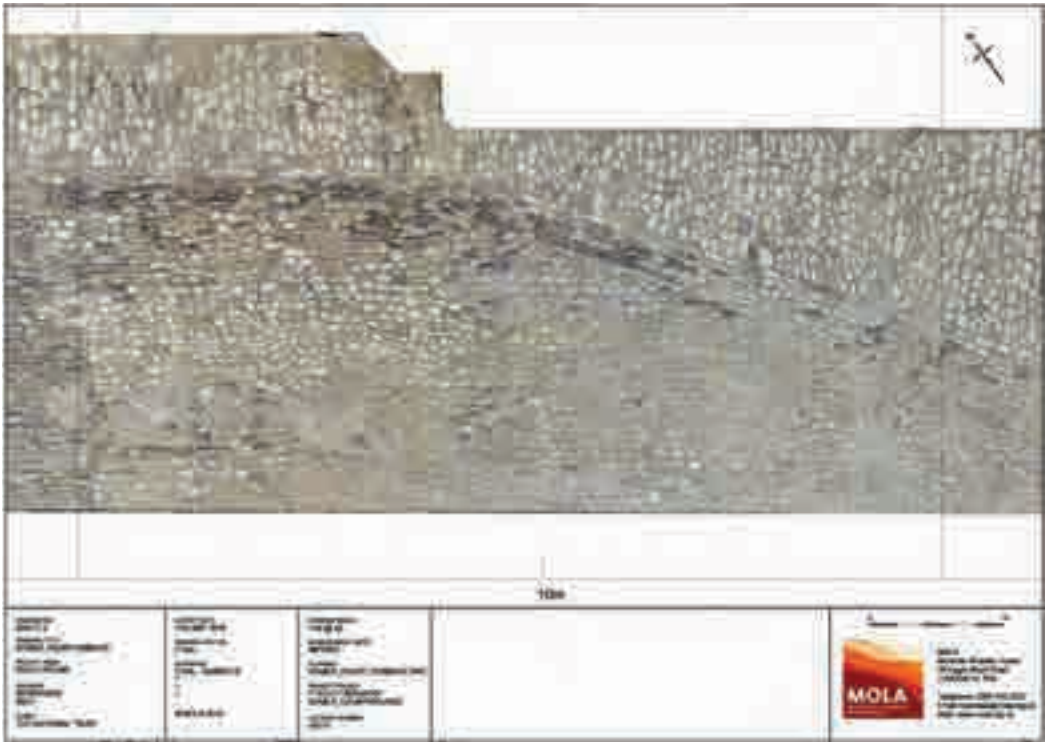
Fig. 5 - Photogrammetric recording of the extensive cobble surface in Stable Court in advance of ground-works (© MOLA)

Fig. 6 - Enabling works underway in the 1st floor Cartoon Gallery, showing lifted floorboards, also an example of decorated plaster ceiling requiring planning (MOLA)

fabric as these works progressed. Other previously private areas were surveyed to facilitate their preparation in advance of being opened to public display, through informing the associated enabling works.

The new room plans have been used by the architects to indicate to the National Trust and their contractors, where enabling works would take place: for example, where floorboards needed to be lifted for installation of services (Fig. 6).

Elevations have been used by the architects (Rodney Melville + Partners) as instructions to contractors, to indicate extent of works to panelling and windows.

For example in the Brown Gallery, instructions to the sub-contractor for installing UV filtering on the windows, and specifying areas of panelling to be removed

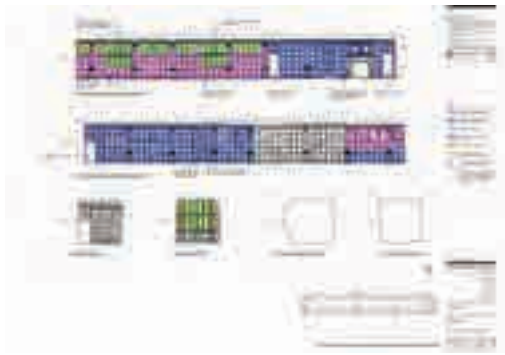*Fig. 7 - First Floor plan (© MOLA)*

Fig. 8 - Rodney Melville & Partners architects reuse of MOLA elevations for detailing instructions to contractors (RMP Architects)

for differing purposes (Fig. 8).

The elevation drawings have also been used to plan how the rooms will look following the works, for example Emma Slocombe, National Trust Curator at Knole has used them to help design the proposed new picture hang in the Ballroom (Fig. 9).

The importance of accurate as built survey is also important for disaster management planning, especially with regard to destruction by fire. There is a strong argument for comprehensive high resolution laser-scan survey with regard to disaster management planning for this type of unique historic building and their interiors, however, this strategy can be seen as cost prohibitive for many heritage organisations, where its implementation in case of the possible disaster, will always be directly competing for limited funding with actual damage and decay of building fabric and collections, that need to be controlled through conservation and refurbishment programmes.

The National Trust and public outreach

The National Trust is a charitably-funded organisation that originated at the end of the 19th century, to fill a perceived gap in the British government's ability (or will) to preserve open spaces and historic buildings for the public good. Consequently, public outreach and engagement is a fundamental concern to the National Trust today. The Knole survey data has been used in both internal
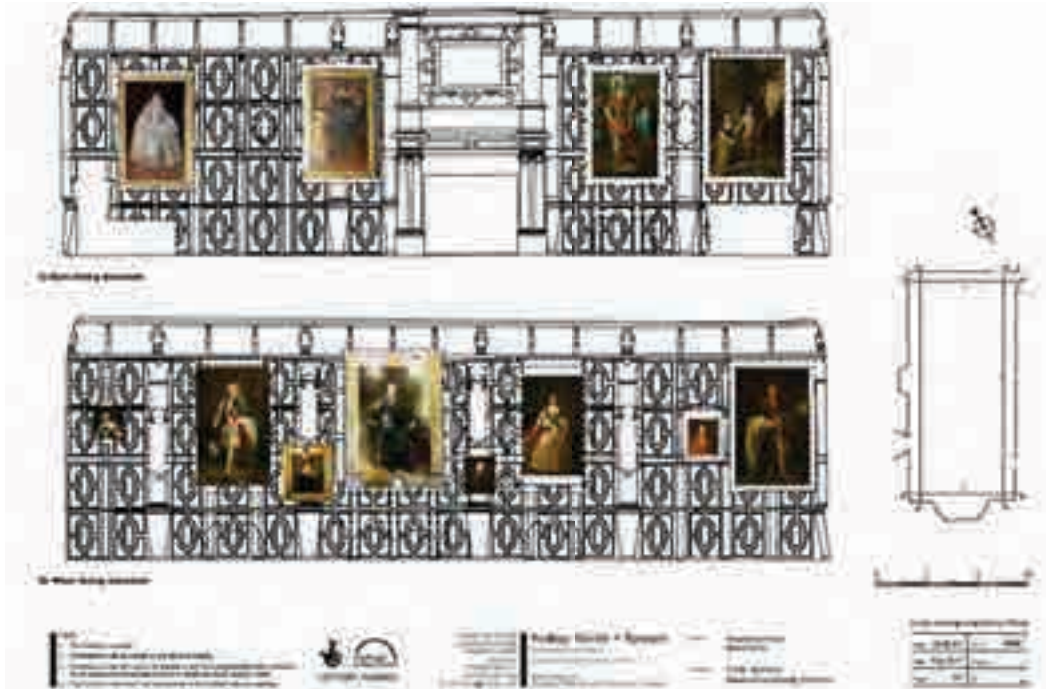

Fig. 9 - National Trust curators use of elevation drawings for designing new picture hang in the Ballroom (National Trust)

and external publications, for example the National Trust's internal magazine, the Arts Buildings Collections Bulletin. Feature articles have appeared in external publications such as Current Archaeology and Archaeology Magazine (US). The survey information for Knole is also used extensively in consultancy meetings, as well as in internal planning and programming.

MOLA outreach at Knole has included demonstrating survey techniques to the public in the grounds, as part of the Festival of Archaeology, and giving public lectures on thehistoric building interpretation of Knole.

National Trust archaeologists constantly

number of high resolution scans and setups, and corresponding RGB capture, and the low lighting levels would not have benefitted the latter. In addition, comprehensive multi-angled detailed supplementary photography would have been essential for off-site 3D interpretation of the point clouds. Office-based reconstruction from point clouds would have been extremely laborious, as there were virtually no economies of CAD replication with such irregular interiors, and the survey requirement was very detailed as built, not as orthogonally reconstructed. It was agreed by all that laser-scanning comes into its own regarding disaster-management

Fig. 10 – outreach: a public lecture in the Great Hall at Knole (Nathalie Cohen / National; Trust)

present the survey information, in relation to the conservation and refurbishment programme, in public lecture programmes (Fig. 10), through conferences and during internal volunteer training, explaining why the survey was necessary, what it involved, and its many applications and uses.

Discussion

The question of why the whole MOLA survey wasn't laser-scanned was raised, and was answered fairly simply by stating that it was essentially a cost issue. If comprehensive laser scan survey had been carried out at Knole, then it would have required a very high

planning, (because costs only need to cover data capture and intial processing) and it is to be hoped that this will be considered in Knole's future. The assumption of laser-scanning as the unquestionable choice of survey data-capture method, served to highlight the difference in approach between academic and commercial archaeologists , the latter tending to be significantly more cost-aware. Arguably in the case of the Knole metric survey, there is also a significant on-site interpretive benefit gained by the archaeological surveyors carrying out selective survey. Historic BIM (Building Information Modelling) was discussed in relation to the example of Knole, as the

ideal and developing tool for integrated facilities management, conservation and refurbishment planning, and accesible storage of data for collections management, metric survey data collation, interpretive historic building records, and for display and dissemination of 3D and 2d information to curators, clients and the public. HBIM (Historic Building Information Modelling) in the UK is at a comparatively early stage of development , where standards and best practices have yet to be defined, and softwares (as a legacy from their intial devleopment in relation to new-build construction programming) are limited by their compulsory orthogonality, and inabilty to cope efficiently with irregularity of structure.It is easy to see how Knole could benefit in so many ways from the application of HBIM, which could be summarised as an information-sharing tool and database,accessed through an appropriately simplified 3D building model for the purpose of increasing communication, efficiency, and so reducing costs. Knole would present a very significant technical challenge to the HBIM designer and modeller, but its purpose would not just be to recreate the structure of Knole's fabric in a detailed 3D model , but to provide a framework for collating, accessing and storing 2D and 3D information, accessed through the model, for the benefit of all.

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The fortification system on Elba Island, archaeological and territorial evidence of the Mediterranean Tuscany

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Abstract: The strategic position dominating all the maritime traffics of the Mediterranean Sea, the morphology of the territory and the resources of the area made the Island of Elba protagonist of a long and articulated militarization, which can be found in a system of fortifications and military apparatus spread all over the territory: a dense network of fortresses and outposts all along its coasts. Political, economic and cultural events of the Island, as well as the development of the defensive coastal fortress system, are closely linked to the iron vein and its research since ancient times. Many colonizers of different cultures reached the island during the metal trade development. This led to the necessity of a development of a military system that became more sophisticated over the centuries. The main feature of this defensive system is the capillarity: the sighting sites are numerous and placed in strategic locations in order to cover the entire perimeter of the island, the inland valleys, the sea, the other islands of the Tuscan Archipelago. Different characteristics from the traditional fortification system of the continent can be found on the island, due to its particular defensive needs: an isolated territory surrounded by the sea and target for its iron resources and for its strategic position at the centre of north-south trade routes in the Mediterranean Sea. The digital survey operated by a team from the DiDA, Florence University in March 2016, produced the first base for a detailed analysis of the fortification system in the Island. A necessary base to catalogue the single fortresses, and also to understand the relation between territory, architecture and archaeological heritage. Even if at the level of an ongoing project, the data and documentation obtained allowed to define a strategy to understand the complexity of this military network and how it changed and evolved during the centuries. The knowledges acquired during the study would be spent in many fields of application, providing a valorization and a better appreciation of this significant cultural heritage.

Keywords: Fortification System, Elba, Archaeology, Digital Survey, Landscape.

Introduction

All over the centuries Elba has been seen as a precious target by conquerors due to its strategic position dominating all the maritime courses of the Mediterranean Sea, combined with the availability of safe havens and the resources of the island. The various dominations have left behind them a dense network of fortresses, castles and outposts on top of hills and all along the island coasts (Fig. 1).

Elba Island

Elba is the largest island of the Tuscan Archipelago National Park (223.5 sq km), and the widest one in Italy after Sicily and Sardinia. It is situated in the Tyrrhenian Sea 10 km from the mainland coast.

The main feature of the island, rich in promontories (*Monte Capanne*, 1019 meters above sea level), with few flat areas, is represented by its own particular geological nature composed by sedimentary and eruptive rocks together with granitic headlands in the western part of the Island. The eastern part is characterized by huge iron deposits, which represented one of the greatest reserves in the Mediterranean Sea.

Fig. 1 – Ruins of the fortification system (Copyright: Google)

Historical Notions

Since ancient times political, economic and cultural events of the Island, as well as the development of the defensive coastal fortress system, are closely linked to the iron vein and the research for it.

The Island remained abandoned for at least 5000 years until II century BC, when the first Neolithic navigators landed on the Elba coasts during one of their explorations along Asian coasts and Mediterranean Sea looking for copper, a newly discovered precious metal.

Many colonizers of different cultures landed on the island during the metal trade development (FORESI 1865).

The Etruscans arrived at Elba during the VII century B.C. from nearby Populonia and the Island experienced a period of prosperity due to an increase in country economy which consequently led to the first realization of a sea fortification system (Fig. 2).

These fortifications were enforced when the Etruscans were defeated by Siracusani after the battle in 474 a.c. for the iron trade exploitation on the Island. This military system became more sophisticated, with fortifications in dominant positions to control the territory. New safe havens and new ways of communication appeared so as to create a real defensive network, not only towards the sea, but also as protection for the workers engaged in the nearby caves.

In the first century Elba became a target both for its iron resources and for its strategic position at the centre of North-South trade routes to Gaul, Spain, North Africa and other Mediterranean islands. The Etruscans were followed by the Romans who left important traces of their activities on the Island. They enforced the defending system, they allowed new productive settlements bringing a period of economic and production prosperity on the Island wich lasted till the end of the Roman Empire after the barbarian invasions (AMBROSINI 1982). In 610 A.C. Elba saw the presence of Byzantine and Longobardi. Once defeated by the Franchi, Elba passed under the Papato rule, which send monks and eremites to the island to consolidate its very

Fig. 2 – Historical map of Elba (Copyright: Camici M., (2009), L'Elba tra Medioevo e Rinascimento. Viaggio alla scoperta di un'isola)

Fig. 3 – Volterraio Castle (Copyright: Google)

Fig. 4 – St. Giovanni Tower (Copyright: Giorgio Verdiani)

power. Around the first millennium after Christ, the Maritime Republic of Pisa was appointed by the Pope to protect the archipelago from the Saracens pirates, which in 874 invaded the island, but were defeated by Pisa. It was during this period that the Island was provided with new defence works: the most important were Torre San Giovanni and the Fortress of Volterraio (Fig. 3-4), a real castle situated on an inaccessible site to give defense and asylum (PINTOR 1898).

The whole 16th century was characterized by improvements to the defensive system carried on by the Appiani Dinasty first and by Cosimo de Medici in a second time, who infact reinforced the landing at Portoferraio (Cosmopoli) creating a fortress with three bastions to protect the town. At the same time he improved and restored the already existing military outposts (ZECCHINI 2001).

This was a period of maximum expansion of the military system of the island.

The following centuries saw the development and improvement of the whole military network especially during the 18th century under the Lorena Dinasty, until 1799 when Napoleone Bonaparte arrived at Elba and proclaimed the annexation of Tuscany to France, beginning a series of new public works to reinforce the military apparatus.

At the end of the century due to local uprisings against the french domination, the defensive system was dismantled little by little and completely abandoned.

The Military System

The main feature of Elba defensive system is the capillarity: the sighting sites were numerous and placed in strategic locations in order to cover the entire perimeter of the island, the inland valleys, the sea, the other islands of the Tuscan Archipelago, Populonia,

Fig. 5 – Volterraio Castle (Copyright: Mirco Pucci)

Punta Ala and Corsica. The apparatus was divided into several parts according to their function: fortresses on top of hills, with mighty fortified perimeters, dominating on lands and havens, had a primary role thanks to their position on mountain ridges that allowed a rapid propagation of signals (eg: Le Mure, Murata Stone, Monte Serra, Capoliveri, the Volterraio); various fortified sites situated on halfway up along the hills and with a very wide signalling system played a secondary role (eg: Poggio, Procchio Monte Castello, Grassera); and finally a third-level system consisted of a series of fortified towns located on hillocks 100 meters above sea level (eg: Mount Puccio, Castiglione di Marina di Campo, Castiglione di San Martino) (CAMBI 2012).

The defensive system sighting scheme of the Island was very articulated and it represented a real communication network allowing a fast and efficient exchange of informations and a secure control over the territory.

The majority of the fortresses on the Elba are those located on top of hills with a view towards the coasts. The most important are Fort Giove, Volterraio Castle and St. Giovanni Tower. This three outposts were (and are still nowaday) directly connected to each other with a sighting scheme. The Volterraio fortress represented the knot and the centre of this connection and it had the primary role in the communication of signals.

Volterraio Castle

The Volterraio Castle is one of the few fortress remained intact and unconquered and played a crucial role in the defense of the territory from the invasions of corsairs and pirates. The fortified local stone castle is surrounded on three sides by steep cliffs covered with few mediterranean vegetation (broom and cistus) and it was built around the beginning of XI sec. on the top of Mount Veltraio at about 395 meters above sea level, north east of Elba, probably on Roman or Etruscan remains (Fig. 5). The name has uncertain origins, according to some history scholars it comes from a past discovery of a Volerra coin on

Fig. 6 – St. Leonardo Church (Copyright: Mirco Pucci)

the top of the hill, with the backward writing "Velathri", the name of the Etruscan Volterra. During the Middle Ages, as attested by some Pisan documents, the splendid fortress is also mentioned as "Monte Veltraio"; in particular, in a paper about payments to castellans of Montemarsale and Volterraio dated 1305, is written in latin: "castri Montis Veltrai insule Ilbe" (that means "about the fortress on Mount Veltraio of Elba Island"). Another hypothesis on the origin of the name comes from the latin word "vulture" that means vultures. According to some local scholars, the origin of the name comes from a legend about a mythological etruscan princess named Ilva, or from the etruscan word ful-tur, high rock (CAMICI M 2009). However the name may simply come from the Volterra architect Vanni di Gherardo Rau, that in 1298 was appointed from the Maritime Republic of Pisa to restore the Castle. In 1440 it was then reinforced and enlarged by the Appiani and by Cosimo de Medici and the Granducato of Tuscany. In the following periods cause of the increasingly costs for the maintaining of the complex,

Cosimo de Medici assigned the defensive system of the island, including the Volterraio, to the commissar of Rio, passing thus under the supervision of Piombino. In 1544 the rock suffered an assault by the Ottoman pirate Barbarossa and by Dragut in 1553.

In both cases the castle remained still and unconquered. Since this period the Volterraio castle followes the history of the whole island, passing from the Medicean and Spanish domination through the Lorena dynasty till the invasion by the Napoleonic troops in 1646. The garrison at the Volterraio consisted of cannons, muskets and mortars aimed to protect the coasts and the roads used for the iron trade. In 1688 the governor Tornaquinci began a series of important restorations to the military fortifications, to Volterraio and to the Portoferraio harbour (LOMBARDI 1961).

Volterraio was provided with a stone staircase, a drawbridge, new rooms for the arsenal and finally a new chapel wich replaced the old medioeval country church of San Leonardo, situated outside the castle walls.

In 1789 an uprising against the French army

Fig. 7 – The Digital Survey. St. Leonardo Church (Copyright: Giorgio Verdiani)

led to the destruction of the complex and its complete abandonment.

The castle, owned by the Tuscan Archipelago National Park since the second half of the last century, has been the subject of a series of renovations that allowed to recover what was left of the old historical complex, making partially visible the original monumental appearance. The mighty hexagonal stone base is very irregular because of the steep slope of the hill. Once it surrounded the entire court, holding a hanging walkways system connected to the tower. Inside the courtyard there were several rooms and space, including armouries, a chapel, and two cisterns with wells fed by water collection coming from the terraces and from the patrol walkways. The steep path to the main entrance is characterized by an earthy part, which ends near the Chapel of St. Leonardo and a steeper part, full of rocks, that affects the highest part of the ridge.

Today the Church of St. Leonardo exhibits a marked structural instability due to the friability of the rocky ridges and it is located next to an ancient curtain wall with a probable function of first defensive gate of the fortress (Fig. 6).

The Digital Survey

The digital survey operated by a team from the Dipartimento di Architettura (DiDA) of Florence University in March 2016 was carried on using 3D Laser Scanner technologies together with a topographic measurement of the area by topographic Monitoring Station, and a detailed photographic and photogrammetric survey (Fig. 7-8).

This digital survey produced a detailed description of the fortress system of the Island, a necessary base to catalogue the single buildings and also to understand the relation between territory and architecture.

Processing Data and Post Production

All the data obtained from the digital survey of the fortification system were elaborated and analyzed according a series of operations, beginning from the mesh generation from

Fig. 8 – The digital survey. (Copyright: Giorgio Verdiani)

the 3D laser scanner data (for a better production of a 3D digital model) combined with photogrammetric operations for the production of a metric database of the area.

The final point-cloud generated by the alignment process of all the point-clouds captured from different scanning positions, was accurately elaborated and filtered in order to obtain a 3D surface. The same was done with the photogrammetric data, using SFM software (structure from motion) (Fig. 9).

Consequently, the two elaborated point-clouds were merged to generate a more complete mesh as possible. This final mesh after a filtering and a noise reduction became the base for the next operation of retopology. The operation of retopology was used to simplify the mesh, preserving its main geometrical characteristic.

The second operations were unwrapping and baking (taken on Pixlogic Zbrush) necessary to obtain an uv map for baking and texturing. The UV map is a bijective correspondence associating the coordinates X, Y, Z of the mesh to the UV coordinates of an image. The UV

map of the low poly objects can receive, after a baking process the normal map, the texturing and even other kind of maps, coming from the high poly mesh. With this procedure the low poly mesh will show the geometrical characteristic of a high poly model, with a virtual increase of the numbers of polygons and a meaningful visual enhancement. The following operation was the texturing by photogrammetric data: the 3D model was imported on the sfm (Agisoft Photoscan) software for the realization of the chromatic texture.

The resolution obtained was 4096 x 4096

Fig. 9 – Final point-cloud generated by the alignement process. (Copyright: Mirco Pucci, Giulia Baldi)

Fig. 10 – Texturing process of St. Leonardo Church. (Copyright: Mirco Pucci, Giulia Baldi)

pixel, which means an excellent chromatic data of the model (Fig. 10). The last post production operations were balancing and correction of the cromatic texture and photo editing, using software as Adobe Photoshop and Maxon Cinema 4D BodyPaint and Modo, necessary to apply the texture directly on the 3D digital model. The final models, combined with their own normal maps and texture, can so be used both for static rendering and for multimedia publications.

Concept and Targets: Multimedia

Applications

The 3d digital models obtained from the study will improve the documentation and the dissemination of informations about the fortification system of the Mediterranean Sea, especially using digital tools and multimedia applications easily accessible online by computers, smartphones and tablets. Visitors will be thus allowed to upload, download or simply interact with a virtual system of 3d digital models that will

Fig. 11-12 – Physical printed models of the Volterraio Castle and the church. (Copyright: LMA Laboratory for modeling and reverse engineering)

to a reflection on the present situation and on the issues that need to be focused on.

Accessibility and possibility to visit the most of the Fortresses of the Island are one of the issues of the analysis and the studies carried out.

However the others important targets beside the creation of a 3D digital model for static and multimedia publications and applications are: the realization of chalk powder 3D physical models that could be placed in Portoferraio (for example) to allow a better understanding of this ancient defensive system (Fig. 11-12); protection and preservation of the original elements; conservation of visual targets and routes; documentation and guide to this important archaeological remains, unique evidence of our past in our today civilization; and finally, the enhancement of landscape and nature as important elements part of the cultural heritage patrimony (Fig. 13).

replace or integrate a real visit to the site creating an ideal connection between the public, the architecture and the history of its territory. The proposal of a virtual tourism wants to ensure the opportunity for a wider audience to visit such important places, aiming at the valorization and promotion of this cultural heritage that has been part of the history of the mediterranean sea.

Concept and Targets: Documentation and Landscape Enhancement

This survey allowed to understand limits and potentialities of these architectures, leading

Fig. 13 – View of the landscape from the inside of St. Leonardo Church. (Copyright: Mirco Pucci)

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Milan at the border of its ancient border: from the XVI century wall to the Beruto's plan, to our days

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Abstract: The realization works of Milan's city walls began about in 1550, by the will of spanish government that ruled the city in that period. They represented the administrative and duty border, clearly separating the inside from the outside, what the city was from what was not. As usually happens, to face the city development and some enterprises offshoring in the suburban areas, at the end of XIX century, the need to plan the growth arises and the engineer Beruto is called to edit the first city Piano Regolatore, in 1889. His work is concetrated in two fundamental operations: to reinforce the streets axis that linked the city inside and the outside and to raze the walls to the ground, creating spacious ring roads, decorated with trees. Then, he traces another ring road in the outside to contain the new urban areas. The part of the city we analize is located in the south-east from the city centre, marked by the ring road built on the ancient walls trail and the new one, respectively in the west side and in the east side. In the north and in the south we find two of the axis reinforced by Beruto's plan. About the ancient doors, Porta Vittoria and Porta Romana, only the second one lives today but both are important city cruxes. A dividing line's icon in the past becomes a street axis with low permeability, in the contemporary city, designed on the private and public mobility. Studying this area, Sebastiano Citroni shows us infrastructural links as possible margins and obstructions, implicating differences also in the sociological distribution of the inhabitants in the suburban areas. This investigation's purpose is to find out strategies and actions to diminish theese differences, bringing new life to outlying districts and fixing parts of urban tissue.

Keywords: Milan, Urbanism, City Planning, Suburbs, Strategies.

Introduction

The themes that will be exposed concern a previous study, which at first were carried for an award-winning competition in 2014 [1] and subsequently integrated in the urban planning for the preparation of a thesis.
The basic topic is the city of Milan and its historical and urban evolution since 1550, when the city walls construction began, by the will of the Spanish rules [2]. They would constitute the new administrative and duty borders of the municipality. These new boundaries created a physical distinction between what was included within the walls, the city of Milan, and what was left out, mostly open country, with the exception of small settlements made up of farms, some of them still standing today. Over the centuries,

the area outside the walls spontaneously began to grow, however the population density and the urbanization were certainly lower than those of the municipality.
All these settlements formed what later would be know as Municipality of the Holy Bodies, given the ancient practice of burying the bodies of martyrs outside the city walls.
The inhabitants of this settlement exploited the advantages of the proximity to the thriving center of Milan, carrying out their occupations within the walls, but not having to contribute to the taxes imposed by the municipality.
Since the goods that were over and above the border of the walls were subject to payment of duty, commercial operations carried out outside the borders were the most economically advantageous. During the 1960's and the

Fig. 1 - Beruto's Plan 1889 (SkyScraperCity - Milano Sparita)

1970's, with the industrial development of the city, some entrepreneurs began to transfer their businesses to suburban areas, to benefit from the economic raw materials. The Milanese administration was unsatisfied by this measure and therefore repeatedly tried to annex the neighboring municipality inside its borders, finally succeeding, through a royal decree in 1873 [3].

Hence, the size of the city increased, approximately one kilometer, in a radial direction in respect to the older core.

Simultaneously, some areas of the city core suffered abandonment and decay, such as the Lazzaretto, a fifteenth-century structure, designed to face the emergency of the plague, and the Sforza Castle with its rear parade ground. Both complexes were subject of speculative aims of the Italian Credit Bank, and for this purpose the Milanese company Fondiaria was set up by the bank. Lazzaretto is detected by the Italian Credit Bank in 1881 and demolished the following year. To avoid the same fate in the castle area, which was particularly attractive for

its size and for the central location, and to give a coherent design to the recently added areas, the engineer Cesare Beruto was commissioned by the administration of Milan to draw the first General Plan of the city. The first version was delivered in 1884 and finally approved in its definite form in 1889 [4] (Fig. 1).

The principles by which Beruto develops the plan are based on the need to create the greatest possible degree of connection between the inside of the walls and the external areas, and to ensure an orderly growth of the city, considering the growing population occurring at the time.

The two major operations achieved are the strengthening of the axis roads that connected both parts of the city, and razing the wall to the ground. Consequently he creates spacious boulevards, decorated with tree-lined walks. Finally, he designed a second external ring road, to contain the new urbanized area.

Successive master plans followed Beruto's principles in the management of the expansion of the city, resulting in the need of constructing further infrastructure to satisfy the growing population.

The demographic increment began in the Italian union period and proceeded during the 20th century when Milan establishes as the first Italian industrial power.

In the 1970's this tendency seems to stop and reverse itself in the municipal area of Milan, but if we look at the population growth recorded in the surrounding metropolitan area it is clear that Milan suffered the sprawl phenomenon [5] (Fig. 2), (Fig. 3).

This terminology describes a common pattern of urban development, which became predominant following the industrialization of American and European cities in the second half of the nineteenth century and exacerbated in Italy since the early 60's. This phenomenon tends to overtake and urbanize more or less extensive portions of land, on the edge of the heart of the city, and it is characterized by the rapid expansion with low population density and the diversification and separation of the various functional areas. This is made possible by the complex infrastructure system, which allows
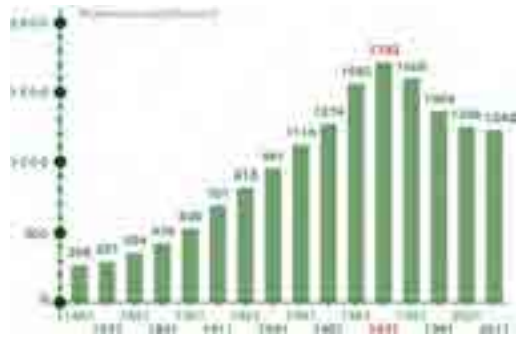

Fig.2 - Demographic records between 1861 and 2011 (Dipartimento A B C and Oliveri, 2013) [6]
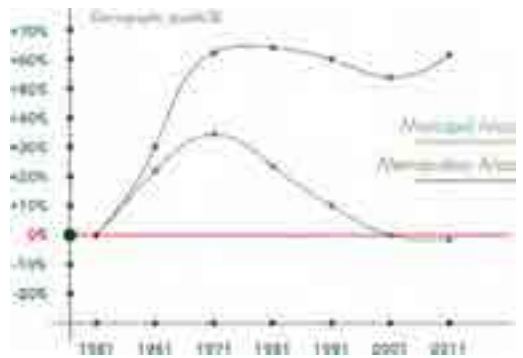

Fig.3 - Demografic growth in municipal and metropolitan area (Dipartimento A B C and Oliveri, 2013)

commuters to reach the city easily, and the immediate consequence is the predominant use of private vehicles for mobility, at the expense of public ones [7].

The focus on the urban sprawl phenomenon is due to its influence in the daily mobility of inhabitants of the city center and the hinterland residents. In 2001 the data attested the number of inbound commuters to 436,077 units, and the outbound to 47.787 units [8].

The reference to this urban model may give an indication as to why a high percentage of people would use private vehicles. This type of urban expansion dilates spaces which in consequence is very inconvenient to the public transport network. Moving by private means certainly has advantages, that is in comfort and in terms of time saving.

It also avoids getting locked into a rigid system that is not directly controllable as it is the case

Fig. 4 - Milan's district 4

public transport, at a time where professions are not anchored to the traditional idea of space and time but instead increase, on average, the number of daily trips.

Although the advantage of using individual-level private vehicles is apparently flawless, especially in terms of comfort and freedom of movement, such a choice is the base of everyday problems for the Milanese reality such as traffic congestion, noise, poor air quality, pollution and inaccessibility of the public and security areas.

The specific analyzed area is located within the area 4 of Milan, one of the nine districts in which it is divided [9].

The entire district has a historical commercial vocation and its urban development is strongly influenced by this factor. It houses, for example, the largest wholesale market of Italy and other commercial structures, some of which are no longer in operation. To serve these structures, it was necessary to implement the system infrastructure, such as main roads and railway stations, and this development has made it an ideal place for the subsequent localization of industries and production facilities. The most significant example is the Italian Tecnomasio Brown Boveri, a Swiss-Italian company which manufactured vehicles and the related infrastructures [10] (Fig. 4).

The presence of these imposing structures brings with it the consequence of a fragmented urban development and nowadays requires converting measures and urban regeneration, even in large sizes. The project of the residential and commercial district, Milano Santa Giulia [11], directed by the architect Norman Foster, covers an area of about 1,200,000 square meters, which previously belonged to the Montedison and Redaelli companies, while in the former railway station of Porta Vittoria it is now expected for the construction of the European library of Information and Culture, although currently it is limited to the digital library function.

A study, conducted by Sebastiano Citroni [12], shows that the nature of these emergencies affects the perception of the entire district by its residents, in particular the railroad line and the outer ring road, provided for in Beruto's plan. These infrastructures divide the zone into three distinct areas, setting up barriers, and also influencing the social distribution of the inhabitants in each area, as it is clear from the interviews carried out in Citroni's research. Furthermore, in the suburban areas, the inhabitants belong to the most vulnerable social groups and these areas are marked by urban decay and criminality (Fig. 5).

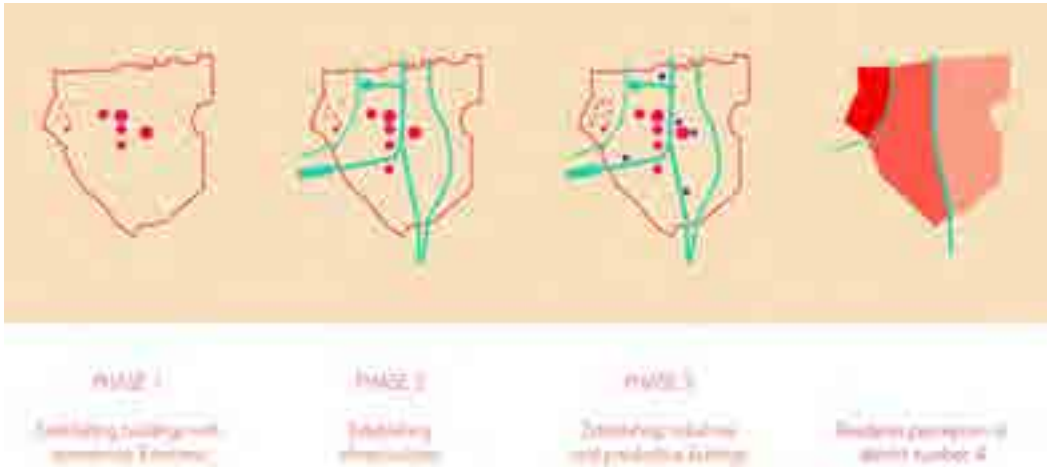The area in discussion is physically adjacent to the city center. Referring to Beruto's project it is

Fig. 5 - Urban evolution of district number 4

between the inner ring road, from the ancient wall, and the second outer ring road. This area is close to two major urban cruxes: Porta Vittoria [13] and Porta Romana [14] two of the doors that gave access to the city before the wall was razed to the ground, the former is now Piazza V Giornate, the latter is still standing (Fig. 6).

This neighborhood has predominantly a residential function, qualitatively deficient from the point of view of public spaces. Geometrically, it is divided into four areas by the two axes of symmetry: the transverse, consisting of a linear public park, and the longitudinal, an inter-neighborhood road (or district road) with a section that becomes, in

Fig.6 - The District object of this study

its central part, a highway section: two lanes with parking spaces, separated by broad green stripes also misused for parking. (Fig.7) As shown in the traffic plan data [15], the longitudinal axis is the most congested and the most used in terms of volume flow. The permeability of this artery is very low, as it is in the two arteries which delimit

fluid. This is achieved through the elimination of traffic lights and introducing other efficient devices like roundabouts. For this aspect, the nodes in which the longitudinal axis section changes are of special importance.

Subsequently, the north-south flow of traffic should be divided along two main axes, both would be two-way local streets connected by

Fig.7 - Streets classification

longitudinally the neighborhood, and the car speed is equally high. On the other hand, Piazzale Libia, which is the symmetric center of the neighborhood, instead of covering primary importance in the linear park, serves as a roundabout for cars (Fig. 8).

Once again, considering the non-motorized traffic conditions, residents find the infrastructure is a barrier. This results as a larger distance between the two parts of the district as going across is even more difficult for pedestrians.

To address this situation, the first step would be to identify and strategically reinforce the nodes for motor traffic, in order to make it more

roundabouts.

The aim is to regulate traffic along the centre axis, restricting private traffic in the stretch to Piazzale Libia and only allowing the public transport. Between nodes number 1 and number 2, the private traffic is only allowed to reach the parking areas and is regulated by traffic calming systems, such as curvature of the road axis and speed limit to 30 km/h. In addition, to inhibit the drivers to increase the speed, sidewalks and roads would be leveled. With these measures this area returns to a public dimension and finally becomes pedestrian friendly, with particular importance for Piazzale Libia (Fig.9), (Fig.10).
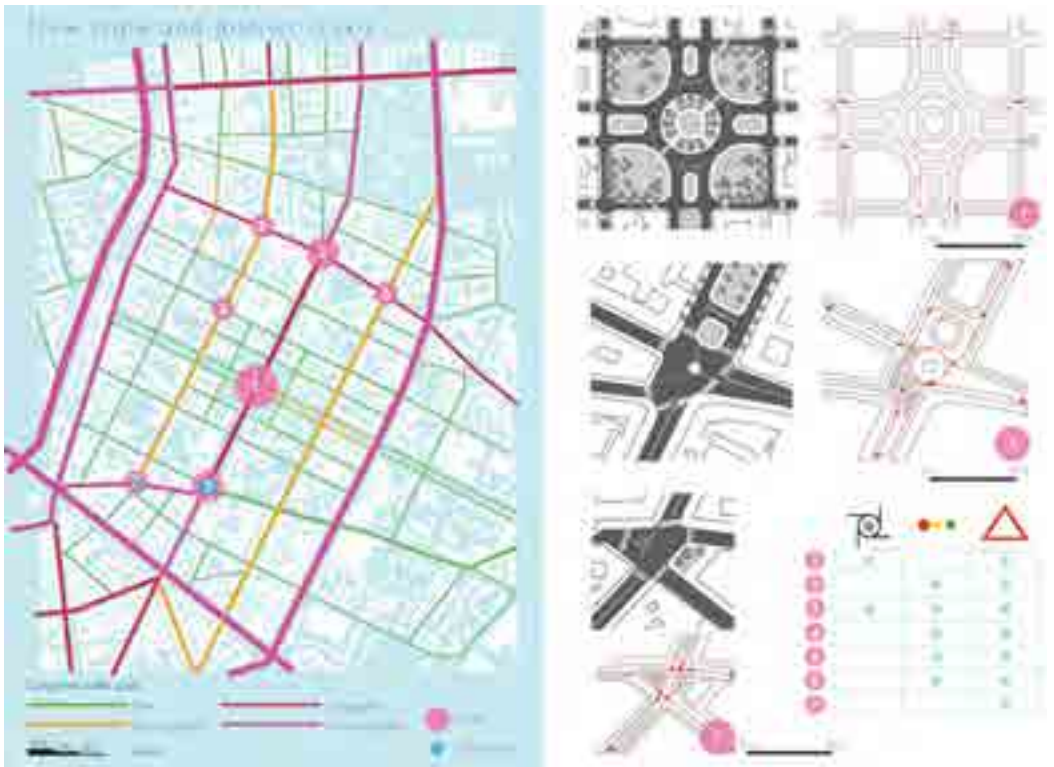
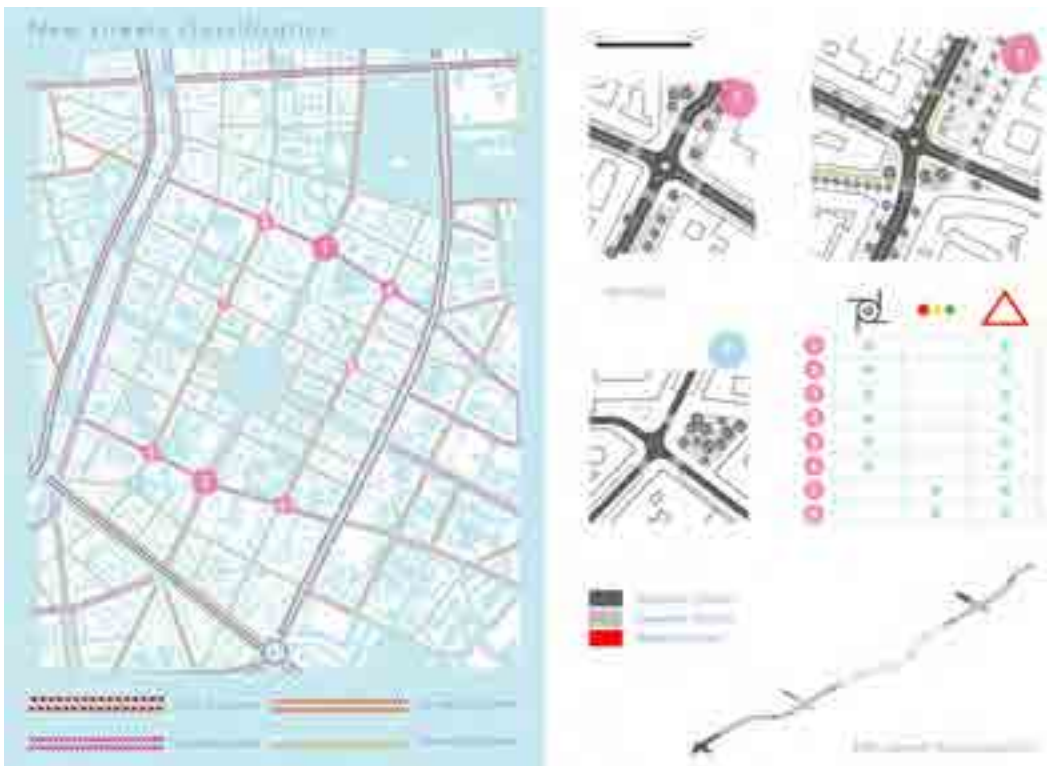*Fig.8 – Flow scale and district cruxis*
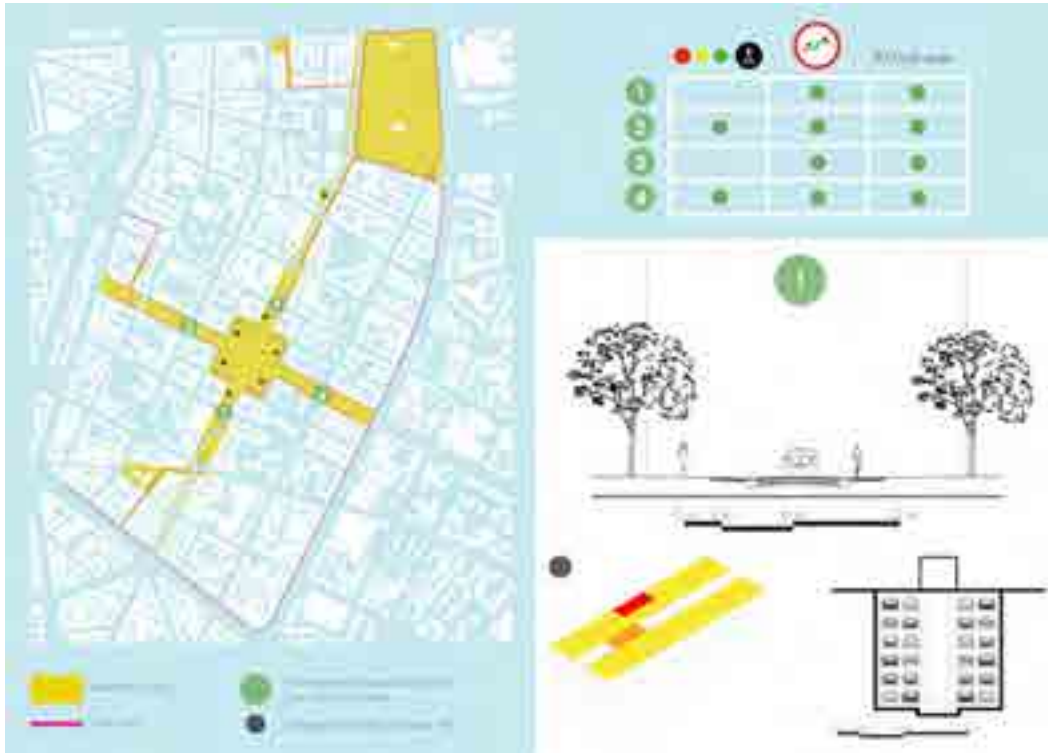

Fig.9 – New traffic solutions

Fig 10 – New pedestrian areas

Analyzing public spaces, in addition to Formentano Park [16] in the northeast, the most important is the previously introduced linear park. As it is today, more than a linear park, it seams two separate trunks, connected by a roundabout for car traffic, in which the various planned activities are all placed on one side, that closest to the city center with: bowling greens, basketball courts and playgrounds. This distinction between the poorly connected trunks of the park provides the citizens of the west side with many more attractions and services than to those on the east side. The enormous potential to unite two pieces of the city which are, as perceived by its own residents, physically and socially distant, is not exploited. (Fig. 11)

Integrating the traffic operations described above, the next step would be to turn the park into a recreational space, equipped with playgrounds, didactic areas for individual and group activities in nature, bicycle lanes, jogging and sport areas, equally distributed in both parts, and in which Piazzale Libia performs the public function of a pedestrian square. (Fig. 12)

The last point was the issue regarding the various business activities and their distribution in the area. Through a precise mapping, it is immediately clear how these are influenced by the street hierarchy and are distributed mainly along those streets with a higher flow. In particular along the longitudinal centre axis, except in the portion previously described. Even in this case, the potential of this axis is immediately perceptible but not accomplished (Fig. 13).

After limiting the traffic, the strategy used would be to join the roads to use and enlarge the existing green stripes to create another linear park. Unlike the first, this new one hosts a commercial path, through the incorporation of lightweight structures in front of the existing businesses, and creating an outdoor gallery and support functions. The facilities are covered spaces for the insertion of kiosks,
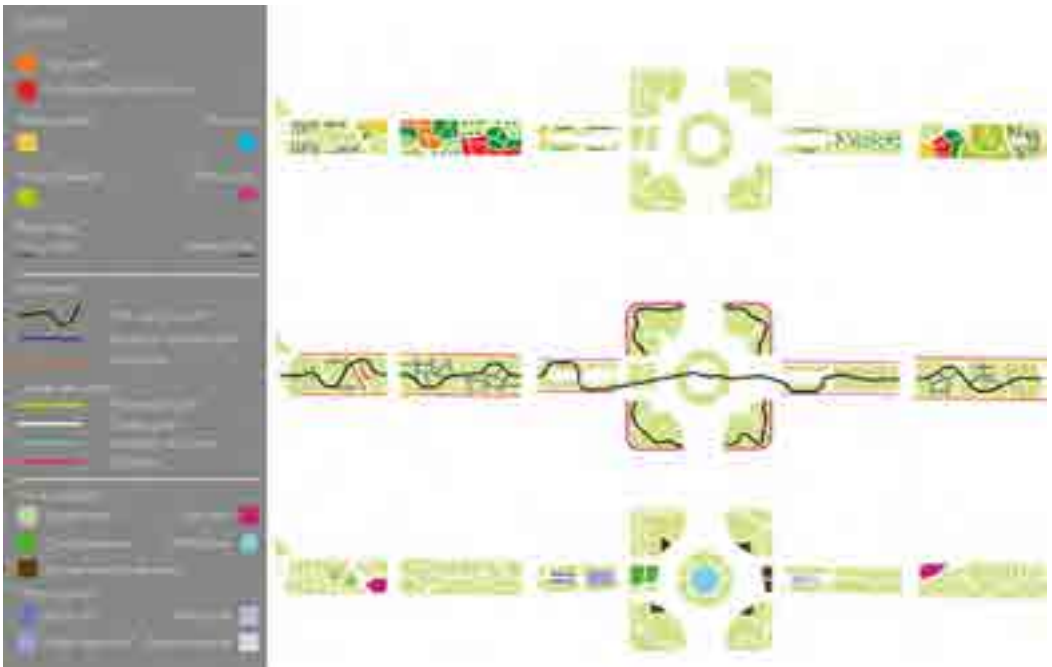
Fig. 11 – Public spaces

Fig. 12 – New linear park

stalls and public land for commercial activities. Larger similar type structures in the paved area in Piazzale Libia would accommodate the fruits and vegetables market.

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Fig. 13 – Buisness activities map

Again, Piazzale Libia becomes the core of the project, by linking the two linear parks with public, recreational and commercial functions (Fig. 14), (Fig.15).

In conclusion, the ancient walls were a physical barrier that created a difference in status between the residents. Today, although they are virtual barriers, in some cases, this diversity is still strong and often, the presence or absence of really usable areas by the inhabitants of a given area is what makes the difference.

The basic idea is that there is a relationship between the quality of urban spaces and the degree of cohesion in the members of a community. The strategies used are theoretical operations that aim to raise that level, through active participation in public life and direct management of the spaces created. The creation of a park, to grow linearly in two directions, with an important hub in a central position, in addition to redeveloping a neighborhood in terms of public spaces, seeks to attract a large user base, coming from both the neighboring central districts and the the peripheral ones. In particular for the latter, it constitutes a city reference, easily accessible, which would be useful also from a social point of view (Fig. 16).

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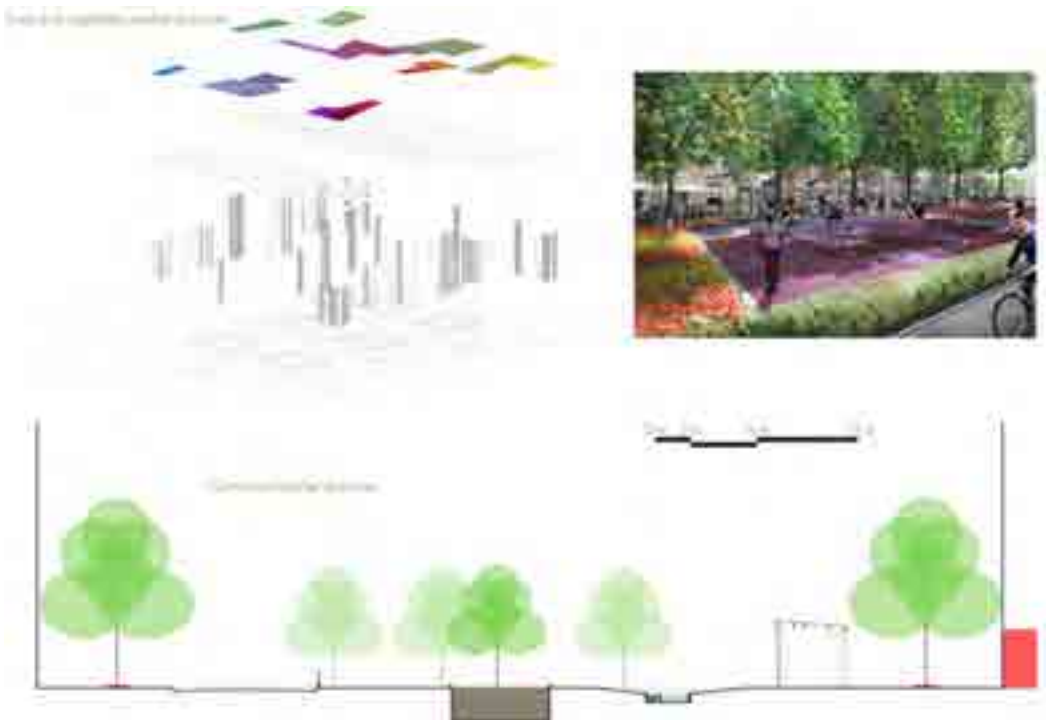
Fig. 14 – New park on the longitudinal axis

Fig. 15 - Lightweight structures

Fig. 16 - Masterplan

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Walking the Walls
Exploring York and Chester's city walls as promenades for engaging with contemporary planning

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Abstract: Historic walls that fully circumnavigate their cities are intriguing. They are uncommon heritage assets in England and Wales and continue to shape their cities beyond their initial historic function as defence and civic systems. The decisions taken to retain city walls not only sheds light on previous generations' concerns with the expansion of their cities but today allow useful vantage points on contemporary planning issues. Reflecting on the possibilities of a foot-based and meshwork approach (INGOLD 2004, 2010), the author considers how best to make use of walls' unique elevated positions within city-scapes, enabling walkers to intersect with different localities that bring wider city priorities to the fore. Using Chester and York as case studies, the author reflects on ways in which City Walls can further be used as 'vantage points' beyond touristic excursions. Findings indicate that in depth and expert knowledge (in this case from external sources) are required alongside shared interests in contemporary issues. Lastly the author considers how examples of dialogues in the city of York may be leading towards some common ground in city management.

Introduction

This paper investigates how the walls of two English historic cities—York and Chester—could help structure a method of engagement that focuses on contemporary planning issues in urban settings. The premise of this paper stems from several contexts that arose during current research as part of a Collaborative Doctoral Award with the City of York Council, focused on local heritage management. These contexts include: the noticeable importance of York's Walls for the creative arts and community-led initiatives (i.e. art installations, community-led tours, and potential future projects focusing on the walls); the emergence of York's Local Plan and ongoing endeavours to consult York's citizens on preferred options for

planned developments; and lastly, the reflections made during an unrelated family visit to Chester in June 2016. During this visit, the experience of walking the walls in situ brought to fore the relationship between city and wall, and the idea that that walls 'morph' city-scapes rang true (CREIGHTON & HIGHAM 2005). Informed by other's work, and a curiosity for tours that invert touristic excursions in order to re-evaluate place, the author was motivated to reflect on her own pedestrian experience of the walls (SMITH 2013, OXLEY 2016). As a result, a methodology exploring phenomenological aspects of being on the York and Chester Walls is proposed, followed by a discussion on how such a methodology could be further adapted to suit contemporary planning issues.
Before the methodology is laid out, further

attention to the importance of city walls, their impact on city growth, and the worth of their elevation is required. City walls are important as signifiers of the evolution of defence systems throughout human history (TRACY 2009, CREIGHTON 2007) but also because of their connection to the development of civic identity in England throughout the medieval and early modern period (TURNER 1971, WEBB 2015). In York's case stone walls were not only raised in order to visualise the monarch's power or to promote a "fierce outward appearance of martial strength" (GRENVILLE 1997, 158) but also to mark the limits of boroughs, enable thoroughfare, the control of passage/egress and tolling by the civic powers (CREIGHTON & HIGHAM 2005, 34-5 & 37, MEE & WILSON 2005, 12, REES-JONES 2013). After the English Civil War (when walls had fully served their military purpose) the further expansion of cities became a major consideration for local authorities and walls seen as a restriction to growth (CURR 1984, CREIGHTON 2007, 348). Indeed, many UK cities decided to demolish their walls; an inventory laid out by Creighton and Higham (2005) there are over 88 cities with wall-remains in England and Wales and only 11 of which can be considered intact or substantial.

Walled Cities in England and Wales:

Canterbury,	Conway,	Wallingford,
Caernarfon,	Exeter,	Winchester,
Chester,	Newcastle,	York,
Chichester,	Norwich	

Certain decision processes had to take place in order for city walls to be retained. York and Chester walls were both promoted in the 18th and 19th centuries by specific campaigns as attractive 'promenades' for visitors to the city, affirming both the pride for their cities and economic prosperity: it was the traction of these campaigns that led to the restoration of the walls in York (CURR 1984). Interestingly,

in the case of Chester, this meant retaining every possible inch of Roman material over any medieval (VCH 2005a). Furthermore, what financial incentive there was informing these decisions still has resonance today and the statistical relationship between economic prosperity and visitor numbers (both business and leisure) is documented on the current local authority websites (VISITYORK 2016a, CHESHIRE WEST & CHESTER COUNCIL 2016).

Ultimately, the key priority of wall restoration movements was to enable visitors to take an excursive route around the city, one which—due to the prior military purpose—enabled a high vantage point. The enjoyment of such visual escapades can be identified in early the 17th century;

A very delectable walk, feeding the eye, on the one side, with the sweet gardens and fine buildings of the city; and on the other side with a prospect of many miles into the county of Chester, into Wales and into the sea.

(WEBB 1615, qtd in HOWE ND)

200 years later, this leisure activity had developed. During the nineteenth century there was an investment in the outward promotion of city identity which manifested in visually grand buildings and monuments (DRIVER & GILBERT 1999, JÄGER 2003, MCDOWELL 2008). Thus, the pleasure associated with voyeuristic excursion was powerfully connected to a sense of belonging to and (in turn) owning the urban landscape. Furthermore, within additional quotations around this time it seems there is some interplay (and tension) between historic, urban and rural views:

In whatever point of view these old ramparts are considered, they possess an imposing interest and confer incalculable benefits. […] the promenade on Chester walls has most inviting attractions, where they may breathe all the salubrious winds of heaven in a morning or an evening walk. Here the enthusiastic antiquarian […] can scarcely advance a dozen paces, but the pavement on

which he treads, or some contiguous object, forces upon his observation the reliques of times of earliest date.

(HEMINGWAY 1836, qtd in Howe ND)

What a lovely walk it used to be from Mickegate Bar along the Walls to North-Street Postern: ancient fortification, grey battlement, verdant fields, and smiling gardens on either hand […] Go and look what it is now!...And for what have the Walls been broken? […] the Walls reminded me of Rome. Altera Roma, I used ot think with complacency. What is it now? Altera inferno more like!

(ETTY 1839, qtd in ROBINSON 2007, 205)

The latter quote is Etty's reaction to the piercing of York's walls in order to give access to the new rail station in 1839. Arguably all three quotes highlight complex relations between notions of urban and rural (or elemental) as experienced from the elevated vantage points of walls, and the expectation (in some cases thwarted) to see beyond the everyday city. As it is these urban/historic/rural relations which are often impacted during contemporary planning, perhaps viewpoints from the city walls can assist discussions about them, particularly discussions that can occur on the walls themselves.

On the importance of 'being on the walls', it is vital to discuss the relationship between walking, seeing and knowing. In the 1930's, Walter Benjamin put forward that the urban environment was dialectically entwined with human psyche and the view of the city is often captured through the eyes of the traversing-pedestrian, the flâneur, a 'sight-seeing' role he himself often undertook (GILLOCH 1997, BENJAMIN 2006). Furthermore, Heidegger's concerned individual (the Dasein) understands (and dwells on) place more authentically if they are proximate and familiar with it (2001). However, positive emphasis on the knowledge of an individual 'being there' can lead to a negative perception of any external knowledge of place. 'Disseverance' of place and loss of 'aura' is argued to be caused by technological (often expert) ways of knowing, such as through photography, maps, data, paperwork and forms of digital technology

(VAIL 1972, WALSH 2007, CLIFFORD 2011). In the 1980's, archaeologists developed reflective attitudes of the impact technology and media has on archaeological knowledge of landscape or place (SHANKS 1997, TILLEY 2007, OLSEN ET AL 2012). Furthermore, in current heritage management there is a push to consider local/situated knowledge as part of democratic decision making about important places by local people (SCHOFIELD & SZYMANSKI 2010, GRAHAM 2014). However, the stark division between 'being somewhere' and 'knowing somewhere' from a distance has been tugged at by Ingold's extensive thinking into the different connective ways of 'being' and 'knowing', strengthening the links between 'walking', 'seeing' and 'visualising', (INGOLD 2010). His arguments can aid an understanding of how the social and the physical world are not divisible, but immersive: "the terrains of the imagination and the physical environment, far from existing on distinct ontological levels, run into one another" (INGOLD 2007, 15). Whilst a foot-based knowledge is indeed inherited as a human birth right (2004), 'meshing' knowledge within an assemblage of technologies, which reveal place, is also an inevitable way to understand place. Indeed, once this more networked stance can be considered, for instance, as part of streams of media, information, place and people (THRIFT & AMIN 2002, URRY 2007, MCFARLANE 2010, 2011) the relationship between external knowledge of place can be worked reflectively within place-based methodologies (PINK 2008). But whilst it may be possible to bring 'in place' and 'of place' knowledges together, what is important (particularly with contemporary planning) is that different individuals experience, see, and indeed seek out places differently, such as through the quest of tourism or the through wishing to build residential memory (ENNEN 2000, DEGEN AND ROSE 2012). Accounting for different walking experiences/motivations must also take account of the spatial practices "concretised over time in the built

environment" (LEFEBVRE 1991 qtd in URRY 1995, 25). The performativity of walking the walls as anything other than a tourist may be a hard grain to push against, although it can certainly be done in fun and active ways (SMITH 2013).

In adopting an 'in place' and 'of place'/ foot-and-meshwork approach, the following methodology has been undertaken:

- York (2011) and Chester (2016) walls were walked and photographs taken without this paper in mind,
- the photographs were later re-viewed and particularly viewpoints were identified that could capture key areas of city expansion and contemporary planning issues,
- a historical timeline of each walls construction was then researched using external sources,
- selected photographs were then embedded into the text and passages written from an 'in place' perspective,
- further in-depth research into the contents of photographs was written up, detailing the key periods of city expansion,
- Discussion of the methodological experience and adaptations laid out.

Full investigation into the chosen key historic period was beyond the methodological thrust of this essay. In order to assist summary historical timelines and the research into key areas, the online volumes of Royal Commission of Historical Monument of England (RCHME 1972) and various sources from the Victoria County History (VCH) were consulted most frequently. As such they are clearly cited in the headings whilst slighter references are cited in text. The results of this research methodology are laid out below:

The case studies--Chester walls timeline, adapted from Barrow et al (2005a)

90-122 AD The Roman defences are built after the arrival of the Twentieth Legion, who (over time) quarried Red Sandstone from sides of the River Dee.

900-1000 In 907 the West Saxon's (under Æthelflæd and Æthelred) adapted the Roman Walls, but a tumultuous period followed after the accession of the crown by and then death of Edward the Elder. Chester thereafter becomes a strategic military site between the North and Wales.

1069-1120 After a quashed rebellion by the Anglo-Saxon lords against William the Conqueror, a new castle with a motte and bailey was constructed, disrupting the walls circuit. The enceinte of medieval walls (which extended further west to incorporate the castle) was completed by Normans in 1120 after the building of the Shipgate stretch.

1249- 1397 Walls are maintained by Stone Masons and murages (taxes) are levied to the citizens of Chester for their upkeep.

1409-1589 Murages are continued however there are records of thieving of the stones by citizens. Due to the decline in trade in the city, the role of the muremasters (taxmen) was dwindling and posterns and towers were hired out to city craft guilds—despite the walls being in bad condition. In 1569, part of the walls fell down, and in 1589, the walls were described as ruinous.

1615 - 1700 Whilst still ruinous in 1641, the threat of the English Civil War meant the defences needed to be reconfigured. During the parliamentary siege, the defences suffered extensive damage and severe breaches. Thereafter the repairs were funded by further murages. Different opinions as to the state of the walls (as either ruinous or as an attractive promenade) are noted in 1682 and 1686.

1707-1831 The walls are gradually promoted as a fashionable promenade having outlived their military usefulness. Substantial funds are granted towards the completion of a walkable enceinte around the city. The walls are declared a popular leisure activity for the citizens of Chester in 1728. Rebuilding of medieval gates continued between 1767 and 1810. Extensions and steps were built into parts of the walls, and in 1831 it was said the walls were to have been altered recently "'not so much for strength as for ornament;

the walks had been levelled, the battlements lowered, and the towers refurbished" (BARROW ET AL 2005a, 245).

1835-1945 The office of muremaster was abolished in 1835, and the responsibility of the upkeep of the walls were passed over to the corporation's finance committee. This Council remained the overseeing authority in various works undertaken between 1882-1930 in order to make space for traffic entering the city. However, in 1929, their plans to oversee a new gate in one section of the walls was met with a campaign, led by the Chester Archaeological Society and the Society for the Protection of Ancient Buildings, who demanded a more sympathetic design and for the land surrounding it to be kept as public open space: after 9 years, a suitable gateway design was delivered. The Archaeological Society continued to put pressure on the Council, however much of the walls and historic buildings were left in a state of decay (VCH 2003a).

1950-2016 The Council begins to invest more heavily in the conservation of Chester's centre and walls after a seminal report by David Insall, which instigated the laying of conservation areas (VCH 2003b). Reconstructions were made to the walls in 1990 (Water Tower Street) and the amphitheatre was further enhanced to attract tourists (VCH 2003c). In 2012, the EU funded Portico project takes place and new interpretation is designed for the walls (PORTICO 2012). Chester's walls today are 2 miles (3.2 km) and took the author 45mins to walk in a clockwise direction. 63-70, 000 'holiday visitors' to Cheshire between 2014-15 (VISITBRITAIN 2016). Unfortunately, there are no statistics to suggesting the numbers of visitors to the walls.

Walking the Chester Walls

…I am pleasantly surprised at my dominant position over cars, which are usually the shapers of our spaces and walking experiences. The

Figure. 1. View from Chester Walls of St Martin's Way (Copyright Foxton 2016)

wind messes up my hair and pollution goes up my nose, but I'm still content to see the vehicles zooming fast under the bridge.

CHESTER's ROADS, ADAPTED FROM VCH (2003a, 2003b, 2003c) & BARROW ET AL (2005c)

Since the Roman period, Chester has always been connected to major roadways, such as to Wales and London, thus strengthening its status as a regional capital. And in the twentieth century inner city roads are not only visible from standing on the walls, they are scalable. Inner city roads were agreed to be constructed in 1922, along with a ring road, in reaction to the levels of through traffic to the city. The first sections of the ring road (named the Circular Drive) were opened in 1928 and then more 1950 but thereafter cuts to local authority expenditure and the outbreak of the Second World War impeded further work. In fact, the idea of a ring road was given up entirely and replaced by a southerly dual-carriageway bypass, which was opened in 1977, with further bypasses constructed from the east and west (later bypassed by the M53 in 1990s). What is interesting with Chester roads is that is overlaps considerably with its historic walls, and are (as is viewable below) entwined thoroughfares of separate modes of travel.

…Quiet now past the roads. The trees obscure gardens. I can hear the birds and feel the expanse of a grassy area to my right. I can smell the green.

CANALS, ADAPTED FROM BARROW ET AL (2005b)

The Shropshire Union Canal Mainline, part of Chester's canal system, is visible from the entire North stretch of the city walls. The establishment of the canals and the relationships between different canal companies is indicative of the expanding and competitive trade environment in the eighteenth and nineteenth century. In 1730,

Figure 2. View of the Shropshire Mainline canal (Copyright Foxton 2016)

transport of the River Mersey was improved and Liverpool threatened to take trade away from Chester; as a result, the corporation began plans for a canal to link Chester up with Middlewich. There were many engineering issues and after it opened in 1779, it generated little traffic. However, establishing a link with the Ellesmere Canal (opened in 1795) was a greater success for Chester. It dramatically changed the townscape physically and economically, despite the process of perfecting the navigation, the cuts and the estimation of costs requiring 13 acts of parliament (PRIESTLY 1831, 236). The Shropshire mainline was opened later in 1835 (CCHT ND). In the twentieth century, trade through Chester's canals subsided. In the 1960's the touristic and environmental worth of these forgotten waterways was embraced and still are celebrated by several societies and community groups today (CCHT ND).

…The shops emerge in the dappled tree light, I can see a hanging sign here, an A-board there. Familiar (Clarks, HSBC) and unfamiliar (Porta,

Figure 3. Facing Eastgate Clock (Copyright Foxton 2016)

Rigby Jewellers) brand names swing or stand, nestled in the spaces between brick and red rock. The movement is copied by wallwalkers and shoppers with rustling plastic bags. They stand or swing slowly to different sides of each other. The smell of tea and sweet things wafts from Rococo Chocolates. I seem to be good at finding the empty spaces to take photos today (at 10:45 according to the Eastgate Clock!) The view from Eastgate itself is fantastic and intimidating, a wash of moving colours and noise (that squeaky noise made by the vendor that some kids go for).

SHOPPING & THE ROWS, ADAPTED FROM BARROW ET AL (2005d):

The shops of Chester are a massive draw for visitors. The famous medieval 'Rows'—visible from Eastgate on the city Walls—consist of a cross-junction of shops in (and forming) the heart of Chester. First officially recorded in 1293, the term "Row" was later attributed to the significant meaning of "elevated walkway" in 1356 (BARROW ET AL 2005d, 226). The form of the Rows in Chester is highly particular and is said to be in favour

of the strategy of intense trading: buildings being structured with a public walkway that runs across their frontages, connecting several stretches together. These were shared by craft tradesmen at first-floor level. The sharing of the space by craft tradesmen indicated the collaboration between and overseeing authority of guild merchants, and the desirability of street space of the four thoroughfares, (leading to high concentration of shops). In the 1960s, adjustments to Rows were made in Eastgate and in other parts of the city centre including the Grosvenor shopping precinct. In this decade, some rows were replaced with a brutalist building, with further developments established in 1970, a new building erected in Watergate Street in 1988 and the Dark Row reconstructed during the 1990s.

YORK WALLS TIMELINE, ADAPTED FROM RCHME (1972, 7-34)

296 The initial Roman Wall is rebuilt

1069 After a quashed rebellion by the Viking Earls of Northumbria, the Normans under William the Conqueror reconstruct York Castle and dam the River Foss where it met the River Ouse, creating a water filled moat and also a lake (known as the Kings Fishpond) 0.4 to the north east of the new castle area.

1300-1400 Gradually the defences (formed as earth ramparts, ditches and wooden palisades) are built in Limestone by the Stone Masons. The last stretch between Walmgate and Monkgate had been erected by 1386, cutting a boundary of rural practice between the community of Walmgate and Heslington fields.

1490-1500 Before his defeat, Richard III commissioned repairs to the City Walls. These were enforced by his successor Henry Tudor but the repairs had to be re-constructed again after rebels attacked the city between 1487-9. In 1490, the Mayor of the time commissioned the tilers to do the king's work and construct a red brick tower (a cheaper resource compared to stone) next to the edge of the Fishpond. This led to a tension between

Figure 4. Grand Cedar Hotel, York (Copyright Foxton 2011)

the two crafts resulting in the murder of a tiler in 1491. Murages were by then being levied, however the muremasters job was seen to be unattractive (and in 1557, four shoe craftsmen were called upon to take the job, which they refused, and were imprisoned as a result) (WEBB 2015, 187).

1644-1736 During the later Civil war in 1644, the Fishpond acted as an obstacle for the Parliamentarian Army trying to access the City. However, in maps in 1600s shown that the Foss was starting to shrink and silt up, especially during summer, causing Sir Francis Drake to refer to the area as a "stinking morass" (DRAKE 1736). Some parts of the walls remained severely decayed after the Civil War.

1800-1889 This century sees the start of a 90-year feud over the walls which starts with the York Corporation considering the demolition of the walls in order to improve transport, infrastructure and economic prosperity in 1800.

Philanthropists, members of the corporation, the Archbishop, the middle-classes and eventually the working classes all campaign in different ways to keep the walls in order to create York 'as a Gem' and visitor promenade. The fully restored walls opened in 1889.

1900-2015 In the 1970's Gillygate housing is threatened in order to bring the walls into full view, however this did not come to fruition and local funding sought to bring street shop back to life (MICHELL 1988 65-8). In 2004 the York Walls Conservation Plan is written (PLB 2004) and the walls are celebrated as vantage points in an overall 'rich townscape' in Council's the Heritage Topic Paper (CYC 2013, 36). For North Yorkshire the holiday visitor number is 276,000 in 2014, and around 180,000 in 2015 (VISITBRITAIN 2016). VisitYork has logged larger 'general' visitor numbers (over 3million), through ticket sales to the 'top ten' attractions in 2016 (VISITYORK 2016b). It is currently not possible to find out exactly

Figure 5. The eastern side of York Station (Copyright Foxton 2011)

how many of these walk the walls. The York Walls are 3.4 KM in length and took the author 90minutes to walk anticlockwise.

Walking York Walls

…The giant hotel to my left looms large, dominating the skyline, its golden sign luminous, its red brick hinted in the shade. Still, there is a lot of sky to see. Walking further along (mindful of the steep bank on the left) a dark, cubic and concrete building becomes more noticeable to the left. I wonder if it is made to look like a chocolate bar? My perspective is then directed through trees and down the green bank. The Station to my right looks like it is having some work done to it (green net scaffolding). I walk on, stop at a passing place to let other wallwalkers past, nodding at the smiles as they go the opposite direction.

Railways, adapted from Tillot (1961):

In the 1830's George Hudson, known infamously as the Railway King, had been campaigning for the Great Northern England Railway Company (N.E.R) to be based at York and promoted the building of a new station. He promised the citizens and corporation increased economic prosperity in a successful attempt to establish himself as Mayor of York (CURR 1984). He was later (1849) discovered to have incurred massive debts to York during his time in office. Nevertheless, there had been growing number of supporters for rail within the corporation and in May 1839 York's first 'temporary' station opened outside the walls on Queen Street. Between 1839–40 another new station (built by the architect GT Andrews) was opened inside the walls at Tanner Row, (previously called the Old Station, now converted into the offices where the City of York Council is based) (HERITAGE GATEWAY 2016). Despite the artist William's Etty's misgivings (ROBINSON 2007) the walls had been pierced on the south west side in July 1839 to enable access to the Tanner Row station, whilst in 1840 the arch North Street

Figure 6. The River Foss (Copyright Foxton 2011)

Postern was enlarged, paid with £500 from the Great North of England Railway Company to gain access to the coal depot which lay to the north of the temporary Queen Street station. To further enable access to the Tanner Row station, a southern arch was made in 1845. But due to heavy traffic and limited space in Tanner Row, the N.E.R decided in 1866 to build another station outside the walls (again on Queen Street). In advance of the opening in of this New Station in 1877, two further piercings were made in the walls in 1874 (at Tower 17 and North Street Postern) to enable road traffic access. The landscape around this section of the walls had dramatically changed in the space of forty years.

The impact of the railways assisted the later economic expansion of the city in aiding the reduction of coal prices. However, this relationship is not easily defined as Tillot (1961) has argued, indicating that it impacted businesses in York in different ways. The railways certainly brought jobs: between 1841-1891 the number of railway staff (hotel workers, administration, labourers and footplate men) grew from 41 to 2,900. In 1855, jobs in the railway workshop (for engines and maintenance) provided 1,200 jobs—however, this closed in 1905. In addition, during the 1850's, the number of visitors to the city increased from 23-4,000 a day to 341,000, travelling on the 13 trains that arrived in the new station. Many guide books were published during this time. Today, new plans for a residential and business development (known as York Central) are being put in place in the area surrounding the current station to the north west, including Leeman Road (CYC 2016a).

…Whilst walking the route from Red Tower to Layerthrope Postern along the River Foss views of the 'fringe' of the city are instinctually felt. The walls stop,and the path is suddenly at ground level. In walking the directed route (following the

green tourist sign) a wide pavement complete with cycle lanes and traffic lights are encountered, which curve to the left following the green Foss. On the other side of the busy Foss Islands Road I can see a commercial shopping area; Waitrose, Frankie and Bennys, Homebase, HomeSense, Pets Store, Morrisons. The traffic is well-regulated by the lights—stopping every 7mins?—but the volume is enduring.

The Foss, adapted from Tillot (1961)

The River Foss has had a massive impact on the east part of the walls. The creation of the Fishpond in 1069 is the key instigation of this relationship because it was seen as a suitable defence (TURNER 1971) so no walls (or other construction) was built in the area between Red Tower and Layerthorpe. The gradual development of the land Foss Islands, where the Fishpond had been, occurred between the 18th and 19th centuries, as a result of failed efforts to make the Foss navigable for boat transport. Poor workmanship, lack of funds, the river's lack of consistent high water levels and meant that in 1853, York City Corporation had purchased the Foss Navigation without plans for improving it, but turned instead to the drainage of the Fishpond for sanitary reasons (Rowntree's condemning report of poor health conditions due to lack of 'clean air' in the nearby Walmgate slums had been published by 1850). In the 1900's the silted land was later used for gas works, the new Foss Branch rail-line and the Power Station at Foss Islands Road, which have since been redeveloped as commercial plots in the 1970s (RAINE 1924, EVANS 2002). Between 2005-2010 the Foss Islands Retail Park had been established (SMITH AND JOHNSON 2005).

Discussion

A number of aspects of the methodology came to fore during the write up of the case studies above.
Bringing together knowledge: in attempting bring together knowledge 'in place' and 'of place' in the write up, the structure of the

paper, including historic information, photos and the author's insight, is somewhat divergent (and admittedly patchy in areas). However, perhaps the same would be true if this undertaking was not a paper (of place) but a tour (in place), not all information can be divulged. Furthermore, the use of photographs (during the write-up of the author's insight) also afforded particular kinds of vision, which were admittedly restrictive and not necessarily the best demonstration of authentic 'in place' experience. For example, 'street view' on Google Maps was called upon in order to understand more clearly the extent to views on the railway section of York's walls. In addition, where external resources were unclear (for example, the author was keen to discover the location of the coal depot in York) additional research on the Heritage Gateway, and hunting for the monument location on the newly published Council of York Council HER website enhanced understanding (CYC 2016b). Thus, with a meshwork approach the two knowledges will mix and inevitably produce forms of 'weirdness'; it is discussed elsewhere that the 'aura' of digital technology inevitably lends to place-making activities both in and away from place (GIACCARDI & PALEN 2008, JEFFREY 2015). Being in place, seeing it and knowing had to coincide with the assemblage of vast information, and both research 'hunting' and 'sieving' to get even an initial grasp on contemporary issues.
Walking and then looking against the grain: In trying to dislocate previous understandings of the walls and memories from the photographs, the author experienced an odd cognitive dissonance. Both wall excursions encourage a certain ontological experience. The evidence and history suggests that the walls manifest mainly for touristic purposes; the present interpretation signs and the Friends of York Walls trail app (FOYW 2016) provide physical (and digital) acknowledgement of this. Bringing contemporary planning issues to the fore for local engagement purposes would require a dynamic that encourages a new way of looking, a new 'gaze' (which can

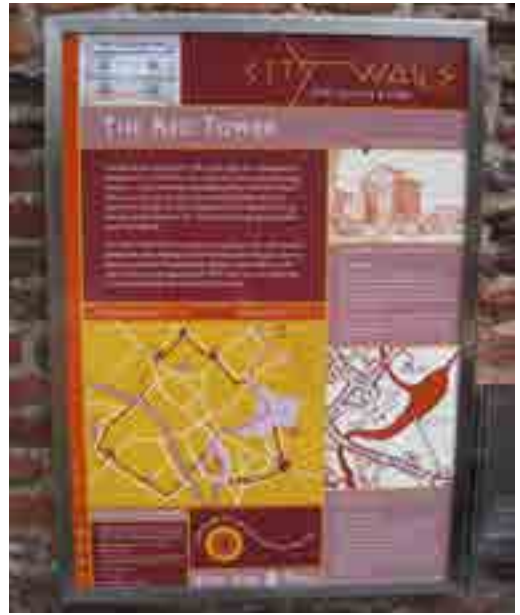*Figure 7. Chester Interpretation Board (Copyright Foxton 2016)*

Figure 8. York Interpretation Board (Copyright Foxton 2016)

tug at both normalised and previous views) (URRY & LARSSEN 2011).

Further considerations: In order to adapt the author's methodology so as to involve others, a tour on the walls with knowledgeable practitioners and the public is an obvious answer. Examples of such tours, which bring different knowledges together effectively, have indeed occurred in York, i.e. the DIY historic plaques (GRAHAM 2014), and 'Tower to Tower', a collaborative tour by archaeologists and artists which brought facts, historical dreams and future imaginings of the walls to light (VESPERTINE 2016). Furthermore, local historians have also conducted similar excursions individually, sharing their insights online (YORKSTORIES 2016). However, in reflection of the discussions at the latest AACCP conference in September 2016, one of the things that has struck the author is this; that wider democratic discussion about cities is difficult (and her own research into community engagement has thrown light on this). Perhaps, in recognising the difficulty of reaching agreed (sustainable) outcomes in contemporary planning or acknowledging the economic incentives in heritage projects — as was discussed at the conference — constructive dialogues cannot be achieved or indeed aided by such pronounced excursions to gain insight and perspective. This is due, simply, to different priorities and everyday interests. However, as dynamic conversations continue in York (alongside further transfers of historic assets from the Council to local communities including towers on the walls), the author continues to hope that further acts of 'walking out together' can bring the commonalty of, not only the walls, but the city, to the fore.

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Physical Planning, the Region, Democracy and the Questions of Time. Preliminary reflections

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Abstract: In order to think physical planning, time and questions of scale, there is a need to develop new approaches. At the AACCP workhops and conferences we have initiated such a process, in Florence, in Valencia, in Cancun and in London. The world in 2017 is, perhaps, a little bit more uncertain, and the importance and urgence of talking settlement organisation and the possible roles of planning are, I think, evident. The 2016 meetings, in Cancun, Quintana Roo, México, and in London, England, were stimulating and productive. One of the interesting themes was about settlements at large; and I think our conclusion was that there is no simple always applicable recipe for were to locate settlements, or how to think about their size.

Keywords: Physical Planning, Democracy, Architecture, Town, Urban Planning, Archaeology

In order to think physical planning, time and questions of scale, there is a need to develop new approaches. At the AACCP workhops and conferences we have initiated such a process, in Florence, in Valencia, in Cancun and in London. The world in 2017 is, perhaps, a little bit more uncertain, and the importance and urgence of talking settlement organisation and the possible roles of planning are, I think, evident. The 2016 meetings, in Cancun, Quintana Roo, México, and in London, England, were stimulating and productive. One of the interesting themes was about settlements at large; and I think our conclusion was that there is no simple always applicable recipe for were to locate settlements, or how to think about their size.

In order to work these questions, it would be fairly evident that collaboration between various scholars is necessary, and that, for example, historians and archaeologists have a place alongside architects and planners. As is often stressed, but seldom truly made into practice, a general participation of citizens is also of urgency.

When the AACCP met in London, it seemed relevant to look at a classic English publication from 1944; a difficult year, but also a year of hope, as is visible in the book *Physical Planning*, edited by Ian R. M. McCallum, and published by The Architectural Press. It consists of a large set of contributions by different authors, often brief but dense texts. Among the authors appears names like E. F. Schumacher, E. A. Gutkind so many others. The book is filled with the hope of a better future.

But there is much to think about in relation to this volume. First, there is, in the AACCP context, certain very harsh remarks concerning old buildings, which are deemed to be of no value whatsoever. However, beyond that, there are other interesting reflections to reflect and think about. One important point is the hope for a democratic planning process, and here, of course, the German Nazi government is put up as the negative example. However, one of the most important messages is that a wider

Fig 1 The cover of the book "Physical Planning, 1944

landscape has to be included in the planning, and focusing on one single chosen settlement should be avoided. The urban is not the point of departure for planning, but rather the region, a wider landscape, and the challenges in planning are to find ways to integrate this wider landscape. In this approach, there is an open criticism of autarchic solutions, and in particular feudal enclaves, which were still in existence, in varied ways, in Europe before 1945. An interesting virtual absence in the book is that of Le Corbusier, and this is probably worthy of more attention in future studies. Contrasting Le Corbusier's ideas on planning to these of this book would be rewarding in various ways. Le Corbusier was highly critical to the idea of grid-iron plans and similar modes, and looked for alternative planning models and different scales.

In the case of the region, Dickinson in a chapter titled Ecology (which, in this case refers mainly to human social ecology) takes his inspiration from British scholars like Patrick Geddes and Lewis Mumford. The question in the centre of attention is what is to be considered the basic social unit, a

theme which has been considered easy and straightforward, but which, actually, is a tricky and difficult topic. Dickinson could be called a modernist, as, actually, most of the book Physical Planning, and some scholars would probably use that argument to discard it without much ado. I would however, while being critical to several of the key arguments of the book, still insist on the positive sides.

In the English tradition, Dickinson makes much of the village (which was idealized, e.g. in the work of Thomas Sharp), and talks about the town as service centres. Here, and this is a curious point, which ought to be analysed in detail at some point, Dickinson picks up the work of Walther Christaller, a German scholar, on central places in southern Germany as a main source of inspiration. Christaller is, today, an important work, quoted frequently in cultural geography, and used in a wide range of disciplines, even in history and archaeology. In parenthesis, it must be said that when Christaller is used to analyse e.g. Iron Age sites in Europe, or the Neolithic, or even the Maya, as does occurs at times, it is not an

Fig. 2. Plan of the Settlements and of the trafic network along the Reno river, 1925 (from Wir haben ja alle Deutschland nicht gekannt, Wolfgang Kemp. DOI: 10.17885/heiup.90.106
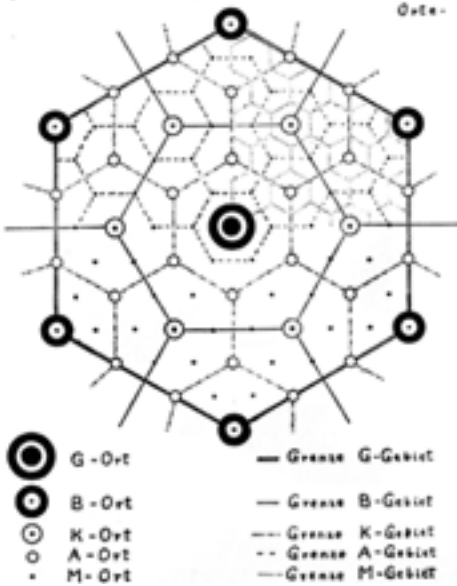
Fig. 3. Hexagon development scheme in the Walter Christaller's planning method. (W. Christaller, Die zentralen Orte in Süddeutschland. Eine ökonomisch-geographische Untersuchung über die Gesetzmäßigkeit der Verbreitung und Entwicklung der Siedlungen mit städtischen Funktionen, Jena 1933, S. 71)
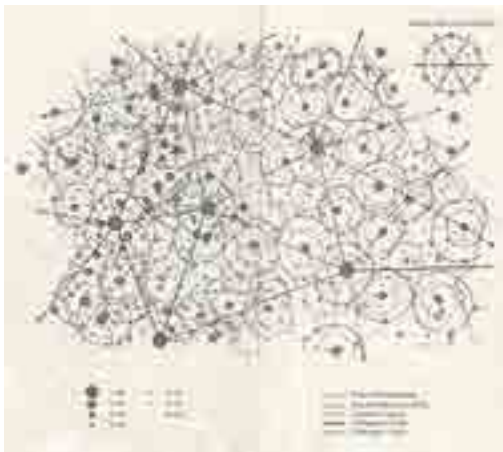

Fig. 4. A development scheme from Walter Christaller applied to the planning of a large area. (W. Christaller, "Das System der zentralen Orte in Süddeutschland", 1933)

evident theoretical or methodological choice. What is entirely clear in Christaller's own work is that he wished to produce models for new ways of planning, to be applied in the present, disrupting what he considered dysfunctional social space. The application of these models

on prehistory is perhaps, thus, not the best choice. Apart of this problem, here are tricky aspects to Christaller in more than one way, and I will return briefly to this below.

Christaller devised a model on the spacing of service centres and market areas, which took the form of a set of hexagons, integrating small market towns and the larger service centres in one large hexagon. It must be stressed that Christaller's work has many advantages, and that it may well still serve as an inspiration. Dickinson applies such a model on East Anglia, and in relation to his models, much of the earlier administrative areas in England, which, in his interpretation were based on medieval patterns, has little relevance for the context of 1944. Christaller and Dickinson also argue on the ideal size of a marketing area, to allow for, in their eyes, a suitable size. Similarly, Dickinson argues that industry need no longer (in 1944) be situated close to the coast or to coal fields, but could be distributed differently. Dickinson also argues on the larger town, the cities, and their subdivisions. Explicitly, there is a suggestion for decentralization, and the idea that the enormous urban mega-space should not be seen as an ideal. The concept of Region is the key to this argument. Of course, recent trends in several European countries insisting on the mega-urban sites as the best planning solution, is rather the opposite of Dickinson's argument. In this, Dickinson is interesting, and actually the entire volume Physical Planning work on this theme.

But it is necessary to reflect a bit more on Christaller. Since a major goal of the book Physical Planning was about democratic planning, applying Christaller without any deep discussion on his work and it's context is strange. Christaller during the Second World War actually worked for the German administration in occupied areas, trying to implement new spatial organizations, which included forced movement of populations, and which had no democratic dimension whatsoever. The absence of a critical discussion here is strange, and urges us to

Fig. 5. A picture from the exhibition "L'Italia di Le Corbusier" (http://cargocollective.com)

think more on the subject.

Just to sketch ways of addressing the question of modes of planning, we could just hint at a simple example, which relates to experiences from the 1930's in Italy, and which incorporates a debate on the urban and the role of architects, planning, and the role of the past. There was an interesting workshop on Le Corbusier and Italy in 2007, realized in Rome and Tivoli. The publication, edited by Marida Talamona, was published in 2010. In this work, we see not only glimpses of Le Corbusier's experience of Italy, but also glimpses of a changing political landscape. Remi Baoudoui explicitly addresses Le Corbusier's entanglement with the Mussolini administration. In this context, the frame is an explicitly anti-parliamentary and antidemocratic stance, defended by several Italian planners, but also, during a period, by Le Corbusier. An interesting detail here is that Le Corbusier, while admiring much of the fascist project, tried to convince Mussolini and the Italian planners that using the old Roman Style was a mistake (Baoudoui 2007: 169). This episode seems today, to be a comedy, and, most certainly, there was little possibility for Le Corbusier to achieve his goal. There are several hints in the bibliography on instances in which Le Corbusier made attempts in this direction. Talamona (2007: 181) mentions an example where Mussolini showed disdain to past monuments, when in 1934, he stated that the fact that there is an old Church close to the intended position of the new train-station in Florence is of no relevance. In other texts, we see how the Mussolini government celebrated ruins related to Augustus and certain other Roman Emperors, and how these were given a key place in certain urban spaces, notably in Rome. To Le Corbusier, certain large old monuments inspired him, but scattered columns and pillars were of little value to him, and here, the difference in attitude is evident.

What seems evident here is that Le Corbusier thinks he can apply some of his thoughts about architecture, space and the urban in Italy of the 1930s, in a frame that can certainly not be defined as democratic. In 1938, the Italian parliament was even formally abolished. The fact that the antidemocratic was such a strong fame of discussion in the 1930's, and involved major actors, such as Le Corbusier, makes the British publication Physical Planning even more interesting. Physical Planning repeatedly addresses the democratic frame as the main point of departure. However, it still relies largely on arguments created in an anti-parliamentary and anti-democratic frame (which, of course, does not only relate to the act of voting) makes the argument weaker, and it is, evidently an important point to return to, to re-address, again and again.

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Construction, city planning and urban archaeology Reflections on the role of money in the city development and archaeological research of Turku

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Abstract: City planning involves and concerns many parties from ordinary citizens to decision makers, construction companies, stakeholders and landowners. The development and construction of the city change the living environment and affect the functions, identity, attractiveness and vitality of the town in many different ways. The ideas and actions are, however, often restricted or directed by financial resources and economic interests of different stakeholders, developers and landowners. In this paper, I am discussing the impact and role of money in city planning, urban archaeology and construction of Turku (Finland). Turku is the oldest town of Finland proud of its medieval roots and long history with notable urban archaeological and historical heritage. Therefore, the construction activities are often preceded by archaeological excavations, which need to be considered in urban planning and development projects. The paper presents a couple of examples from the past and present, which demonstrate the relevance of finance and role of moneymen in urban development and in the preservation and research of archaeological and historical heritage of the town.

The beginnings of urban archaeology in Turku and the establishment of the subject

In Finland, the beginning of urban archaeology can be traced to the late 19th and early 20th century. The first excavations were carried out purely for research on the bishop's site of Turku in 1898. The excavations they were financed by a businessman and industrialist Fredrik von Rettig, who had studied history and literature for two seasons in Switzerland, in the university of Geniva before engaging himself in the family business in Finland. (Fig. 1.) His background and enthusiasm in history reflected in all his actions. He expected the first excavations to be carried out by a professional archaeologist from Helsinki, since it was the only town in Finland, which provided education in archaeology at that time. Next year, the city council of Turku participated in financing the excavations and covered 80% of the excavation costs while the share of Fredrik von Rettig was 20 %. Excavations continued in 1901–1902 when the city council bore most of the costs with 6000 Finnish marks while the share of von Rettig was now only 500 marks of the total costs.

The role of Fredrik von Rettig did not, however, decrease in supporting the early phases of urban archaeology. At the same time, he was responsible for carrying out large excavations on three other sites in the town area. These excavations were carried out as part of the construction project of a residential building, a cigarette factory and a city library. (Fig. 2.) The excavations on the construction site of the cigarette factory were actually supervised by Fredrik von Rettig himself, while the other

excavations were carried out by Juhani Rinne, a young master of arts at that time (DRAKE 1984: 94–97; JUTIKKALA 1985: 862).

Fredrik von Rettig can be considered as a key person in promoting urban / historical archaeology in Turku and in Finland. He was a very generous donator and benefactor and a forerunner in many other ways, too. He improved the living conditions of his employees and working class in general and financed the construction of the city library in Turku at the beginning of the 20th century. (Fig. 3) He was also one of those three persons, who established the city museum in Turku in 1881 and who actively participated also in practical museum work in the early years of the museum. He was the chair of the museum committee and organized the meetings of the museum board in his own premises. By his death in 1914, he had supported archaeological research on many sites and initiated the antiquarian activities related to local history in several ways (DRAKE 1995: 19–25).

Fig. 1 – The bust of Fredrik von Rettig (1843–1914) made by Walter Runeberg in the lobby of the city library (Copyright: https://fi.wikipedia.org/wiki/Fredric_von_ Rettig#/media/File:Fredric_von_Rettig_%C3%85bo_ stadsbibliotek_2010.jpg)

His son, consul Henning von Rettig (1866–1924) followed in his father's footsteps as a donator but did not make his mark as a supporter of urban archaeology. After his death in 1924, his widow Anna von Rettig donated a

Fig. 2. The excavations related to construction of a new residential building in 1906 were carried out on the site of the medieval Dominican Convent. The construction history of the convents is still unsolved and consequently, this is one of the areas, which would need to be excavated with advanced methods. (Copyright: DRAKE 1984: 97, orig. TMM)

Fig. 3 – The city library of Turku donated by Fredrik von Rettig in the townscape of today. The construction of the library included large excavations on the site, but unfortunately the documentation and dating of the revealed remains is defective and scanty.

large sum of money (3 million marks) to the University of Turku in order to establish (and later to upkeep) a professor's chair in historical archaeology. (Fig. 4.) The distinguished archaeologist and historian Juhani Rinne was presented as a candidate for the chair. Dr. Juhani Rinne had collaborated closely with the farter-in-law as well as with the son of Anna von Rettig, but when the plans for filling the new Chair became publicly known, the process turned into a political matter.

According to the press, the relationship of Juhani Rinne to the Finnish language and Finnishness was considered debatable. This situation caused a serious newspaper polemic and controversy between the Fennomans, Peasants' Party and other parties and people at the university. The situation got so intense that the products of Rettig were boycotted and there were financial scares towards the company as well as threats of other kind against the professors and directors of the university. In order to save the economy,

Fig. 4 – Anna von Rettig (1872–1953). Had her will come true and her donation used as she requested, the University of Turku would have had one of the first professor's chairs in Historical Archaeology in Europe. (Copyright: STIFTELSEN FÖR ÅBO AKADEMI 2007: 9.)

Fig. 5 – Matti Koivurinta the founder of the foundation carrying his name participated actively in planning of the museum and construction works on site (Copyright: Aboa Vetus & Ars Nova magazine no 1, 1995).

operations and the reputation of the university as a supporter of Finnish education, a decision was made not to establish a professor's chair in historical archaeology in Turku at all.

Archaeology and the nomination of the professor were thus used as a strong tool for political propaganda. Interesting fact is that Juhani Rinne was really Finnish, but since he collaborated with Swedish speaking families and used the Swedish language at home too, he was considered unsuitable for working as a professor in the Finnish-speaking University. Besides, Anna von Rettig donated money for the Swedish-speaking University in Turku, Åbo Akademi, in order to establish a faculty of theology, which was actually realized. Unfortunately, she addressed the donation to the chair in Historical archaeology in the Finnish-speaking University, who accepted the donation but used it to other purposes.

The Department of archaeology was finally established in the University of Turku 30 years later as a consequence of a private donation. The donators, Ester and Mauno Vanhalinna, owned a large farm near Turku and donated the entire farm with its buildings, fields and land (including an ancient hillfort) to the university in 1956. The donors were especially interested in the history and archaeological heritage and expressed as their wish that a part of the yield of the donation would be used

Fig. 6 – Aboa Vetus -museum houses the archaeological remains in situ. Since the opening of the museum minor excavations have been carried out as part of the exhibition and museum pedagogy. After twenty years, the area still provides work for archaeologists. (Copyright: Markus Kivistö)

for teaching and research in archaeology. Learned the hard way and possibly to avoid polemics related to politics this time, the professor's chair was nominated as Finnish and Comparative Archaeology focusing on the prehistory of Finland. (PIHLMAN 1994: 1–4; TAAVITSAINEN 2003: 11–13.) Since the mid 1990s, the department has slowly but steadily profiled to the late Iron Age and historical archaeology. However, it is very unlikely that there will be a special chair for historical or urban archaeology in the near future in Finland.

Relationship between construction projects and archaeological heritage – three examples

In 1927, the son of Anna von Rettig, Hans von Rettig (1894–1979), built a big house so-called Rettig palace on the site of the old bathhouse in Turku. The area was partly excavated by Juhani Rinne, who had been the source of fervent discussion about founding the subject of historical archaeology in the University of Turku. In the early 1990's, the palace was bought by the Matti Koivurinta Foundation with an aim to establish a private museum of contemporary art in the premises (SARTES 2003: 77). The Matti Koivurinta Foundation had been established a couple of years earlier, in 1987, with aims to preserve Finnish cultural heritage and to support art. [1] The construction project of the new art museum included archaeological excavations on the site. The excavations did not only reveal the remains documented by Juhani Rinne 70 years earlier but also new findings related to the long history of site.

The archaeological remains in the area were so remarkable that the National Board of Antiquities started negotiations with the Matti Koivurinta Foundation about the preservation of the remains in situ. With the notable financial support from the ministry of Education and Culture, the decision was made to save the remains and the archaeological-historical museum was built on site. (SARTES 2003.) We may speculate whether the remains had

been saved unless some other party with no means and officially declared dedication to preserve cultural heritage had bought the area and the palace. The decision of preserving the remains and to build the museum on site was not made without numerous negotiations with different parties. The head of the foundation, Businessman Matti Koivurinta, decided not to collaborate with the local museum (Museum Centre of Turku), but decided to hire his own archaeologists in his company (including me) to do the work and prepare the site for museum purposes. (Fig. 5.) The museum was opened in 1995 and ever since then, minor excavations have been carried out as a part of exhibition and museum pedagogy. (Fig. 6.) Presently, the foundation supports only archaeological research concerning the collections and remains excavated in the museum area. The museum complex Aboa Vetus & Ars Nova houses the museum of contemporary art with temporary exhibitions and its own collections, too. Today, the main function of the foundation is to maintain the museum complex and to increase the collection of contemporary art [1].

A couple of years after the opening of Aboa Vetus & Ars Nova museum, a similar kind of area was under construction in the old part of Turku. The developer was the Foundation of Åbo Akademi University, which wanted to build a new administrative building in the area. The excavations revealed plenty of wooden constructions and find material, which were considered unique in Finland and significant in Nordic archaeology, too. The preservation of constructions and layers as well as the quantity and quality of finds exceeded all anticipations and archaeologists were facing problems related to time and resources reserved for excavations.

This time the findings and archaeological situation were not presented and discussed in the ministry of Education and Culture, even though the findings aroused a lot of interest in the media. The situation was very difficult for the archaeologists working on site and facing the lack of resources, existence of significant

Fig. 7 – In 1998, the value of archaeological heritage on the main site of Åbo Akademi University was not considered worth renegotiation and rearrangement of the original construction plans. By the decision of the museum, some of the medieval constructions and layers were destroyed without documentation.

heritage and the approaching deadline. The museum decided to abide by contract they had made with the foundation and to adjust the timetable and archaeological work accordingly. This led into the situation were some of the oldest layers and constructions were destroyed without proper documentation by the order of the Museum Centre of Turku responsible for excavations and urban archaeology in Turku (SEPPÄNEN 2012: 2–4, 8–9, 70–71) (Fig. 7).

This time the remains and archaeological heritage on site were not considered significant enough in order to have renegotiations about the value of archaeological heritage and rearrangement of the timetable and budget related to archaeological research in the area. According to the introduction of the Åbo Akademi University Foundation, the main role of the foundation is to provide financial support to the Åbo Akademi University as a university with Swedish as its teaching language. Furthermore, the foundation

supports cultural activities to a limited extent. [2] In this context, I want to point out that the foundation has kindly supported the publication of my thesis related to the material of the area.

Sometimes, archaeological and historical heritage and the people responsible for its protection and research have been considered as obstacles for urban development. The fact is that money plays a major role both in urban development and in archaeology. Financial resources define the realization and extension of excavations, which in turn affect construction activities as well as the preservation, research and dissemination of urban heritage. Although, the understanding about the necessity of archaeological research has increased, the developers are not usually very delighted with the existence of archaeological heritage on the construction site because of the costs they bring along. In the big projects, the costs are carefully considered before making final decisions

about the construction work.

In 2015, a housing company in the vicinity of Turku cathedral planned to build a parking area underground in order to release the backyard for more attractive recreational activities (Fig. 8). I was asked by the company to estimate the costs of archaeological excavations including the post-excavation work and conservation of finds. After having presented by my estimation of nearly 2 million euro, the company decided to give up the plans to have more a comfortable living environment and a playground for children. Being fully aware of the archaeological potential of the area and good objectives of the company, my estimation was realistic, rather on the low side than reasonable. In this case, it was quite easy for me to join the opinion that archaeology became a financial obstacle to improving the living environment of the residents.

Had the area belonged to a developer with an ambition to build an expensive profitable block of flats, the costs of excavations had probably not become an obstacle to construction. This kind of development would not, however, make the living environment more comfortable and the townscape more attractive. Therefore, archaeological excavations are more likely to be realized when the construction work is lucrative in the long run. Therefore money counts and dictates the realization of excavations as equally as the realization of construction projects and development of the area.

Antiquity Act as a mainstay of protection and research

In Finland, the most important regulation behind the protection and research of archaeological heritage is the Antiquities Act from 1963 [4]. According to the act all remnants and signs of ancient habitation and activities, burial grounds, hillforts, places of worship and the ruins of significant buildings as well as shipwrecks are to be protected. The act delineates, that in the case or under the thread of destruction, the remains need to be excavated and documented at the landowner's expense. Here, I would like to point out three things: Firstly, the act does not define what is considered ancient. Therefore, it enables many interpretations and courses of action. For example, at the end of the 1990s I was told that the Antiquity Act does not define that remnants of medieval constructions need to be protected or documented. This notice was given to me by my superiors who had the main responsibility for archaeological excavations I was working on at that time in the city of Turku (the main building site of Åbo Akademi University mentioned above). Consequently, some of the medieval constructions and remains were destroyed without documentation under the surveillance of my managers in order to expedite the beginning of the construction project in appointed time (Fig. 7).

Two years later, I carried out other excavations in the centre of Turku and this time I was told by my supervisor that the layers and constructions older than 1721 need to be documented while the ones accumulated after 1721 are not considered as archaeological heritage. In 1721, Sweden and Russia made a peace treaty in Uusikaupunki in Finland and Sweden needed to give the southeastern part of Finland to

Fig. 8 – The costs of excavations on this backyard turned out to be an obstacle for making the area more attractive and comfortable. The car park underground remains undone and the area will be reserved for cars instead of recreation of the residents.

Russia. As an archaeologist working on the field, I was wondering how to distinguish archaeological evidence from the layers and constructions accumulated after the peace treaty, since the event it self did not affect to the materiality in Turku that much. The definition is very artificial: How come the archaeological evidence prior to the peace treaty was worth documenting and preserving while the evidence accumulated after the peace treaty was not?

Year 1721 was not actually defined by the Museum Centre of Turku regarding the archaeological heritage in Turku. It was actually defined by the National Board of Antiquities (NBA) and thus related to urban archaeology all over Finland. According to the NBA, the periods before 1721 have higher archaeological and research value than the younger layers and constructions. According to definition the limit can be extended to younger periods with good reasons, too (NIUKKANEN 2004: 6, 12). Since good reasons for extending the chronological limit to younger periods can be defined by the party responsible for excavations, the

definition of archaeological heritage remains very subjective.

A couple of years ago, the Museum Centre of Turku, which has the main responsibility for archaeological excavations in Turku, declared that all layers and constructions older than 1827 need to be documented in archaeological excavations. Consequently, the definition of ancient has changed even in one city in less than 20 years: In the late 1990s, the late medieval constructions and layers were not considered ancient while today the constructions and layers from the early 19th century are considered ancient. Actually, the present interpretation about ancient is more in line with the definition of antiques. In Finland, artefacts older than 100 years are considered antiques. Consequently, the chronological criterion for antiques today is 1917 and the gap from antiques to ancient in Turku is nine decades.

Another thing I want to point out in the Antiquities Act concerns the interpretation of the word significant. What are the ruins of significant buildings, who defines them and on what grounds? Are only public buildings

Fig. 9. The house of Dennis in the cityscape of Turku today. The building is one of the few still-standing buildings saved from the big fire of Turku in 1827, which destroyed nearly the whole city centrum.

or buildings with notable (established) historical value significant? In Turku, for example, there are few still standing buildings constructed before the big fire in 1827, which destroyed nearly the whole town. Some of these buildings have not been protected. Today, there is an on-going discussion about whether some of these buildings should be demolished and areas thus to be released for the construction of new buildings with better financial productivity and utilisation rate.

One of these is a wooden building called "the house of Dennis" according to the most recent owner of building since 1975 when Dennis Rafkin opened a first pizzeria in this building in Turku (Fig. 9) Consequently, this building is not considered significant enough to be protected – even despite its earlier history and curiosity. Interestingly, at the same time archaeological remains of the same age (until 1827) are considered worth protection and documentation according to the updated definition policy of the Museum Centre of Turku.

Thirdly, I would like to point out the sentence in the Antiquity Act, which refers to financial conditions if the remains are under the thread of destruction. According to the act, the remains need to be excavated and documented at the landowner's expense. In practise, however, the expenses related to archaeological excavations are reflected with an unwritten principle of equity, which again means very case-specific procedures and actions depending on parties involved, personal relations and interests as well as cities and sites in question. Generally, the principle of equity favours private owners or small joint-stock property companies, but sometimes a private owner has without any doubt sufficient means to cover the costs of excavations and carry out the construction work, which will be a financially profitable investment in the long run. Sometimes the state, a city or the National Board of Antiquities has participated the costs of excavations, which have been considered too high for the landowner.

Recently, it has been discussed whether the costs of excavations should be related to the costs of the construction project. This means that the archaeological excavations should not exceed a certain percentual maximum (e.g. 5 %) of the total costs of the construction project regardless of the project or the site under construction. To me, who has worked on various sites with archaeological heritage of different kind from different periods, the discussion about percentual limit sounds absurd.

Let's envisage this kind of practise for example with a construction of a parking lot of the same size and the same depth with similar construction company and equal costs under the main market square in three different cities: Lahti, Turku and Helsinki. In Lahti, this kind of construction work was actually realized in 2013–2015 with archaeological excavations. According to my present knowledge, the costs of archaeological excavations were less than 5% of the total construction costs. Even though the excavations reached the depth of nine meters and the documented archaeological evidence extended from the 14th century until the early 20th century, the main focus of archaeological excavations and documentation was at the end of the 19th century (c. 1860–1910), which is not even officially counted as part as archaeological periods documented and studied in Turku today (SEPPÄNEN 2015: 104–105).

In Turku, there is an on-going discussion about the construction of the similar kind of parking lot under the main square. According to the plans, excavations should be carried out in 2017–2018. However, the site is very different from Lahti and the area contains archaeological information from the 17th century onwards with good preservation and plenty of organic material requiring conservation. According to my preliminary estimations, the costs of archaeological excavations (without conservation costs) would well exceed 10 % of the construction costs.

In Helsinki, the situation would be different if the area under construction was Senate Square, which contains remains of different kind from the 17th century onwards including a church and a burial ground with thousands of graves in several layers. The square has already been partly excavated on several occasions during the 20th and early 21st century. (E.g. HEIKKINEN 2011; HÄMÄLÄINEN 2013; SALO 2016: 101.) However, the square is not completely excavated and there are still areas that need to be investigated unless they are under the thread of destruction.

This example demonstrates, that the discussion about percentual costs does not justify archaeological research in different cities with different kind of preservation, history and archaeological heritage. Today, the act is 52 years old and there are discussions about the reformulation and updating of the act presently going on. The protection of archaeological heritage has been delineated in European level, for example on The European Convention on the Protection of the Archaeological Heritage (1992), which was validated in Finland in 1996 [5]. Delineations and discussion about cultural heritage in general can be found on the Convention on the Value of Cultural Heritage for Society (Faro Convention 2005) [6]. However, Antiquity Act has hold its position as the foundation pillar for protection of archeological heritage in Finland since according to the authorities it covers the declared aspects related to the protection and research. (NIUKKANEN 2004: 14–15.) Therefore the delineations on European level have not really changed the situation.

The role of money and archaeological excavations

In Finland, nearly all excavations are rescue / commission excavations which are connected with construction activities or land use projects. Few excavations are carried out purely on research basis and these include student excavations organized by universities as a part of archaeological education. There can be great differences between different excavations depending on the town, the organization responsible for the excavations and different parties involved in the project including also individual archaeologists and the way they carry out the projects.

Traditionally, the National Board of Antiquities has been responsible for most excavations in Finland. The main exception has been Turku, where the excavations have been carried out by the local city museum, the Museum Centre of Turku. In recent years, the practice in Finland has changed and most excavations have been open for competition. Today, there are 19 parties conducting archaeological fieldwork on land and 15 parties conducting archaeological projects underwater. The parties include universities, museums, private companies as well as the state funded organizations [7]. Furthermore, the National Board of Antiquity needed to establish a special archaeological fieldwork department in order to compete legally with other parties conducting archaeological fieldwork projects on commission.

According to the prevailing practises, prior to construction activities the developer is supposed to consult with the authorities responsible for archaeological and cultural heritage of the area about the possible existence of the heritage on site. The officials give an authoritative statement related to the developing project and estimate its impact on the cultural heritage of the area and define the level of archaeological investigations if the cultural layers are likely to be affected by the developing actions. In case archaeological research is needed prior to the developing project, the developer is responsible for arranging the investigations required in the area. Furthermore, the developer may decide who will carry out investigations and on what terms. Unfortunately far too often, the decision is based on the costs only and it is not unusual that the selection

criterion (the lowest costs) is mentioned already in the request for offers. This means that the archaeologists, who may have the best experience and knowledge of the area and period in question, are not necessarily chosen for the job (SEPPÄNEN 2015: 101).

In 2015, the city of Turku decided to make an open call for offers concerning all archaeological excavations in Turku between 1.9.2015–31.8.2017 (with an option until 2019) [3]. The request for offers declared that the decision will be based on the affordability order of the offers. Consequently, competitive parties were aware of the benchmark stated by the city for archaeological excavations and research: The one, who can compose the lowest offer, will be given a monopoly to conduct all excavations commissioned by the city of Turku at least until 2017. Five companies, including the National Board of Antiquities, made an offer where all possible costs related to excavations had to be stated. The following decision was made the 24th of August 2015: The cheapest company was chosen to conduct all excavations in the city of Turku until 2020. The decision was made on the basis of following costs: the salary (€/hour) of the excavation manager, research assistant, archaeological site assistant, conservator and conservator assistant. No other costs or any explanation of the modus operandi of the company were evaluated. Consequently, the city decided to make a contract with a company whose salaries are the lowest per hour. Previous experience, possible efficiency (time and resources) and the quality of the work were not counted in this competition. The city authorities had not probably even considered, whether the company that pays the least manages to carry out the work always in the shortest time and with the most effective and best way.

With this decision, the city of Turku – accredited as the main city of urban archaeology with the longest urban history and the most significant archaeological heritage in Finland – proved how it measures and values the archaeological heritage of the city today. Interestingly, at the same time the city is discussing the establishment of the new city museum in order to demonstrate the historical and archaeological significance of Turku as the oldest town with the most meaningful and unrivalled urban history in Finland. The decision of the establishment of the new museum is made in 2017.

In September in 2016, the city board of Turku designated "a vision group" of the suggestion by city leaders. The group was given three objectives: Firstly, the group has to compose a realisable vision for the development of Turku. Secondly, the group needs to suggest concrete actions for increasing the vitality of the town. Thirdly, the group has to create phenomenal and innovative proposals for actions promoting especially digitalisation in the city. The group needs to produce the vision by the end of March 2017 when they need to present a report including the suggestions of the group to the city board of Turku. The decisions related to the work and proposals of the vision group are made during spring 2017 (TS 19.9.2016).

The establishment of this kind of vision group aroused astonishingly little public discussion considering that the establishment of the group as well as the composition of the group was approved as suggested by the directors of the city without general political discussion. The nominated vision group consisted of 12 members who represented commerce, industry and politics. However, there were some people who criticized the heavy representation of commerce and industry in the group. The composition of the group is following: Markku Vilenius (social scientist, professor in future research), Minna Arve (CEO of Chamber of Commerce), Mari Hantula (CEO of department store Stockmann), Janne Renanen (CEO of chain stores TOK), Lasse Svens (master of economic sciences, CEO of Åbo Akademi Foundation), Juuso Virtanen (CEO of Virtanen Oy – chain of construction companies), Timo Hintsanen (an architect, director of city planning in Turku), Riina Lumme (chairman of the student union of the

university of Turku), Arto Valkama (master of economic sciences, CEO of Turku city theatre), Elina Rantanen (vice chairman of the city board, planner in health care), Niko Aaltonen (bachelor of business administration, chairman of the city environmental and city planning board) and Vuokko Puljujärvi (work ability co-ordinator, chairman of the Public utility property management board). According to the list, none of the members represent expertise in heritage or history.

As an urban archaeologist, historian and citizen of Turku interested in the dialogue between the past, present and future in this city, I am looking forward to publishing the report of the vision group in the next few weeks and the following discussion and decision making it brings along in 2017.

Conclusions

Money as well as influential individuals with political and administrational power and authority have always played a major role in urban archaeology in Finland. The beginning of urban archaeology in Finland took place in Turku, which is the oldest town and has been regarded as a cradle of urban archaeology and heritage in this country. The beginnings of urban archaeology can be connected to the rise of national romanticism and enthusiastic search for local history in the late 19th and early 20th century. The ideas concretized in the first archaeological excavations and in the establishment of the local city museum in the late 19th century.

One of the key people in supporting the archaeological and antiquarian activities was Fredrik von Rettig (1843–1914), known as the owner of a cigarette factory with strong enthusiasm in archaeology, history and culture. He was influential and wealthy enough to invest in archaeology and to affect the opinions of the city authorities at that time. His successors (son, daughter in-law and grandson) followed his example and supported the education and culture in many different ways. There were also many other

citizens in the wake of Rettig family who were enthusiastic about the past and promoted the activities in archaeology. All these people represented the upper social class at that time, which reflects the values that were considered appropriate for them at that time.

Fredrik von Rettig as a supporter of urban archaeology has remained beyond compare until now. Today the house built by his grandson, Hans von Rettig, houses an archeological-historical museum maintained by a private Matti Koivurinta Foundation, which is supporting the research related to the material and archaeology of the site. However, the other sponsors have not been able to show equal kind of support (nor financial or social and professional) to urban archaeology and archaeologists than what the members of Rettig family did a century ago.

In 1963, more than 60 years after the first urban excavations in Turku, the actions related to the preservation and research of archaeological heritage were defined in the Antiquities Act still valid today. According to the act, the owner of the area under construction is responsible for covering the costs resulted from archaeological excavations and documentation on the site. In recent years, this has led to the situation that the developer tries to minimize the costs by choosing the party who commits to carry out the excavations with the cheapest costs. In 2015, the city of Turku decided to update its archaeological practices and decided to give a monopoly for all archaeological excavations in the city of Turku until 2019 to a company that provides its workers with the lowest salaries (€/ hour). The decision did not count any other factors that are relevant when the quality and efficiency of the excavations are considered like the resources, expertise and time used in excavations. This kind of decision, made by the city renowned for its archaeological heritage, justifies other cities and organizations to do the same.

It is quite obvious, that the research of archaeological heritage does not arouse interests of private sponsors and donators

anymore. The only discussion related to money concerns the costs of the excavations and investigations required by the Antiquity Act.

On the basis of recent development, it seems that the role of money is increasing and highlighted in the city development of Turku while the meaning of archaeological and cultural heritage is decreasing in decision making related to urban development and construction activities.

Notes

[1] http://mks.fi/
[2] http://stiftelsenabo.fi/en/
[3] Tarjouspyyntö 6981-2015. City of Turku. 10.07.2015
[4] http://www.finlex.fi/fi/laki/alkup/1963/19630295
[5] http://www.finlex.fi/fi/laki/alkup/1995/19950486
[6] http://www.coe.int/en/web/culture-and-heritage/faro-convention
[7] http://www.nba.fi/fi/kulttuuriymparisto/arkeologinen_kulttuuriperinto/arkeologisten_kenttatoiden_tilaaminen

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From decay and total destruction to the worst practice in Cultural Heritage: a reflection about the will of losing all the traces

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Abstract: In time the community of the Cultural Heritage scholars, have experienced a large amount of archaeological ruins, we have visited them, we have surveyed them, we have wondered about the original aspect of those places. Most of the time we have imagined the causes of that decay: wars, disasters, abandon, in a lot of situations the reasons for the ruins are not that clear and legends and common believes take the place of any proved reasoning. But there are some situations, all across time, were the applied destruction was so strong and methodical to leave absolutely no trace of what was in place, this creates a great challenge for the archaeologist and for the architects, a challenge in finding any possible reason for what has been completely forgotten leaving nothing but some drawings, a popular story, a mix of crushed ruins. The political will of removing a small walled town, the effort of the thieves, the try to cancel the memory of a place, the blind and improper approach to cultural heritage operated by certain administrations, create a bad and unlucky environment which is the exact opposite of memory and preservation. It is not something specific from our age nor from the previous, it is an articulated process developed in different ages, cultures and approaches, but with a same result: the annulation of a place or an architecture. This contribution will be aimed to develop a reflection about this illness in built heritage, using various direct samples, from the Hekatomnos' tomb in Milas, to the Hadrian's Villa in Tivoli, to the Montecastrese settlement on the Tuscany coast, to the Pionta citadel in Arezzo, to the Vagli town in central Tuscany, up to the Corallo baths in Livorno and the Tonietti mausoleum on the Elba island. A series of "bad" stories where the digital approach to documentation and virtual reconstruction meet the interest in some sort of preservation or even "resurrection" of these unlucky constructions. This may help to discuss one of the worst process in built heritage and start some understanding about new ways to better address efforts and face this complex phenomenon.

Keywords: Decay, Destruction, Built Heritage, Digital Reconstruction, Digital Heritage

Introduction

Sometimes we can think that Built Heritage has a precious value out of any discussion, an old and historically significant building appears to us as a source of interest and as an engine of culture, a depot of important values worth to be shared. When the building or urban area we study is running in bad conditions, we thing about how to operate on it, to the possibilities offered by restoration and intervention. We act according to our cultural position, respecting the values we learned from cultural heritage studies and maturated staring to and learning about the patrimony we have seen all around our world. But the well constructed concept of preservation and sharing, the strong roots these ideas and this approach have extended in our professional and intellectual behaviour can be sometimes even too strong, bringing us to think about these values as something commonly recognized as a common will of people. With the understanding of the built heritage value as a direction for all the people living in rich historical and

stratified context. This ideas are based on concepts with various declinations in the same geographical area, even when the value of Built Heritage is recognized, the way to approach the intervention can vary from total or even maniacal preservation to various degrees of freedom according to specific needs and local traditions. The ancient Built Heritage can be considered as something to be preserved in all its features, creating a self referenced image of itself, or it can be "edited" in its contest or its same parts, to preserve a sort of "sense of place" or "sense of the architectural item", while transforming all the elements around it, sometimes removing the structure and the pattern which have generated the specific architecture of the place and extracting the object of interest creating the illusion to have it embedded in the present time.

As told, the way of intervention may vary from country to country and from situation to situation: as strong is the will in changing the aspect of a town or a neighbour, as massive is the economical effort and interest in doing it, as declined can be the uprightness in the logic of the operations. But even in these generally recognized conditions, even when all the people from the primary schools get the ideas about preservation as a common part of our culture, it is important to keep in mind that this conviction is a new orientation of our times, never in the past it has been operated or acted on such a scale like it is brought on in our time. The act of preserving and restoring according to clear and well readable practices is applied to any old building, from the real monument to small house and remains with a minimal trace of historical value. It's a matter of scale, but this conviction is often so deep-rooted to bring the risk to see certain architectures or old parts of a town to be frozen in the condition of being the museum of themselves. But if this condition can be a rich subject of debate in a large geographical area, it is important to keep in mind how these ideas are based on con-

cepts from our own historical period. The last century has seen the will of preservation rising from a cultural condition limited to certain elites to be a common educational approach. After the World War 2 the long period of peace in Europe, large part of Asia and America has created the conditions to develop and enhance all the concepts of preservation and reuse of the historical patrimony and to start considering the built heritage in front of two main great challenges: the disasters (earthquakes, floods and climate and environmental changes) and the evolution of the town into more technological conditions (piping, urban infrastructures, overpopulation, implementation of information technology, energetic efficiency). Most of the museums reorganization and almost all the "in place" musealization operations took place in the past sixty years, with a progressive increment in the rehabilitation of the built heritage, taking care, little by little, not only about monumental masterpieces, but also about industrial historical buildings, housing architecture, minor vernacular architecture and so on. In a lot of cases the results are very satisfactory, with the new urban asset offering a valuable scenario, pleasant for living and to be used in a multiplicity of ways. In others situation the result is a simply musealization or an "in style" recreation of a place, creating something expressly aimed to the evoking of a certain previous historical moment (sometimes even more than one). Thus, even if this is what has been done and what it is expected to be done also for the future when an intervention is planned on built heritage subjects, there are two aspects there are almost ignored when talking about regeneration and restoration: what was done in the past (and why) and how is common to get a correct result in interventions aimed to the preservation. The first aspect, is apparently is quite simple, but it is a key point in the understanding of the story of a place, it helps a lot in defining the correct questions when looking at an archaeologi-

cal remain or a at a very transformed architecture. In the past people never considered the ruins or the abandoned buildings as a precious subject to be preserved. Most of the time they look at them as a quarry of pieces or a reserve of parts for new constructions. They never felt guilty or thought that what they were doing was wrong, they simply saw this operation as a natural event following the evolution from a historical period to another, the stones from the past were a present reserve of building materials, what was not coherent or compliant with the cultural and/or religious status of their time was to be removed or was of poor interest. The priority to the optimization of the resource, the need of reuse was always the first in the list of tasks in all those years, the removal of parts was mainly done as there was no strange feeling in starting the building of new houses over the ruins of an amphitheatre, nor in "cooking" Roman (pagan) marble statues to produce lime. If the piece was capable of extreme beauty and in very good conditions the reuse of it in a new buiding was also a matter of "continuity" to exhibit something from a glorious past, but the mix of new elements with the remains often required some adaptation to the old pieces, so cutting and re-modeling them was a quite common operation. From intense reuse to total destruction the almost daily intervention on abandoned part of the ancient towns have been a common behaviour in all our past history. The rules connecting the way to operate the destruction to the new use were most of the time quite simple. First of all the richer the building, the more robust the destruction. If the building was presenting marbles, statues, plumbings, reusable small elements, the people have removed in time all the usable portion of it, with no thinking about the damage to the remains, most of the time the holes and demolitions caused by removing a part were in a quite short time the cause of even more extended fall and damage. If the parts of the building,

like its stones and its sculpted elements, were very large, better to work on it in place and move them only for small distances, only very rich people were capable to pay to move a large pillar or a capitol or blocks of stones for long distances. If the parts of the building were too small and complicated to be moved, like mosaics, decorations of the vault or the vaults in themselves, better to leave them in place, a mosaic can easily fall in small pieces, that no one will recompose again and a vault can have very dangerous collapses while been unmounted, thus the damages to all the other structures in many occasions were enough to weaken the remains and accelerate the general decay. The presence of parts coming from previous architecture is in general indicated with the word "spolia" but this can be used to indicate clearly recognizable elements, while it is quite clear that the reuse was often quite beyond the simple placing of a part in a wall: it was common to scalpel, carve or fragment the parts to fit them in a new layout, making them impossible to be recognized in the long run, and for certain materials the destiny was to be reduced to dust according to the specific needs, a good picture about the situation in the Mediaeval age can be taken from Dale Kinney: "The reuse of Roman stone for building was normal until the late eleventh and twelfth centuries, especially in Britain. At that point it tapered off due to depleted supply, the technological and economic recovery that made it possible to resume new quarrying, and the novel design demands of Romanesque (or Norman) and Gothic architects. Marble was always a special case. It was a luxury stone and its reuse was ornamental, not expedient. Even in Italy it had to be obtained secondhand, as the Mediterranean quarries that produced it were abandoned in late antiquity". But the past was not only made of destructions or of use of ancient building as quarries, in many situation, the reuse and adaptation of previous constructions brought in our times not the

original building but its very original trans-formation into following structures, creat-ing unique masterpieces of stratification and architectural inventive. Just to mention few samples of this phenomena it is possi-ble just to list the "Piazza dell'Anfiteatro" in Lucca, or the "Piazza dei Peruzzi" area in Firenze: two cases of urban reuse of Roman amphitheatres where the original buildings completely disappeared to leave space to houses which simply kept the original shape of the lot; or to "Castel Sant'Angelo" in Rome, evolved from the monumental mausoleum of the emperor Hadrian. The number of cases of total or partial reuse of previous buildings is high, with a lot of meaningful samples, mainly in the Mediter-ranean area. But if reuse can bring to the destruction, the forgiveness or even the complete annihilation of a place, it is still done for practical or symbolic reason, somehow it is a sort of continuity with the past. On the contrary, there are numerous situation when the will to destruct a place worked pushing it to fully disappear from the physical and cultural level. In the next lines a series of cases will be presented to guide through a gradient of situations from the reuse bringing to destruction to the full will of removing a place from the history.

The Hekatomnos' tomb in Milas, Turkey

There are many cases demonstrating how the subject of the "Mausoleum", of the monumental tomb, is one of the most "suffering" architecture. Rarely this type of building has a lucky history, most of the time, with the death of his guest, the following changes in political and social situations bring to the destruction or alteration of a "too much" visible structure recalling a (sometimes long gone) past. At the same time, the nature of "significant" architecture, dense of a will of remembering, causes this building to be strongly experimental, to be at risk of earthquakes, of structural collapses and of unexpected decay phenomena. In

Fig. 1 - Three picture from the scene of the "haunt" from the Milas Sarchofagus (G.Verdiani 2013).
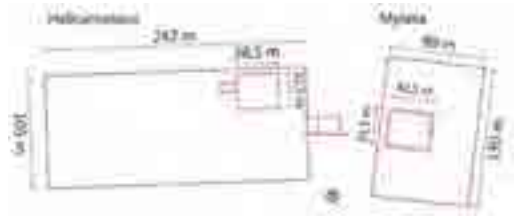

Fig. 2 - A parallel between the tomb in Milas and the most famous Mausoleum of Halicarnassus (G.Verdiani, A.Frascari, 2014).
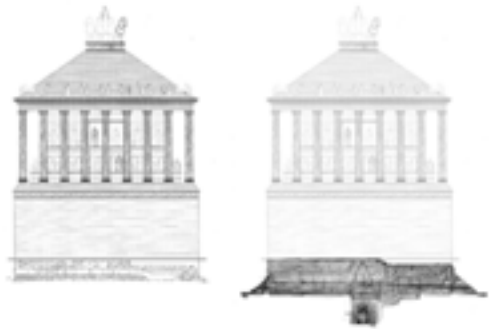

Fig. 3 - Reconstruction parallel between the monumen-tal tomb in Milas (on the left) and the Mausoleum of Halicarnassus (G.Verdiani, A. Frascari 2014).

all the cases the balance between richness of the elements, decay of the social status of the guests, or decay of the structures, cause this kind of building to became an interesting quarry of materials or the place for building something else.
In 2010, in the city centre of the city of Milas, Turkey (the ancient site of Mylasa), an hypogean sepulchre was found inside a superstructure identified earlier as a temple. The discovery came after an illegal excavation in the area was noticed. The tomb has been attributed to Hekatomnos, satrap of Caria and father of the better

knows Mausolus (satrap of Caria between 377 and 353 b.C.). At that time the city of Milas was the capital of the Carian kingdom until the reign of Mausolus that moved it to Halicarnassus between 370 and 365 b.C.

It is well known that we use the word "Mausoleum" to indicate a monumental tomb and that this derives from Mausolus, so finding the tomb of his father creates a very interesting studying condition, both for architectural and art aspects. The building has been used in time as a quarry for other constructions and probably it suffered from some partial or extended fall across time, this cause it to be reduced to a part of the original, thus the tomb chamber has preserved the large sarcophagus, hiding it until 2010. The disastrous actions of the thieves luckily has not damaged too much the sculptures and the set of figures sculpted on the sides of the sarcophagus allows to open a new view to this ancient past. The structure consists in a chamber tomb occulted within the structure of the funerary monument. This chamber is almost completely filled by the monumental sarcophagus made from a single block of white marble that is carved in high relief on all four sides. The burial chamber is placed around seven metres below the actual soil and it's preceded by a dromos, both rooms are covered by barrel vaults. The entrance to the subterranean area was buried under the ground level and sealed with a monolithic stone block.

The thieves penetrated into the basement of the proto-mausoleum perforating from the floor of the house the calcareous blocks and marble stones. They used a core drill to pierce the floor, creating a series of cylindrical holes and then removing the block detached from the structure. also led to a considerable amount of water ingress inside the hypogean chamber to cool the cutting surface. This water has impregnated the walls damaging the paint on the surfaces. The burial chamber consists in a rectangular room of about 4x5 metres and is 3 metres high at the keystone of the barrel vault. All the walls and the vault itself are made entirely of marble. At the approximately centre of the chamber there is the white marble sarcophagus of about 3x4 metres, tall 1.70 metres under the gabled lid. It occupies most of the interior space making it difficult to move in the chamber.

In order to steal the funerary decoration and all the grave goods, the thieves forced open the lid of the sarcophagus in a bad way, removing and damaging the doors of the burial chamber, producing numerous scrapes, cracks, and drilling here and there, probably looking for some more rooms to ransack and apparently losing some parts from the sarcophagus including the right leg of the rider sculpted on the back. After archaeological discovery, the local government proceeded to expropriate housing built on the mausoleum and throughout the area bounded by the terracing of the temenos wall. Later many of these buildings were demolished in order to proceed with the archaeological excavations in the area and have revealed the entire perimeter of the mausoleum of Hekatomnos. A continuation of the excavations has shown the re-emergence of the crepidoma that consists in seven steps which run around the entire perimeter of the building.

This architecture shows two particular aspects: it has been forgotten for a long time, considered as a Temple of Zeus or some other damaged building and secondly, the remains of the massive base arrived in our time hiding the precious tomb inside its stones. A significant part of history missing while being under the eyes of everybody in that area. In a certain way this confirms the idea about how much is still waiting to be discovered in our times, but at the same time underlines the problems about preservation and historical stratification: the destructive approach to everything built in time over the proto-mausoleum, without any kind of documentation, doesn't look like the best approach in Built Heritage.

The Hadrian's Villa in Tivoli

A system of construction of this size move the problems and the issue from the proper conditions of a building right to the urban scale, with specific problem of people and goods movement all around this huge settlement. The choice made by the Villa architects was to try creating an articulated network of connections completely independent and almost invisible from all the area of the Villa characterized by richness and luxury, this was done for two main

Fig. 6 - View of the cryptoporticus around the building called "Peschiera" in the Hadrian's Villa, Tivoli (G. Verdiani, G. Corsaro 2010).

Fig. 4 - The network of the underground passages in the Hadrian's Villa, Tivoli (G. Verdiani, G. Corsaro 2010).

purposes: avoid to have a direct view on the servants activities and create special spaces for walking and relax during the summer season to the emperor and his court.

In the Villa there are many types of connections partially or completely realized underground, some have been completely built, with the realization of a dig and then of vaults and other masonry works to integrate it to other constructions or back to the landscape, others were made simply digging tunnels into the tuff. The name used to indicate these structures is Cryptoporticus. The state of the knowledge about the cryptoporticus network documents a system articulated along almost five kilometres.

The need of galleries was strictly linked to the mobility inside the Villa's area. A need similar to the current needs. In the complex of the Hadrian's Villa, cryptoporticus have very different characteristics, especially under the functional aspects. Often the function of a cryptoporticus changed over the years, adapting to specific needs. Generally (and often wrongly) some underground tunnels are defined cryptoporticus; cryptoporticus, in its standard definition, means a series of

Fig. 5 - Pictures from various samples of Cryptoporticus in the Hadrian's Villa (G. Verdiani, G. Corsaro 2010).

Fig. 7 - Section of a Cryptoporticus between the Large Baths and the Small Baths (G. Verdiani, G. Corsaro 2010).

corridors partially buried, barrel vaulted and lighted by small windows open on one side of the vault. Often the corridors are linked together according to a rectangular shape and are frequently placed under a peristyle. The cryptoporticus was generally used as a substructure, or to stabilize a steep terrain, or like a podium for other architectures.

The network of underground paths of Hadrian's Villa can be classified according to some macro-categories:

Classic cryptoporticus, for the imperial court, usually decorated.

Link ambulacrum: are galleries connecting the different buildings, they were usually used by the crew of the villa.

Underground carriageable roads: There is an extensive network of roads for the transport of supply and building materials.

Hypogean elements of service: Like maintenance galleries, aqueducts, depots, and so on.

Inside the Hadrian's Villa almost each building is composed and serviced by one or more covered path, just near or even combined in the structures. Such a complex system, asked a complex project, with very specific solutions, thus, with the decay of the area, the reason for all these structures was forgotten. Now it is well known that easily stories and legend about fantastic "underground" construction took place among people. "The tunnel going from here to there", "The conduct from the castle to the monastery", "the secret passage", are mere samples of a reality barely perceived in holes opening in the ground and badly read from ruins and parts of old architectures. But the people from the Medieval age, were
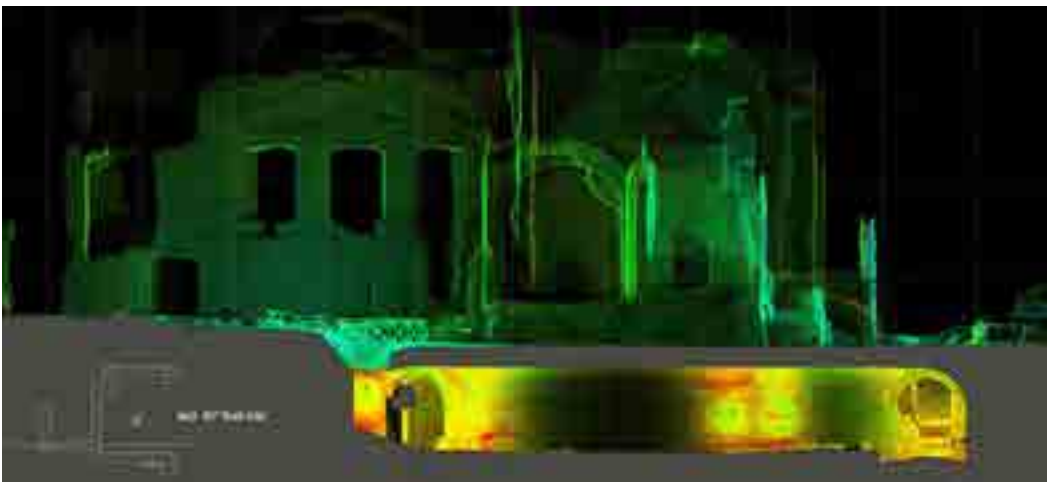

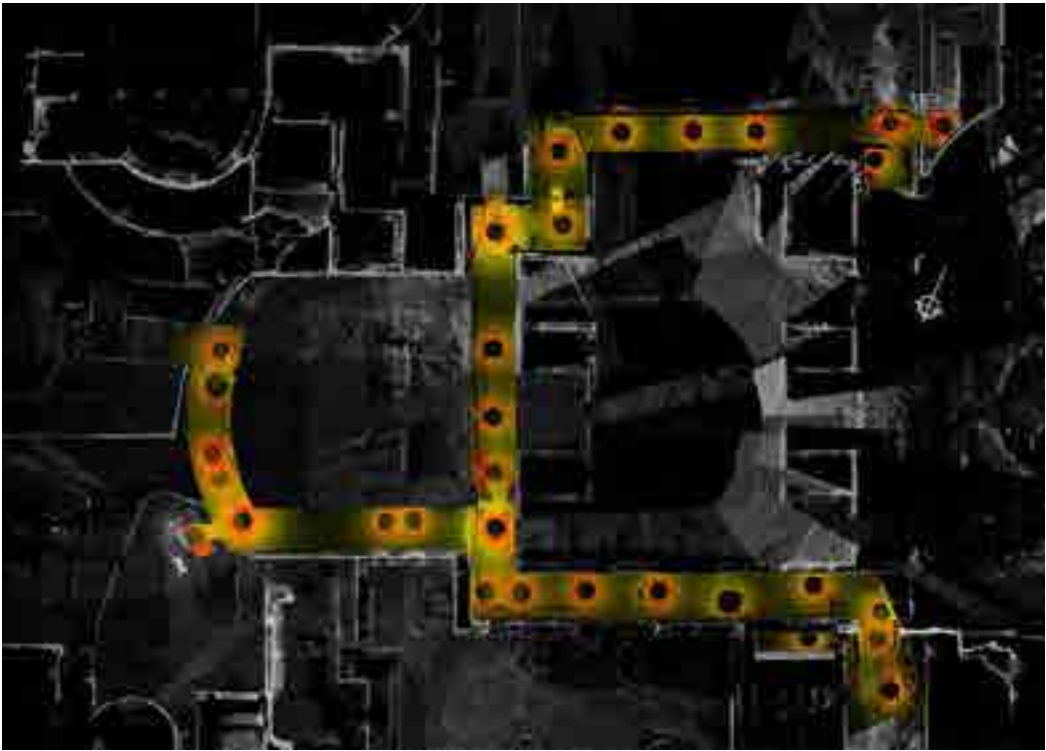*Fig. 8 - Section of a Cryptoporticus between the Large Baths and the Small Baths (G. Verdiani, G. Corsaro 2010).*

Fig. 9 - Plan view of a Cryptoporticus between the Large Baths and the Small Baths (G. Verdiani, G. Corsaro 2010).

Fig. 10 - Illustration presenting an image from the legend of "Santa Sinforosa" (J. A. Mulca).

probably able to enter and visit large parts of the Cryptoporticus system, the trace were so clear that no legend about a fantastic system of tunnels was created, the tunnels were there in front of them, ready for a tour. So, during the long centuries of abandon the Villa and Hadrian were not completely forgotten, during the middle age a legend about a local Saint, "Santa Sinforosa", took place with a strong link to explain the "underground" characteristics of the Villa in connectioon to Saint Sinforosa's martyrdom. According to the main legend Hadrian sent Sinforosa, a Christian Roman woman, to death, the reason for this was the refuse of the woman to renounce to her religion. As a following punishment for his bad act, after the death of the Saint, Hadrian was persecuted by her spirit and by a strong remorse. So he decided to go living underground to hide himself from the sunlight and to expiate. It is possible to imagine this legend as a direct explanation of the strange and huge underground network

the people from the middle age found in the Hadrian's Villa, probably the idea of living far from light was suggestive enough to need some strong and complex legend like this one. Visiting this huge "invisible" town, it comes immediately clear where the legend found its origin. For the Hadrian's Villa the forgiveness of the original use, was not due to choice or to some specific will, the abandon, little by little, caused the "re-reading" of certain structures, something to put order between the past and the need of putting some rationality in an intervention too innovative to be easily understood even after some centuries.

The Montecastrese settlement on the Tuscany coast

On a hill dominating Camaiore, Lucca, Tuscany, there are the ruins of a Medieval settlement, named "Montecastrese", a system of fortifications organized along the top of the hill. In the first half of the XIII century, the castle was conquered and destroyed by the army of Lucca. This caused that almost all the buildings were destroyed and the area abandoned. Only from the XXth century the area was studied from an archaeological point of view. In 2015 a survey campaign brought digital technologies in this place. The municipality of Camaiore commissioned a complete survey to the "Dipartimento di Architettura", University of Florence in collaboration with AION s.n.c., Rome. This was done using aerial photogrammetry for the general documentation of the top part of the hill and 3D laser scanner survey for all the remains of the fortress. This new digital survey allowed to have the perfect base to refine existing hypotheses about the original aspect of this interesting and almost lost medieval settlement. The Montecastrese castrum is mentioned for the first time in a parchment dating back to 1219. At that year the settlement was belonging to the Corvaia

and Vallecchia noble families. At the moment of its maximum development, the fortress was organized around two main towers, with walls and various houses, at that time a quite extended village was located along the southern hillside. With the destruction occurred in the 1224, the towers were torn down, the inhabitants were forced to move to Camaiore and the site was then gradually abandoned until, at the turn of the XVth and XVIth century, this area was dedicated to an extended olive plantation that partially allowed the conservation of some of the archaeological remains. The archaeological campaigns brought back to light the traces of the fortress and of the village, exploring the monumental ruins of the northern tower, still in place and tumbled in two main large parts between the trees.

The first traditional archaeological surveys have been accomplished by the Archaeological Group of Camaiore with the

Fig. 11 - One of the fragments of the Northern Tower in Montecastrese during the aerial survey (G. Verdiani).

Fig. 12 - Some shots from the aerial photogrammetry survey (A. Blanco and D. Nepi, 2015).

discovery of some very ancient pieces of pottery and some remains from IX-X century, supporting the idea of a settlement used for long time. According to the information gathered by archaeologists and scholars, it is possible to define 3 main phases in the development of the settlement: the first goes from the VIII to the X century: the area around the North tower is occupied by structures made of perishable materials, part of the settlement to the South was protected by a wooden palisade, and probably to the West by a moat. In the X-XI centuries there is the second fortified phase: the wooden fence is demolished to leave space to a first stone building. The XII century represents the third phase of the fortified settlement: in this

phase there was the demolition of the older stone structures on the North-East and the construction of a tower with square shaped layout surrounded by a defensive paddock and completed by a guard on the eastern side. With these constructions there was also the building of the South-West tower and of the double wall containing the keep in the upper part of the village and in the lower areas of the hill. At this point Montecastrese constituted an important fortified centre with a strong strategic value. The settlement was articulated between the structures of the fortress and the village, with a complete view of the sea and of the roads all along the plain. The mountains at the back of the settlement were enough to give an adequate

Fig. 13 - First modelling results from aerial photogrammetry survey (G. Verdiani, 2015).

protection and the path along the Apennine was very close to the borders of the fortifications. A similar strategic position and the image of the towers dominating the landscape were a symbol of power too strong to be tolerated in the evolution of the rule of Lucca on this area. The destruction of the architectures was so total and direct that in a certain way the interest in this area was immediately removed, the only use for the terrains and the ruins in time was only for some agriculture activities. It is interesting to mention that the large northern tower was mined and demolished, but that probably the operation got out of control, causing not the crushing of the walls but the tumbling of the top part of the tower. A large block of masonry made a turn of 180 degree on its cracked base as stopped upside up on the ground in front of the remains. In time this part get broken in two, but after almost eight centuries it still looks like some sort of materialization of the Tarot's Card "The Tower", or at least of the effects it represents. The strange event probably caused the broken tower to became a great symbol of defeat, even stronger than the absence of all the settlement, totally destroyed to the ground. All the other aspects in the operation of removal worked as programmed by the army and in time the place was fully forgiven. Ruins on a hill, difficult to be reached, with narrow paths, a nice place for a walk on Sunday and nothing more. So any intervention of valorization here has to start from a very first understanding and reading and in our time this can be achieved using digital tools and efficient procedures both for documentation and dissemination. In the specific case of the Montecastrese settlement this was done starting from the gathering of all the previous materials and then coordinating them around the new digital survey. The research work was then oriented to produce a set of materials to disseminate information and create learning and understanding around the story and the events of this particular site. The final products were a set of physical models, created from digital models and aimed to present the state of the settlement and its reconstruction, various graphic panels and a short video presenting all the operations done in 2015. The physical models, the panels and the video are in permanent exhibition in Camaiore at the «Civico Museo Archeologico» Palazzo Tori-Massoni, Piazza Francigena. The models were realized in white Plexiglas with a digital laser cutting machine at the Architecture Modeling Laboratory (LMA), part of the
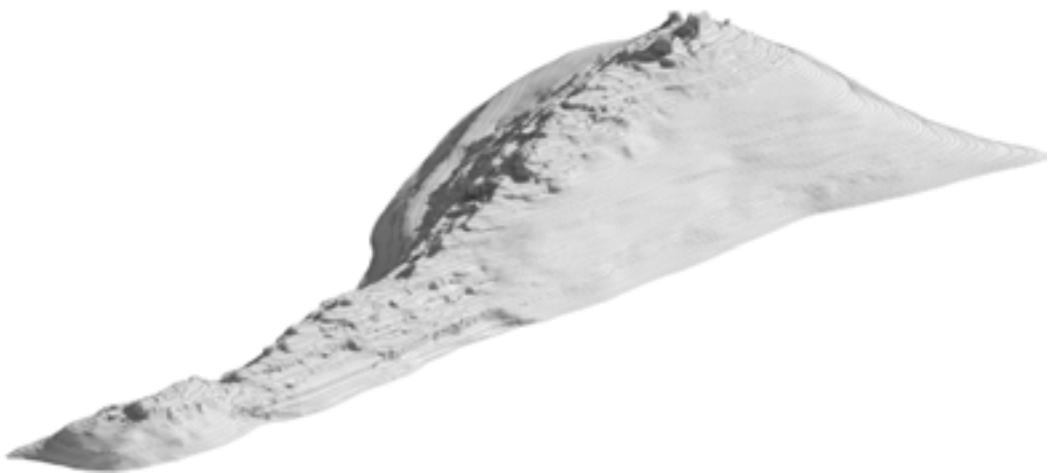

Fig. 14 - 3D digital model of the Montecastrese hill with the system of ruins (P. Kruklidis, S. Lami, M. Carrara 2016).

Fig. 15 - Physical models of the Montecastrese hill, state and reconstruction, in the Model for Architecture Laboratory in Florence (LMA) and the specific exhibition area in the "Museo Civico" in Camaiore (G. Verdiani 2016).

DiDALabs System of the Dipartimento di Architettura, Florence University. The idea was to produce an accessible to the public maquette, a tactile model, when needed, robust and massive enough and capable to communicate the relationship between the territory and the structures (both in the form of archaeological site and of hypothetical reconstruction). The system of panels and maquettes, enriched by some findings and some reproductions took their place in the rooms of the museum, planned and designed by arch. Andrea Innocenzo Volpe and arch. Yoichi Sakasegawa. In this way, starting from a complete and accurate digital survey a whole process of cultural dissemination was started, creating, at the same time, the right bases for new studies and researches to enhance the knowledge and the understanding of this ancient citadel.

The Pionta citadel in Arezzo

Arezzo, a town in Tuscany, is located in the centre of Italy, as many of the town from this very lively area, it has a rich and intense story. But in the story of Arezzo there was an ancient and complex event which destroyed a piece of the timeline in the history of this town. There was a time when the hillock named "Pionta" was closed by walls protecting a small independent citadel , governed by bishops, with its own

churches and political alignment with the Pope and the Vatican State. The hill rises in an area outside of the Arezzo walls; it had its own fortifications and was a completely independent settlement. The tolerance for this small enclave in the Tuscany territory ended in the sixteenth century: Cosimo de' Medici ordered the destruction of this walled town in 1561, bringing to the ground all the buildings and trying to obliterate its existence, not only from the terrain but from the historical memory.

This was the will and the effect of this intervention, but there are few evidences supporting a completely clear reading of the state of the Pionta Hillock before the destruction, the duration of the demolitions, the evolution of the site in the time immediately after the destructions. The traditional reading of these events indicates

Fig. 16 - Digital Survey of the ruins on the Pionta Hillock (G. Verdiani 2014).

Fig. 17 - The "Cacciata dei Diavoli da Arezzo" from Giotto, Fresco from the St. Francesco Church in Assisi. The remains of the Church of St. Stefano and Maria on the Pionta Hillock, Arezzo (G. Verdiani 2014).

the presence of two large churches in this area, both used as cathedrals. The earlier one was dedicated to the Saints Maria and Stefano; it was a quite common construction in the system of the Romanesque churches, while the following St. Donato was characterised by a very complex asset, with a central and symmetrical plan organised around a large central space. Even if the presence of this area remained at a latent state in the memory of the population, the buildings on the hill were demolished and their materials were most probably reused somewhere else, while only minor parts of the previous churches and chapels were reused and adapted in combination with new constructions (like the small church of St. Stefano, built in 1610, giving access to a small crypt from the original settlement).

Fig. 18 - The crest representing the façade of the lost Cathedral of St. Donato on the Pionta Hillock, digital model produced by photogrammetry (G. Verdiani 2015).

Various interventions through the centuries have rearranged the terrain of the hillside itself and only starting from the 1960 a real archaeological excavation campaign was started to discover the remains of the ancient town.

The ruins of the Romanesque church of St. Maria and St. Stefano were brought to light and various minor remains were excavated in the following archaeological campaigns. But a large part of this settlement is still mysterious and unclear. There are no significant traces of the large church of St. Donato, the real cathedral of the walled town, or the original walls protecting the citadel. The organisation and the aspect of the area is barely testified by some paintings, representations and drawings, which include a plan view of St. Donato made by G. Vasari the young, but all these buildings are disappeared; there are no clear remains or traces, neither there are findings of their foundations. In 2014 new investigations were started, based on a new survey of the whole area with the use of Drone Photography, 3D Laser Scanner and Total Station, after this first phase of documentation, a new Archaeological campaign started and it is still ongoing at the moment of the writing. The new data were used to produce drawings and schemes useful for testing ideas and

Fig. 19 - Various representations of the lost St. Donato Cathedral on the Pionta Hillock, the architectural characteristics are clearly present, thus the relationship with the walls and the other buildings is simply symbolic.

dissemination. While the poor ruins on the hill of the Pionta are not the only witness of the ancient condition of this place, a series of specific digital survey was operated on various iconographic examples that can be found around Arezzo, this heterogeneous series of elements testifies, in its own way, the original aspect of the citadel. All these elements were surveyed using digital photogrammetry procedures. The first was a sign engraved on the main door architrave of "St. Maria of the Old Dome" Church in the Arezzo town centre, probably realised immediately after the destruction of the citadel. The second was a baked clay plate from an altar now located in the Diocesan Sacred Art Museum in Arezzo. For both these items the photogrammetry was based on the use of Agisoft Photoscan with the use of a measurement taken in place to put the final model in scale. The use of 3D models to study such elements is very interesting, because it allows the detailed reading of the shape of the elements and it makes it possible to look at them from different and specific perspectives. There are also other and even more detailed graphical description of the place before its destruction, but they are paintings or drawings, so a simple flatbed scanner was enough to create a digital copy starting from a good quality reproduction of these documents. One of these is currently conserved in the Uffizzi "Gabinetto dei Disegni", and it is a drawing by Giorgio Vasari the Younger showing the plan of the original St. Donato Church. This is a very important document, describing a rare and innovative medieval church with a spatial organisation running all around a central space, something existing in other types of architectures, but only found in churches built many centuries later. The combination of this drawing and the other traces left in paintings and sculptures is the only possible basis to start a virtual reconstruction of the St. Donato church, while the presence of a certain set of ruins from the Church of St. Maria and Stefano allows to start investigating this ancient church with more ease. The virtual reconstruction of the site started from the main evidence of the site: the Church of St. Maria and Stefano. The remains of the crypt, the walls, and the previous archaeological investigations and studies offered the base for an architectural reflection of this building. The plan of the church was compared with other similar

ones like St. Salvatore in Agna, Pistoia and St. Eugenia in Bagnoro, Arezzo. These two churches are in well-preserved conditions and useful to better understand the general aspect of the elevations and sections of the ruined church. The study of the geometrical layout, based on the units of that time, the Florentine "braccia", was done starting from the remains.This work was very beneficial in defining a spatial grid, able to be extended, and allowing a better understanding of the proportions of each part. To test the virtual project, the mosaics found during the excavation in the 1960s and now conserved in St. Stefano Church were virtually brought back into place and extended in their pattern to fill the whole space. This was a successful test; the new hypothetical plot showed to be perfectly compliant with this operation. The virtual reconstruction of the St. Maria and Stefano church was just the first step of a complex work; the model defined interpolating between existing architecture and inverse design procedures and allows to have a first look at the possible aspects of the area. Yet it leaves all the questions about the St. Donato cathedral open, as its original place remains a mystery and nothing seems successful in finding its traces. Even the most promising excavations turned out to discover only fragments belonging to other buildings. The presence of the underground chapel gives not enough suggestions to be used as a possible reference in locating the main monument. In the end, the total destruction applied to all the buildings of the area and the numerous rearrangements of the terrain seem to have destroyed everything to such a level that the main question seems to be "why did only the St. Maria and Stefano Church ruins remain intact enough to be read?" Such a question may open new and interesting scenarios about the state of knowledge of the area, while the attention raised by the use of contemporary archaeology may be able to bring back attention and understanding

Fig. 20 - Digital reconstruction of the Church of the Saints Stefano and Mary (I. Giannini, G. Verdiani, 2016).

about this rich and unlucky part of the town. At the state of the art of the knowledge about the Pionta hillock any try for a virtual reconstruction of the St. Donato Cathedral must be based on reasoning, interpolation and abstraction. The ideas about this architecture are easy to be resumed. Urban aspects: the hillock hosted a very rich citadel, with the possible presence of two cathedrals, additionally there was a set of minor chapels, the presence of defensive walls and an undefined number of buildings and facilities composing an urban pattern. It is worth to remember that one of the most surprising elements is the total destruction of all the parts. No traces of the St. Donato Cathedral, no traces of the defence walls. Most of the ruins seem to come from a level underground which was underground even at the time of the demolitions. Architectural aspects: it is known that this second Cathedral was a rich and important church and that its architect was named Maginardo.

Fig. 21 - Study on the plan orientation of the St. Donato lost Cathedral (I. Giannini, G. Verdiani, 2015).

The historical approach to this building suggests a relationship with St. Vitale in Ravenna, seen as Maginardo's inspiration. The drawing from G. Vasari the Younger, various paints and some sculpted representations allow a partial definition of the building. There are also some hypothesis about the presence of the St. Donato Apses in the "Cacciata dei Diavoli da Arezzo" from Giotto (1295) one of the frescos in the St. Francesco Church, Assisi. Thus the indications from this artwork are more cultural than formal in front of further representations. The Vasari's drawing remains the fundamental piece, while it allows to put in scale and orient the plan view. At the same time it allows to organize all the other representations: various paints and drawings about the apses seen from the outside and the aforementioned sculpted representation of the façade. The digital reconstruction moved from the Vasari's plant view: it was oriented and resized into 1:1 scale, this was possible because the drawing has clear notes to help it: the indication of a dimension scale and an orientation made with the indication of the winds, obviously this form of orientation is not totally accurate, but gives a consistent reference. The process of reconstruction bring back the question: why, in the total destruction of the Citadel on the Pionta hillock, only the basement of the St. Mary and Stefano remains in place? No other constructions are there any more, no trace of large basements, neither the ancient walls closing the citadel left any trace. A possible answer may come from placing the drawing from Vasari over the ruins of the St. Mary and Stefano church. They look compliant, so is it possible to imagine that St. Donato was built over the previous church? A renewal of the Cathedral?. No evidences can support this idea and the documents and the historical reading of the poor archives traces seems to exclude this possibility. It is known that the demolition of an older church for the new one to be built is something that happened in other towns, like it happened in Florence with the "new" St. Maria del Fiore" rising over the ancient basement of the previous St. Reparata. Even if not possible to any confirmation and in front of many odd advices, this hypothesis should explain the remains: they were yet underground at the time of the demolition. In the lack of any archaeological finds this can take place in the various number of ideas about this place, or at least can be worth of verification any previous reading of archive data, just to clearly check any possible misinterpretation about the co-existence of both the buildings. Last but not least, this hypothesis even if not demonstrable and even if denied by other evidences can be seen as an intellectual exercise, showing how, sometimes, when a research can not find answers can still found the right questions, and "why some elements are still in place?" can be still a good one for starting a new interpretation of this particular site.

In the completion of the virtual reconstruction of the St. Donato it was preferred to define the mass of the architectural elements and use generic "replicated" models for the details like capitols and other decorative elements. The construction of the model makes quite clear that this is not a central plant church, it has a particular, almost experimental solution, the external aspect is the one of a massive, lengthened church, but the inside is dominated by the central space. It seems that there are no other buildings with similar

Fig. 22 - Study on the digital reconstruction of the St. Donato lost Cathedral (M. Pucci, G. Verdiani, 2016).

roof. For this complex nature it is not simple to find existing reference buildings, none of them seem available in Tuscany, almost none of them from the same age. At the state of the research it has been possible to find two interesting references: the church of St. Sofia in Benevento (774), the original church of St. Flaviano in Montefiascone (1180, but transformed in 1302) and the church of St. Erasmo in Capaci (1523). These churches are not to be considered in connection with St. Donato, but they present a similarity in the spatial aspect, with a central open volume articulating the shape of the church. These churches come from different historical periods, but all present the complex will to design a central space developing into the naves of a church. The virtual reconstruction of the St. Donato is just a part of a complex work, the models defined interpolating between existing architectures and inverse design procedures allow to have a first look at the possible aspects of this lost building, yet this leaves open many questions about the
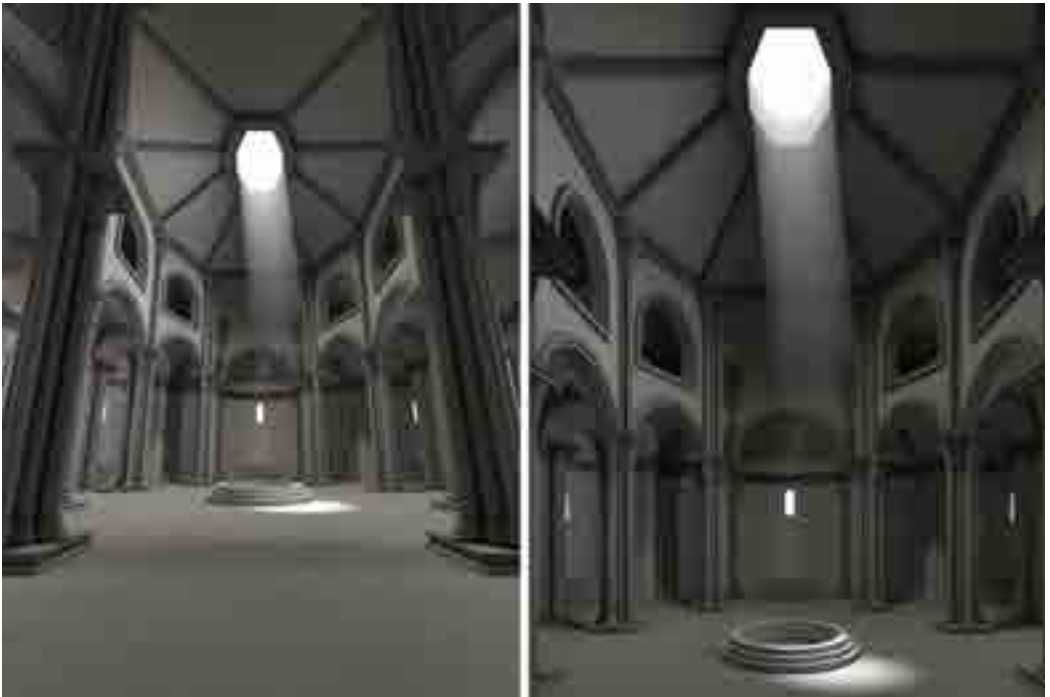
layout available for a direct match. The St. Donato cathedral was a very "experimental" building for its time, with the effort to find a balance between the need of a cathedral and keeping a central space, opened to the

Fig. 23 - Study on the digital reconstruction of the St. Donato lost Cathedral (M. Pucci, G. Verdiani, 2016).

Pionta Hillock, as its original asset remains a mystery. At the same time, the use of interactive media can enhance the approach and consciousness about the important story of a place linked to the roots of the development of Arezzo.

The Vagli town in central Tuscany

A lot of destructive events happen as a consequence of wars, conquests or confrontations to rule a place or an area. But in the recent age we have seen various events connected to the "obsolescence" of a place, or at least the effects of some minds thinking that for higher needs is possible to lost some old but not so "important" place. It is the case of the small town of Fabbriche di Careggine in the inner mountains of the Lucca's Province, included in a municipality named Vagli di Sotto. The need for energy in Italy brought to the realization of a new dam in this area, with the result of flooding completely the valley and the small town. The small medieval town was founded in the thirteenth century, a period in which it is documented the presence of blacksmiths coming from Brescia. After the conquer of the area by the Estense dynasty, starting from 1755, the town became quickly one of the largest iron suppliers of the state, it was equipped with a mill, increased its number of building and the renovation of the older constructions. In its maximum growth phase it was realized a new road to direct connect the shipping of the products to Modena and Massa, this road crossed the river Edron first on a wooden walkway, then on a masonry bridge with three arches. The Church of St. Teodoro, erected in the central part of the settlement, had a single nave covered with a barrel vault and octagonal lantern concluded with a lowered dome. There was also a rectangular apse decorated with some wall paintings. A simple bell tower with square plant was the completion to the characterization of this small town Church. The progressive decline of factories led to the gradual decay of the connecting structures and in the nineteenth century, the people living there had to return to the ancient crafts of farmers and herders. At the beginning of the twentieth century, the economy of the area saw a new positive period, following the exploitation of local marble, this new industrial activity brought to the construction, between 1906 and 1907, of a small hydroelectric plant on the Edron river. In 1941, under the Fascist regime, the SELT-Valdarno company (later to become the National Board for Electricity: ENEL) decided to build a hydroelectric reservoir damming the river Edron nearby the municipality of Vagli di Sotto. After the end of the World War Two, this project was brought on, and between 1947 and 1953 a large dam has been built and is still in place: it is 92 m high and can collect 32

Fig. 24 - View of the ruins of Fabbriche di Careggine in 1994 (mapio.it).

Fig. 25 - View of the ruins of Fabbriche di Careggine emerging from the water in 1994 (tuscanypeople.com).

Fig. 25 - View of the ruins of Fabbriche di Careggine in an old postcard, probably from 1983.

million cubic meters of water. As a result of this the old town was gradually submerged and the people living there forced to move away. At the time of abandonment the town was made up by 31 houses and 146 inhabitants. The residents were moved into the new housing of Vagli di Sotto, built, according to the propaganda of the time "in order to faithfully reproduce the urban layout of the medieval village evacuated". The lake, on the occasion of the dam maintenance, was emptied doing resurface the medieval village, with its stone houses, the cemetery, the bridge with three arches, the Romanesque church of San Teodoro and the bell tower. This event, which was initially expected to happen every ten years, took place only four times since the flooding: in 1958, in 1974, in 1983 and in 1994; the next emptying, which was scheduled for 2016, it was postponed for various and mixed reason. In November 2010 it was planned to complete the construction of a suspension bridge in wood and steel, which was completed in 2016. The inauguration of

the bridge took place on the 19th June 2016. It is worth to say that this is not the only case of flooded town in Italy: there is also, for example, the case of Curon and Resia in Alto Adige, flooded for the same reasons of Fabbriche di Careggine, but still showing the tower bell out of the water. Many and quite various cases are not missing in the world, like the apparently similar case of the Seuthopolis, in Bulgaria, flooded in 1948, presented on the web as brought out of the water by an apposite dam, which comes out of being a misunderstanding based on a project proposal (still far from from being passed to an operative phase) from the Bulgarian architect Zheko Tilev. Fabbriche di Careggine, somehow has a quite curious condition that define a place different from the others. The periodic emerging of the town create a sort of unique vision of cracked mood and ruins, which is capable to capture the attention of a large number of visitors, the quite extended amount of building and the preserved "urban" aspect of the site make it unique. The significant

Fig. 27 - The project for the Bulgarian archaeological flooded site of Seuthopolis (Tilev Architects).

popularity has brought as main effect the will to convert this place in a sort of amusement park, which is in the end can be seen as not completely negative, but at risk of ruining the charm of the ruins, or to exchange it with some eccentric experiment, like the idea, seen around local newspapers of a "glass bubble" to preserve the remains of the town (make it sense? An interesting subject to discuss about). Behind all this circus of ideas and bad practices in Cultural Heritage there is the experimental and almost unique aspect of seeing what remains of a town submerged for more than half a century and brought to air for short period in time.

The concept of "almost intangible" ghost town has here replaced the original historical value of the place. Probably the best approach to such a situation is the documentation and the digital modeling for virtual reality and some accurate reflection about how to tell its story and coordinate information for visitors and curious. May investments build a new result that is still missing around? Or all the operators will simply look at a town in its slow disappearing while wasting money for the creation of a spectacular mess? The answer may appear easy but it is not sure, while this abandoned town has the chance of evolving itself into something else, remaining at the same time a ruin, which is a very rare occasion for a ghost town.

The Corallo baths in Livorno

In Livorno, there is a bad case of abandon, a historical monument made of fine art element is left to complete decay. The "Terme del Corallo" (Coral Baths), were at the beginning a bath area exploiting salt waters. After a first abandon, no serious efforts were done in years to go behind this situation, the poor and slow moves towards the restoration were stopped and slowed down by inefficiencies and never ending political times. The monument is now on the edge of its collapse, showing a full failure of cultural preservation. According to this visible shame, a variety of studies, initiatives, television reports and newspaper articles take place renewing the common idea that "something should be done" but in the end the whole community simply stand looking at the progressive destruction of the building. The story bringing at this tragic point starts inside the large set of Bath buildings in the Italian (and international) tradition. Italy is one of the most important

Fig. 28 - Main dancing hall of the Corallo Baths (G. Verdiani, 2012).

country for bathing-place in the world. In its tradition bath represents history and cultural characteristic of a territory and one of the factors in social valuation and costumes. For example the "Thermae" and "Balnea" during the ancient Roman period were a place for social life; or later have represented a social status of richness, like it was during the "elite thermalism" in the past Century. During the period between the XVIIIth and XXth Centuries, thermal baths have an exponential growth with the construction of several new buildings. The thermal baths in this phase became a complex system, expanding their functions to offer: hotels, café, gardens, and mixing the classical scheme from the Roman age with spaces coming from the oriental tradition. In this way the baths became more and more a luxury place. The Art Noveau architecture (as well known, in Italy the common word used to indicate this current is "Liberty") was in its best development phase during that time. So it became the most used style for this kind of buildings, the richness of

Fig. 29 - Lateral passage in serious decay inside the Corallo Baths (G. Verdiani, 2012).

Fig. 30 - Detail of the columns of the porch in the Corallo Baths (G. Verdiani, 2012).

the details, the presence of natural shapes, seemed perfectly compliant with the luxury and the wellness that this place was in need to evoke. Is this the case of the "Acqua della Salute " in Livorno settled along the "Viale dei Condotti". In 1865 along the the owners of an area, excavated the land and found water and they named it "Acqua del Corallo" (Coral Water). During the period from the 1854 to the 1893, six different kinds of water were found, the curative property of these waters became famous; the hospitals near Livorno started using the waters for medical treatment. The popularity of the waters was the beginning for a new company, created by a group of person that had a robust fortune behind, the name was "Società delle Acque della Salute" (literally: "The Health Water Company"). The company decided to protect the water in the ground building an underground system of walls; in the 1903 they decided to entrust Angiolo Badaloni with the task of realizing the new building named "Stabilimento delle Acque della Salute" (literally: "the Health Water Establishment"). The inauguration of the building was a rich event, people from far away went to visit this Art Noveau building. During this period Livorno became a popular place for human-care with water and was indicated as the "Montecatini a mare" ("Montecatini on the sea") with a direct recall to the name of "Montecatini Terme" a town very famous in Tuscany for its baths. About the event that caused the

Fig. 31 - Main front of the Corallo Baths (V. Fantini, 2012).

first closure of the complex, there aren't certain information. The building worked until the 1936, the second World War was probably the main cause. Livorno was strongly injured by bombing, in the centre of the city remained safe only the 8% of buildings, while in the suburbs the 43% buildings were saved. The "Stabilimento delle Acque della salute" did not receive damages, but obviously the presence of people was strongly reduced. Anyway in the second post World War there was an increase of the population caused by the return of the soldiers, so in the 1947 the local administration bought the area in the east side of the city and started to build housing. The growth of the city in the surroundings of the Coral baths probably caused the pollution of the ground and destroyed the underground walls; the water were dispersed. After this the "Stabilimento delle Acque della Salute" changed his primary function into: disco and club, but anything were durable or stable solutions, its decay was on a one way path.

The last use of the building was as a factory.

Fig. 32 - Internal staircase in the porch of the Corallo Baths (G. Verdiani, 2012).

Fig. 33 - The same staircase painted in a picture in an art gallery in Vienna (G. Verdiani, 2015).

Fig. 34 - Recent view of the Corallo Baths, with the front garden cleaned up because of some TV shooting, thus the state of decay of the architecture is still ongoing (G. Verdiani, 2017).

In 1964 the society named S.T.I.B produced there four different drinks, including Coca-Cola. In 1967 Coca-Cola society bought S.T.I.B and after three years decided to close this factory. Since then the process of decay brought the building to support various kind of damages, the demolition of all the minor buildings, the realization of ugly tall housing with mere economical purposes, absolutely far from increasing urban quality, while the persistence of the main building was due only to the good quality of the concrete used for the vaults and in general of the whole construction, but after such a long time in decay the conditions are gradually being worst every year. So this may look as a case of simply abandon, with no will to force the forgiveness of the place, but the more the decay goes on the more the phrase "impossible to recovering" is heard around, asking for resignation, defining a slow, but not for this less brutal decision of destruction for an interest piece of cultural heritage.

The Tonietti mausoleum on the Elba Island

At the end of the XIX century the Elba Island was the Italian centre of the mining process. One of the important mines of the Elba was right in Rio Marina, as mentioned

above. The first concessionaire of this mine was Giuseppe Tonietti, a very rich man in Rio Marina. In 1896 he died, and his son Ugo decided to build a monumental chapel as a family tomb, in the place where his father used to walk and stare at the sea, in the peak of the Mount Lentisco. At that time, the Italian architect Adolfo Coppedè was working in the Elba Island. Ugo Tonietti commissioned to Coppedè the construction of the chapel, which today is considered one of the best examples of the eclectic work from this architect. From the second half of the 20th century, with the extinction of the familiars Tonietti, the chapel was abandoned. Today it appears in an advanced state of decay and dangerous deterioration. The Tonietti Chapel is a witness of the climate of those years, the ambitions of the clients as well as the high quality of the designer. The chapel is configured to suggest the shape of a lighthouse marking the route between Piombino and Portoferraio, rising majestically from the woods. The choice of recalling a lighthouse is can be explained because of the strong relationship with the seaman life that always inspired Giuseppe Tonietti. The Mausoleum is composed by a large and impressive staircase that leads the visitor to the decorated entrance gate of the main room at the first level. This room is characterized by a ribbed cross-vault and by a small polygonal apse, covered with a ribbed half-vault, where once there was an altar. The tombs found their place in the floor of the main room and on the two sides of the chapel, where the traces of two large coffins are still visible. The interior part of the chapel, painted by Carlo Coppedè, but all this artistic work is now barely visible and only some remains of a starry sky and of other decorations on the vault and the half-dome are still readable. A small opening on the left side of the altar leads to a narrow stone corkscrew staircase that give access to the upper level: a very small room with an iron helicoidal stair arriving to the lantern. From the staircase

Fig. 35 - The Tonietti Chapel at the time of its completion and nowaday (A. Mancuso, A. Pasquali 2016).

it is possible to see a breathtaking view of the landscape of the island. It is worth to say that except for minimal changes in the houses on the side looking straight towards the sea, all the windows see now a day the same panorama they were seeing at the time of the construction: wood and sea. Unfortunately, the four windows in iron and glass originally closing the oculus are now totally disappeared: stolen and/or destroyed by the thieves.

The remains of a rusted frame is still laying on the ground nearby the building. With the oculus fully opened the salinity and the wind enter accelerating the rusting of the staircase, which is now collapsing and highly dangerous. Abandon, absence of interventions, vandalisms, thieves, has heavily damaged this architecture, giving the most favourable conditions to destructive natural effects to operate: plants, roots, weather have affected many parts of the building.

Comparing a historical picture of the mausoleum to a recent picture taken from a similar point of view it becomes immediately clear the numerous differences between the past and present: some important parts of the balustrade are missing, the oculus windows, the entrance gate and of various significant sculptural pieces are disappeared. The columns at the side of the main entrance have been engraved and some poor graffiti are visible on the left side.

As seen in the past for many archaeological sites, the forgiveness of the place, the disappearing of the original owners, leave it in hands unable to manage it, opening the way to thieves and vandals. They operate slowly, but with a twisted approach to the value of things, considering their vantage as the only thing that matters. In this case, the situation is even more bad because of the dangerous conditions caused by these events. In its actual state the chapel has its access opened to everyone, it is not inconceivable that a visitor may stumble trying to reach the entrance, or entering and accessing the damaged staircase encounter and highly harmful mass of falling iron.

Conclusions

In a certain sense, an architecture of the past, an architecture of the future really does not exist, the only existing architecture is the architecture of the present time. A manifestation of layered decisions or an articulated mix of choices, a set of opportunities and/or some twists of fate. An architecture can start in its own environment, it took parts from it, it exploited it and changed it, but it will be changed by the changes, it will face fast transformations, but to the eyes of an acute observer it will show the rich articulation of all the events. It will demonstrate how variable and ever-changing is the landscape and the environment in itself. The restoration of a place should be always aimed to a clear series of tasks, and this not to force a mere utilitarian purpose, but to give a lively condition to the restored building, to make it a part of a living urban tissue, used by the society residing in that area. Generic restoration, made only for law requirements, create the risk to bring on the procrastination in the decay of an unused area, reflection and reason should be always the guidelines to renew and to revitalize an urban area, with all the involved parts acting with a clear consciousness that a place is always the expression of a complex environment made of cultural, economical, artistic, social and not necessarily "quite" choices. In each case, the approach of the archaeologist, of the architect, of the Cultural Heritage scholar must start from the understanding of the reason which caused the decay of a place and first of all must define the "right questions" before finding convictions about hypothetical answers. One question can be "why what is still in place is still here?" this can be most important than "where are gone the missing part and/or buildings?", and in general some first hypothesis can be redefined applying classical investigation procedures like the Occam's razor.

In this kind of analysis it must be kept in mind that all the remains are work of man (and in a certain part of nature), and that most of the time the approach to ruins has never been "constructive" until our recent age. Reuse, transformation, replacement are the most common operations, they are practical, highly compliant with the needs of humanity. The progress of understanding the value of the past is merely contemporary, it is important, it is an enrichment, but it is so recent that all the long past times has simply not known this approach as a general behaviour. So, in first place, the value of a site, a monument, an ancient building, must be recovered and valorized, while in a lot of environment the "preservation" is still something far from being completely structured in the approach to built heritage, no matter of its value. Interpreting a reconstruction studies or defining a restoration work without understanding this may cause mistakes and misinterpretation of the reasons of behaviour of the same context in which the subject of the study is located.

Credits

- The paragraph "The Hekatomnos' tomb in Milas, Turkey" has been developed in collaboration with Anna Frascari.
- The paragraph "The Hadrian's Villa in Tivoli" has been developed in collaboration with Graziano Corsaro.
- The paragraph "The Montecastrese settlement on the Tuscany coast" has been developed in collaboration with Martina Carrara and Stefano Lami.
- The paragraph "The Pionta citadel in Arezzo" has been developed in collaboration with Angela Mancuso, Iacopo Giannini, Mirco Pucci, Carlo Gira.
- The paragraph "The Corallo baths in Livorno" has been developed in collaboration with Valentina Fantini.
- The paragraph "The Tonietti mausoleum on the Elba Island" has been developed in collaboration with Angela Mancuso and Andrea Pasquali.

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Pictures from the workshop

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Abstract: Behind a conference, behind the proceedings and the book left to testify the complexity and the mountain of ideas flowed in few days, there is always the group of people who debated all the subjects, and their life around the event. So documenting with pictures is a nice way to add something more to the acts, and it is something that can be done with group pictures, with reportage pictures, with casual shots, but most of all it is something that must be done with an effort, the one trying to capture the real essence of visiting and of the people around. In this closing contribution it is possible to see a selected series of images from the workshop, the visited city, but no people posing or common postcards, only few shots to put in order what was done, trying to capture the involvement of the participants in the workshop. All the pictures here are taken and post processed by the author.

Keywords: Photography, Workshop, London.

Social activities: visit to the Queen Elisabeth Olympic Park

A very interesting urban space with many high quality architectures, showing and mixing new and old elements from the recent history of the town, from an industrial past to the contemporary public spaces for entertainement, sport and shopping.

During this tour, the accurate and detailed guide by James Dixon allowed the clear comprhension of the evolution of this part of the town, with the important interaction between the offices of the MOLA and all the operators, James took care about illustrating to all the participants the nodal points of the transformations and the choices taken to bring this place out of the abandon and into a new active dimension. The many courtyards and the relationship between new buildings and their interaction with the ongoing transformation were clealy explained.

All the visit shows a various and rich level of details, accurate construction and planning, the variety of details passes from the one of the new and highly technological building to the one typical of the abandoned architecture with various phases of decay, the overall renewal of the area is clearly readable in a large gradient of transformations, connected gradually and capable to show the ongoing passage from the past industrial activities to

the present evolution into a new expansion of urban social activities.

In the southern area of the visit it is possible to see the overlapping of abandoned architectures and contemporary spontaneous reuse.

The presence of the canal, the interesting quality of the industrial architectures and the mix of street art elements and new skylines create the possibility to have a look to the transformation of the town, from single elements and urban accessories to the evi-

dent traces of the interaction between people leaving in the area or passing by artists and the constructed presences from the past. Many of the new urban assets seem to catch this suggestion, with the integration of single "creative" elements into the general planning of the urban space, signs helping the orientation, signaling a passage that is not free of contaminations and is capable to bring the new image of the area to get some influence from the personalization brought here by an human use that have tried to bring out this

place from a past of simple decay.
Coloured elements, new designed objects, accurate landscape drawing create now a suggestive balance between the new urbanscape, the legacy of the past and the promise of a "new" integrated part of the town.

Visit to the King's Cross / St. Pancras Area

Travelling is the word. This whole area has a large presence of this action. It has a large, historical and almost iconic train station, it is a continuous cross-over for people, it is a place were ideas and intentions may take place and develop. It is large enough to re-quire a small trip to be completely visited. In the same place there are two levels of perception of the sense of travelling: one

is really real, the possibility to take a train or to connect to the urban network of bus, undergorund, taxi, etc... and another which is completely symbolic, statues, the resto-ration of certain elements and the insertion of many new ones, some "pop" event, like the "platform 9 ¾" recalling the novel and movies "Harry Potter" and getting a lot of

popular attention for a picture to be taken at the end, in the middle or at the beginning of a journey or of a holiday. The changes in the station have created a new condition, a modern space for shopping, walking, looking around, arriving and leaving. The lower levels of the train pavillions are now

opened   and host the commercial and service spaces, expanding the overall size of the architecture, but keeping all the original features, this intervention preserves a lot of the original aspects of this building, but at the same time it brings it to be a contemporary urban system in full integration with

the city all around. The large King's Cross area surrounds and find all the possible integration with the station, opening new pedestrian passages and areas, with very large and open spaces were most of the time is the same presence of people to be the main character. The presence of canals, with real functions and nice connection to many buildings complete and enrich both the network of suggestions to the theme of

the journey and the connection to a former London, made of commerce and industrial / practical activities all along the waterways. At many levels the perception of the sense of the journey permeate this urban sector and all the architectures and point of view seem to come back to flowing flux of people moving from a location to another, with a continuous exchange between many different places that creates a wonderful variety.

Visit to Hampton Court Palace

This third visit brought the attention out of the more dense and overlayed urban context and into an "out of the town" intervention started in XVth century and continued all along the XVIIth century to provide a rich architecture to host the real families in a pleasant and relaxing part of the country. Being developed in such an extended series of courtyard, the palace shows different styles and influences, offering an articulated composition of elements from the Tudor and Baroque styles giving access to a large French formal garden. The high quality of the artifacts, the constant use of well de-

fined materials and the rich level of details, made give it a general unity and continuity in its capacity to capture the attention.

From the end of the XIXth century the palace is opened to public and is considered a main turistic attraction. The setup of the

exhibition areas, the turistic visit and the musealization of the palace took care about preserving at the best the awesomeness of the place, mixing impression from different kings, historical period and, in the end, valorizing the various development phases of the palace. Almost all the architectural details are valorized for their original aspects offering a suggestive collection of technical and artistical solutions from centuries of builging artistry. The will to preserve

while giving access and converting into a museum of itself the palace seems here fully succesfull, creating all the conditions for different level of reading and offering a wide and appreciable window on the past relationships between spaces, architectures, designed landscape and artworks.

Days of the workshop

Obviously, the presentations from all the participants, questions, answers, discussion. The interest and the intention to bring on the discussion about architecture, archaeology and contemporary city planning sharing ideas, concepts, points of view.

The workshop took place in London, U+I Offices, 7a Howick Place, Victoria.

Workshop organizing committee:
James Dixon, Giorgio Verdiani, Per Cornell

The workshop has been realized in collaboration between Museum of London Archaeology (MOLA), the Architecture Department of the Florence University, Italy, the Department of Historical Studies, University of Gothenburg, Sweden.

2016
22th-25th September/LONDON, UK

In discussions on urbanism, the need to involve new actors has been a major theme of recent debate. In this field, throughout Europe, various ways of allowing citizens to take a more direct part in planning is stressed. It is also important to look at the role or lack of role played by particular research fields. Architecture plays a major role in city planning. While archaeology has become increasingly involved in field projects in urban environments, the discipline seldom plays an important role in city planning. In several countries and particular cities this situation has been questioned during the last decades. In September 2016 a group of scholars from different countries met in London to discuss about the relationship between Architecture, Archaeology and contemporary City Planning. This book collects the final papers from that meeting.