



PROCEEDINGS

**ARCHITECTURE,
ARCHAEOLOGY AND
CONTEMPORARY
CITY PLANNING**

"State of knowledge in
the digital age"

VALENCIA
18-20th May 2015

Valencia, Spain
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**editors:
Giorgio Verdiani
Per Cornell
Pablo Rodriguez-Navarro**

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ARCHITECTURE, ARCHAEOLOGY AND CONTEMPORARY CITY PLANNING
"State of knowledge in the digital age"

The workshop took place in Valencia, Valencia, Camino de Vera, Universitat Politècnica de València, School of Building Engineering (Escuela Técnica Superior de Ingeniería de Edificación) Building 1C, first floor, boardroom.

Workshop organizing committee:
Pablo Rodriguez Navarro, Giorgio Verdiani, Per Cornell

The workshop has been realized in collaboration between Universitat Politècnica de València, Spain, the Architecture Department of the Florence University, Italy, the Department of Historical Studies, University of Gothenburg, Sweden.



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PROCEEDINGS INDEX

INDEX

WORKSHOP PRESENTATION

Pablo Rodriguez Navarro, Giorgio Verdiani, Per Cornell 7

TOWNS AS HISTORICAL PROCESS, TRACES AND STRATIGRAPHY

Per Cornell, Stefan Larsson 13

REPRESENTING THE CITY: THE CHOROGRAPHIC TRADITION FROM THE RENAISSANCE TO THE PRESENT DAY

Pedro M. Cabezos-Bernal, Juan J. Cisneros-Vivó 22

THE NEW EARLY 20TH CENTURY CITY CENTRE OF VALENCIA

Víctor Gamero Bernal 31

THE bATHS AND THE ANCIENT TOWNS: FROM THE CASE STUDY OF GRANADA TO THE READING OF A PLOT

Filippo Giansanti, Paolo Formaglini 38

ARN (UP)- ARNO RIVER AND ITS SEASONS: REVITALIZING THE bANKS THROUGH PERMANENT AND TEMPORARY INTERVENTIONS

Enrico Tomassini 46

HUMAN-NATURE RELATIONS IN bUILT HERITAGE AND URbAN PLACES, PRESENT AND PAST

James Dixon 61

MILAS, TURKEY, CANCELLING THE TOWN TO EXTRACT THE MONUMENT? THE CASE OF THE HEKATOMNOS' TOMb

Anna Frascari, Angela Mancuso 69

DESIGNING CONTESTED HERITAGE WITHIN THE SACRED CONTEXT. THE ΑΧΕΙΡΟΠΟΙΗΤΟΣ MONASTERY, CYPRUS

Alessandro Camiz 78

THE URbAN DEVELOPMENT OF THE NORTH-EAST CORNER OF THE OLD VALENCIA THROUGH THE EVOLUTION OF ITS CITADEL

Santiago Lillo Giner 91

STATE OF ARCHAEOLOGY IN ARCHITECTURE AND CITY PLANNING REFLECTIONS ON TWO CASE STUDIES IN FINLAND

Liisa Seppänen 100

FROM PORTA ALLA CROCE TO PIAZZA BECCARIA THE EVOLUTION OF FLORENCE FROM CITY TO CAPITAL

Gianluca Belli, Silvia D'Andrea 108

MEGA SHIPS AND MICRO HERITAGE. THE TUTELA AND VALORIZATION OF HISTORICAL ELEMENTS IN THE FUNCTIONAL TRANSFORMATION OF THE LIVORNO HARBOUR

Matteo Scamporrino 122

FORGIVING A PLACE: THE CASE OF THE PIONTA CITADEL IN AREZZO, ITALY

Giorgio Verdiani, Iacopo Giannini 132

PICTURES FROM THE WORKSHOP

Giorgio Verdiani 147

FORGIVING A PLACE: THE CASE OF THE PIONTA CITADEL IN AREZZO, ITALY

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Abstract: Arezzo is placed in the middle of Italy, a town in Tuscany with a rich and intense story. Even if such a thing is true for a lot of old town in Italy and abroad, in the story of Arezzo there is an ancient and complex event which has cancelled 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 politically aligned with the Pope and the Vatican State. This small enclave in the Tuscany territory ended being tolerated in the XVI century. In 1561 Cosimo de’ Medici ordered the destruction of this walled town, bringing to the ground all the buildings and trying to cancel the existence of this place not only from the terrain, but apparently from the historical memory. 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 probably their materials reused somewhere else, while only minor parts of the previous churches and chapels were reused and adapted in combination with new constructions. In 2014, a new research about this area has been started, based on the collaboration between the cultural association “Academo, Roberta Pellegrini” and the “Dipartimento di Architettura” of the Florence University. The digital survey data treatment, the reading of the architectural traces, the interpretation of the original projects -made following the logic of Architecture- and a specific investigation about the state of the knowledge about this area, have brought the basis for starting to hypothesize a map of the next possible excavations, while other common solutions to investigate the underground (like georadar survey and visual analysis of the anomalies) turned out to be not so usable, because of the strong transformation of the ground which is mixed with ruins and fragmented parts creating a very “noisy” and uniform terrain, in this way only a direct excavation, planned by clear guidelines, can give results. Because the state of ruins and the poor remains of most of the excavated areas, it was decided to proceed comparing other architectures and getting the digital survey of any elements “connected” to the original settlement and its architectures. The study and analysis of the architectural traces and indications is allowing the gradual interpretation of the original design of large part of the buildings. All the digital tools have been used focusing on the will to understand and discover traces of the original asset of this place, trying to bring back in the memory of the people the presence of their past. The research presented here will bring the status of its advances about the survey data, virtual reconstruction, methods and techniques used to enhance the knowledge about a lost architecture and urban settlement.

Keywords: Digital Reconstructin, Inverse Design, Digital Survey, Arezzo, Pionta.

Introduction

Arezzo is placed in the middle of Italy, in its central part, a town in Tuscany with a rich and intense story. Even if such a thing is true for a lot of old towns in Italy and abroad, in the story of Arezzo there is an ancient and complex event which has 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 out of the Arezzo walls, it had its own fortifications and was a completely independent settlement. The Place was not chosen by chance, in the past it has been used by Etrurian and later by Romans, it was also a burial place. Because of its use as a cemetery the St. Donato burial

was placed here, creating all the conditions of faith and devotion that chanced this place from ancient graveyard to a holy place. *San Donato* was an important Saint, he is the patron of Arezzo, where he was born in an unspecified date (even if some studies try to locate his place of Birth in Rome, or even in *Nicodemia*, Turkey) and died as a martyr in Arezzo on the 7th August 362 AD (or in the 304 AD according to other studies). The presence of such an important tomb may explain the reason for the first Christian settlements with the construction of chapels and churches, but the reason for creating a separated, self-governing town can be found in more complex motivations. On one side probably there was the political and strategic intention to have some sort of outpost directly in the heart of Tuscany. But on the other we can find some philosophical reason basing the reasoning on the words of Jacques Le Goff in *L'imaginaire Médiéval*. Here, presenting the urban concept from Guglielmo d'Auvergine (Aurillac, 1180 – Paris, 1249) in his *Opera Omnia* (pp. 407-416), the author underlines the following passages: "Let's imagine a town made by the grouping of such perfect men (*imaginabimur civitatem aggregatam ex hominibus sic pfectis*) that all of their life is focused on giving honour and respecting God, a life dedicated to reach and apply the nobleness of the soul (*honestas*), a life dedicated to serve the others" [...] "It comes out clear how in front of such an admirable town (*preclara*), the rest of humanity is like a savage forest (*quasi silva*) and all the men outside are like raw wood (*quasi ligna silvatica*)". To the contraposition between town and forest, Guglielmo d'Auvergine adds a second contraposition: the one between the natural materials and the construction materials, in the specific of the natural stone and wood against wood beam and sculpted stones. "On the contrary of the brute stones, raw pieces from the quarry (*lapidicina, lapides rudes*) and of the natural wood, the cemented stones, nailed or connected and the

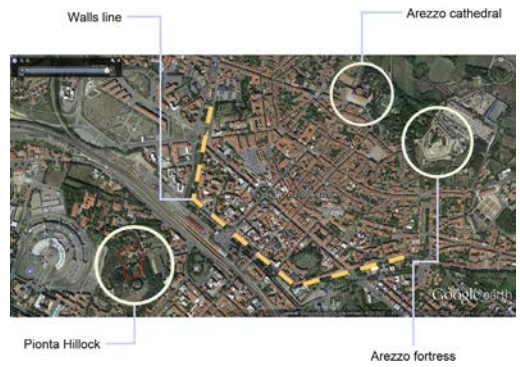


Figure 1 – The Pionta Hillock and its main urban surroundings.

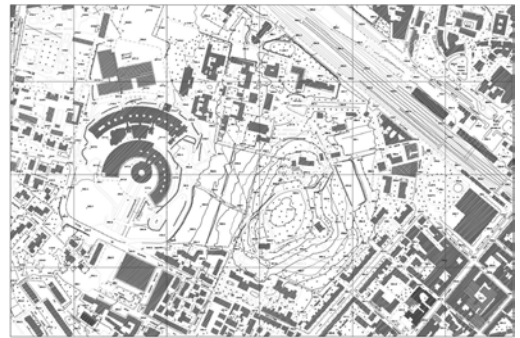


Figure 2 – The urban asset around the Pionta Hillock, on the left, the new hospital complex.



Figure 3 – Main archaeological areas on the Pionta Hillock, with the later St. Stefano church and one of the old hospital pavilions.

manufactured wood (*coementum, et clavi, e carteraeque ligature inter lapides, et ligna*) are the symbol of the mutual love and of the spiritual needs coming from humanity". He defines: "this admirable town is exactly the society, the aggregation of men or the city (*societas, aggregationes hominum, seu*

civitates)”. This town is the real alternative to the “fake” towns, which are forests and caves. The town is defined by the work of men whose capacity of artistry and work is a gift of God (*vires, et artem, et artificium*). In the end: the towns are men (*Cives civitatis procul dubio sunt veri nominis homines*). Such ideas can be imagined in their materialization in a rich, well constructed and “ideal” settlement, placed as a sort of satellite on the borderline of the main town, a place of faith influencing its urban surrounding, showing and at the same time preserving, the meaning of Christian values in front of common political and social context. This particular condition seems to find its graphical representation in one of the must famous frescos from Giotto (or least attributed to Giotto), the “The expulsion of the devils from Arezzo”, realized in Assisi, in the Upper Church between 1295 and 1299, but representing the town of Arezzo, a town closed by walls, with the apses of an independent church creating the background for San Francesco and other friars. The chaos of the town in parallel with the well organized lines of the church. The devils can be banned from the town because of the strength of faith, but the faith needs proper places to host its intermediaries with humanity. Maybe this was one of the concept at the origin of the consolidation of this citadel as a religious outpost in front of the town.

The tolerance for this small enclave in the Tuscany territory ended in the XVI century. In 1561 Cosimo de’ Medici ordered the destruction of this walled town, bringing to the ground all the buildings and trying to obliterate its existence not only from the terrain, but apparently from the historical memory. The memory of the place remained, supported by some elements saved and reused in other churches, some frescos and paints representing the Citadel, but most of its consistence is due to the “myth” developed around of the first Arezzo Cathedral, the Santo Stefano e Maria and the second one: the San Donato. Not a simple story, but the



Figure 4 – *Cacciata dei Diavoli da Arezzo*, Giotto Di Bondone, Assisi, Basilica Superiore, 1295-1299.

story of two Cathedrals, one near the other, one larger than the other, one ancient and coming from an early period of Christianity and a second one, almost experimental, for its articulated plant and enriched by marbles and spolia elements.

The traditional reading of these events indicates the presence of two large churches in this area, both once used as cathedrals. The ancient one was dedicated to the Saints Mary and Stefano, it was a quite common construction in the system of the Romanesque churches, while the following St. Donato, was characterized by a very complex asset, with a central and symmetric plan organized around a large empty 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, hosting a small crypt from the original settlement). Various interventions through the centuries have rearranged the terrain of the hill itself and only



Figure 5 – Aerial view of the ruins of the St. Mary and Stefano church.



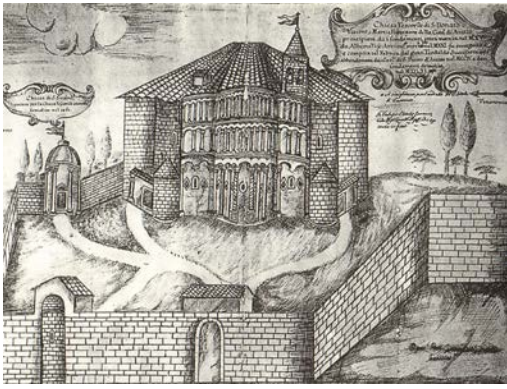
Figure 6 – Ground view of the ruins of the St. Mary and Stefano church.

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 organization and the aspect of the area is barely testified by some paints and drawings, which include a plan view of St. Donato made by G. Vasari, but all these buildings seem to have disappeared, there are no clear remains or traces, neither there

are findings of their basements.

A new research about the Pionta Hillock

In 2014, new research of this area was started, based on the collaboration between the cultural association “Academo, Roberta Pellegrini” and the “Dipartimento di Architettura” of the Florence University. A general photographic shooting operated by UAV, using an Aremax drone was done just before the beginning of the main survey campaign. Then a new survey of the whole area has been made with the use of a 3D Laser Scanner and a Total Station. During these activities all the emerging walls have been photographed to allow further reference and texturing. Specific photogrammetric surveys were made for the main finds, like Roman marble urns, original mosaics and decorated remains. The survey data treatment, the reading of the architectural traces and the interpretation of the original projects were made according to the logic of the architecture. At the same time a specific investigation about the state of knowledge of this area was brought on. These two research lines formed the basis of a starting hypothesis for a map of the next possible excavations. Other common solutions to investigate the underground (like georadar survey and visual analysis of the anomalies) turned out to be not so usable. This limit is due to the strong transformation of the ground which is mixed with ruins and fragmented parts. In this way the data can be very “noisy”, so only a direct excavation, planned by clear guidelines, can give results. The ideas about this place are easy to be resumed. The hillock hosted a very rich citadel, with the presence of two cathedrals, the older one dedicated to St. Mary and Stefano and the “newer” one designed by Maginardo in the XI century and dedicated to St. Donato, additionally to the cathedrals because as such it indicates that the St. Donato cathedral is comprised of a set of minor chapels and small churches, the presence of defensive walls and an undefined



Figures 7-10 – Various representations of the St. Donato Cathedral. All of them realized after its demolition. The 9 is quite interesting, it shows a “group” of Cathedrals, with no intention to place them in a real space. In 10, the idea of more than one cathedral at the same time is consolidated.

group of buildings and facilities composing an urban pattern. All of this was built over older remains, coming from the Etruscan and Roman ages. But even if well built the whole citadel was completely destroyed. All the buildings were demolished to their basements, in an undefined time lapse, disappearing almost completely and leaving hard to read traces of their presence. One of the most surprising element is the total destruction of many 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. It seems more proper not to formulate the question “Where are the remains?” but “Why these remains are still in place?”.

Because the state of the ruins and the poor remains of most of the excavated areas, it was decided to proceed by comparing other architectures and getting the digital survey of any elements “connected” to the original settlement and its architectures. While the gathering of all the possible indications is still in progress, the virtual model of the whole area, in its current condition, has been completed, allowing the presentation and the browsing of all the parts of the ancient Basilica. The study and analysis of the architectural traces and indications allows the gradual interpretation of the original design of the larger parts of the buildings. All the digital tools, from the survey to the data treatments, to the post processing of the information have been used focusing on the will of understanding and discovering traces of the original asset of this place.

Digital Survey

The whole research started from the digital survey. While it is the first meaningful way of knowledge, a first approach to separate the mass of data from place and start structuring ideas. The organization of the survey followed multiple actions. In the first the whole area around the site of the church of St. Mary and St. Stefano was photographed using an UAV,

an Aeromax model equipped with a Canon PowerShot S100 12.1Mp compact digital camera (offering RAW shooting and GPS function). The pictures were taken from a single height with the camera parallel, most of the time, to the ground and with only a few shots taken from a tilted position. All the shots were taken in raw format and this allowed the recovery of a certain amount of details from the shadows. Indeed the weather conditions at the time of this survey offered a clear sky and a bright sun and in consequence a set of deep shadows. The total aerial survey was done in one morning, with a shooting session of 1.5 hours (from the first to the last shot). The pictures were later used to create a first textured 3D model of the area. This was done using photogrammetry, in the specific case with Agisoft Photoscan. This solution produced a light and practical model capable of giving a first, generic, visualization of the site, with all the main elements visible and readable. But this was not a complete and fully usable result: the quite large pixels describing the stones and the area and the quite simple mesh resulting from the photogrammetric process were not fully satisfactory.

The 3D laser scanner survey was planned in the form of an integrated survey, combining 3D LS to a topographic survey, the solution is quite classic and well suited for a situation like this, allowing the reduction of the need for a large and overlapping scanning area. The 3D laser scanner used was a phase-shift type, a Zoller+Fröhlich Imager 5006h. This unit offers good accuracy combined with robust construction, fast operations and the possibility to use the same tripod of the topographic unit. This last feature can turn to be quite useful during integrated survey operations: with three or four tripods around the area it is possible to swap from one to the other, reducing the operational time of the entire process. The working range of this instrument ranges from 0,4 to 79 metres (according to the technical specification of the manufacturer), in this survey the most



Figure 11 – 3D model created from the aerial (UAV) photogrammetry.



Figure 12 – 3D Laser Scanner at work in Area 1000.



Figure 13 – 3D Laser Scanner pointcloud (aligned).

usable data was ranging from one to 50 metres. The positioning of the scan stations was decided according to the shape and to the specific conditions of the terrain and of the remains.

The surveys were completed taking 112 stations, all of them operated in full panoramic mode, and exploiting the characteristics of the 3D laser scanner in use, which was capable of scanning 360° on the vertical axis and 310° on the horizontal axis. The site has generous vegetation, with various trees and brushes and at the same time it has various “empty” space with no relevant structures, the excavated areas are at a certain distance one from the other, but the terrain is at the same time interesting for investigation and design aims.

So the topographical network worked well in connecting all the scans together and allowing a lower density of the scans for the terrain and the “connecting” parts and applying a high level of details only for the excavated parts and the sectors where it was really needed.

Post Processing of the data

The first data treatment was dedicated to the alignment of the point clouds; this was done using Leica Geosystem Cyclone. The topographical network was the base of all the work, but to ensure a solid result each couple of scans were consolidated using geometrical matching between the clouds: the so called “cloud constrain”. This process took time and produced the first 3D digital point cloud model of the archaeological site. During the following post processing of the point clouds special attention was given to the trees, the parts of the point clouds describing them were separated and heavily decimated. In this way the overall work, was simplified to a little less than 2 billions points. Thus this was still a “heavy” and not easy to use dataset, so it was used only for data extraction and not for interactive usage. A final version of the global point cloud was exported into Pointools Viewer (now

Bentley Pointools) with interesting benefits in interaction and visual performance.

The dataset was later divided into multiple parts, according to the structure of the site. The first to enter the process for multimedia aims was the sector of the ruins of the Church dedicated to the Saints Mary and Stefano. This is indeed the “best” preserved monument of the whole hill, but it’s more or less a collection of low walls and fragments. But it remains the only clearly readable architecture and a very important reference for any further study.

The dataset of this ancient structure was treated using a well-consolidated practice, derived from the video games graphical solutions and still useful for Cultural Heritage items in digital survey processing. Starting from the point cloud of the church ruins a very detailed mesh was created. Then it was considered as the “high poly” (high number of polygons) mesh: this very complex model was exported using the .OBJ format into Raindrop Geomagic Studio. Using the specific tools of this software it was decimated to become a “low poly” (low number of polygons) mesh. The “high poly” model was then used to extract its details in the form of a normal map and displacement map; these two bitmaps were then applied back on the “low poly” model. In this way the lightweight model was capable to be used with ease in multimedia and interactive use, apparently preserving its original level of details. For the remaining walls of St. Mary and Stefano the decimation was quite strong, the original model, made of around six million faces was used to apply texture. This one was created starting from a large set of shots taken on the ruins at the time of the survey.

Then, after the extraction of the normal/displacement maps, it was simplified to be made by only 50 thousands faces, but with the texture, the normal and the displacement maps applied, it still looks rich and useful for the reading and interpreting of the site. The processing of the texturing was done

using Maxon Cinema 4D, the model was then exported again in OBJ and DAE formats for further use in multimedia and interactive software.

Other surveys

The poor ruins on the hill of the Pionta are not the only witness of the ancient condition of this place. A various set of iconographic examples are here and there in Arezzo and they testify, in their own way, the original aspect of the citadel. Some of them are very interesting and so it was decided that photogrammetric surveys of each of them were to be taken. The first was the sign engraved on the main door architrave of “St. Maria of the Old Dome” Church in the Arezzo downtown, probably realized 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 take a look 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, thus a simple flatbed scanner was enough to create a digital copy starting with a good quality reproduction of these documents.

One of these is currently conserved in the Uffizzi “Gabinetto dei Disegni” and it’s a work by Giorgio Vasari the Young, a drawing 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 organization running all around a central space, something existing in other architectures, but only in churches built various centuries later. The combination of this drawing with the other



Figure 14 – Baked clay representation of the Pionta Citadel, Diocesan Sacred Art Museum in Arezzo.



Figure 15 – The façade of St. Donato in the crest of the St. Maria of the Old Dome” Church in the Arezzo.



Figure 16 – Detailed 3D textured model of the St. Maria and Stefano church (Mirco Pucci).

traces left in paintings and in sculptures are the only possible bases to start a virtual reconstruction of the St. Donato church. While the presence of a certain set of ruins from the Church of St. Mary and Stefano allows to start investigating this ancient church with more ease.

Digital Reconstructions: St. Mary and Stefano

The virtual reconstruction of the site started from the main evidence of the site: the Church of St. Mary and Stefano.

The remains of the crypt, of the walls and the previous archaeological investigations and studies, offered the base for an architectural reflection on this building.

The plan of the church was compared with other similar, like St. Salvatore in Agna in Pistoia and St. Eugenia in Bagnoro, Arezzo, two churches in well preserved conditions, useful to better understand the general aspect of the fronts and sections of the ruined church.

The study of the geometrical layout, based on the units in use at that time: the Florentine “braccia”, was done starting from the remains.

This work was very useful in defining a spatial grid, able to be extended and allowing a better understanding of the proportions of each part.

To have a confirmation of the virtual project, the mosaics found during the excavation

of the sixties, and now conserved in St. Stefano Church, were virtually brought back in place, extended in their pattern to fill the whole spaces.

This was a successful test, while the new hypothetical plot showed to be perfectly compliant with this operation.

The use of the grids developed during the analysis phase was very useful to define the missing parts and organize a logical relationship of proportions.

The process was brought on interpolating between the evidences coming from the survey, the logical construction and comparing buildings from the same period.

A first set of classical 2D drawings was realized out of all the sketches produced in this phase, then, later, a 3D model with details and texturing of all the external parts was realized.

As a third step, the model was then completed of all the internal elements, while the modelling of the space of the crypt is still an ongoing project at the moment of this writing.

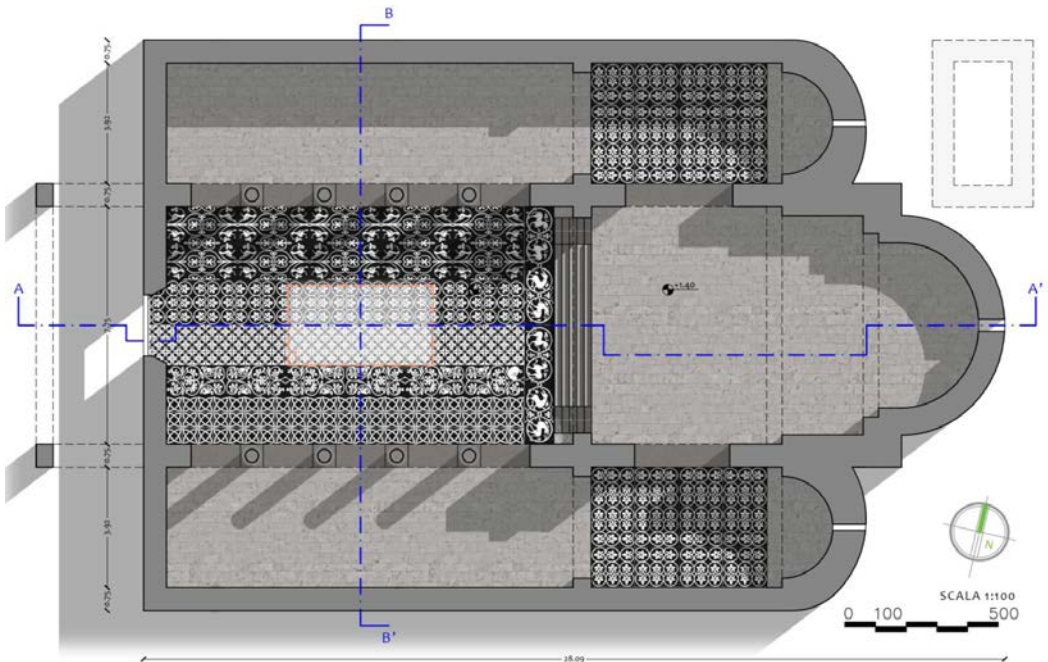


Figure 17 – Digital reconstruction of the St. Maria and Stefano church, with the floor mosaic brought back in place and interpolated to complete their drawing (Iacopo Giannini).



Figures 18-19 – Digital reconstruction of the St. Maria and Stefano church, external views (Iacopo Giannini).

Digital Reconstructions: St. Donato

If the St. Mary and Stefano church offers many walls and various elements to base a reconstruction, the St. Donato cathedral seems a sort of vanishing building, with no remains to support hypothesis.

None of the previous excavations have ever found traces of this building, the list of references are quite short, the most relevant are: few written lines about the St. Donato in "Le Vite" from Giorgio Vasari; a plant of the cathedral made by Giorgio Vasari the Young; various paintings and frescos, all realized after the demolition, representing an apses view of the cathedral, probably most of them are based on the same drawing and one follows the other altering an original version of this view; the two representation in marble and baked clay mentioned in the previous paragraph; various ideas coming from previous studies, most of them oriented to find a reference in the St. Vitale in Ravenna.

The text from Giorgio Vasari about the St. Donato Cathedral is short but meaningful: *"Gli edificij ancora, che in quel medesimo tempo si fecero in Toscana, fanno di ciò pienissima fede. E per tacere molti altri, il tempio che fuor dalle mura d'Arezzo fu edificato a S. Donato vescovo di quella città, il quale insieme con Ilariano monaco fu martirizzato sotto il detto Giuliano Apostata, non fu di punto migliore architettura che i sopra detti. Né è da credere che ciò procedesse da altro che dal non essere migliori architetti in quell'età; concio' fusse che il detto tempio, come si è potuto vedere a' tempi nostri, a otto facce, fabricato delle spoglie del teatro, colosseo, et altri edificij che erano stati in Arezzo innanzi che fusse convertita alla fede di Cristo, fu fatto senza alcun risparmio e con grandissima spesa, e di colonne di granito, di porfido e di mischi che erano stati delle dette fabbriche antiche, adornato. Et io per me non dubito, alla spesa che si vedeva fatta in quel tempio, che se gli Aretini avessero avuti migliori architetti, non avessero fatto qualche cosa maravigliosa; poichè si vede in quel che fecero, che a niuna cosa*

perdonarono per fare quell'opera, quanto potettono maggiormente, ricca e fatta con buon ordine. E perchè, come si è già tante volte detto, meno aveva della sua perfezione l'architettura che l'altre arti perduto, vi si vedeva qualche cosa di buono."

From the text emerges: rich shape, rich architecture, materials and elements coming from the Roman sites.

For sure it was a quite particular building, rich, articulated, maybe "experimental" for its time, with the effort to find a balance between the need of a Cathedral and keeping a central space, opened to the roof.

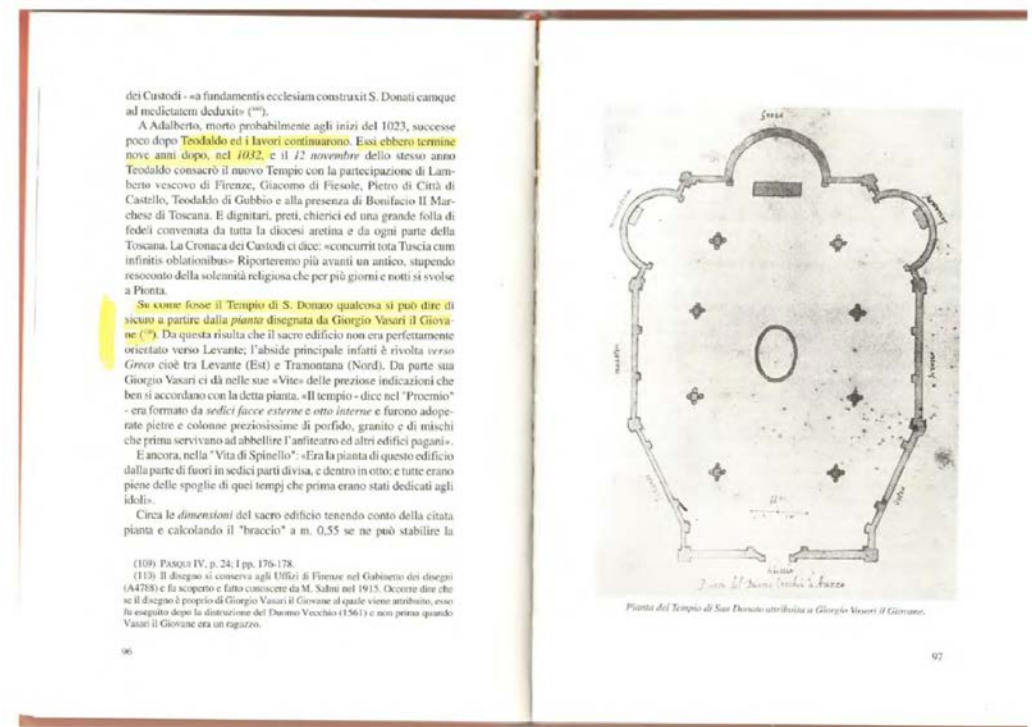
Such a design creates a lot of difficulties in finding existing reference buildings, none of them seem available in Tuscany, almost none of them from the same age.

At the state of the research it has been possible to find two interesting reference: the church of St. Sofia in Benevento and the church of St. Erasmo in Capaci. Both are not to be considered in connection with the St. Donato, but probably they present a similarity in the spatial aspect, with a central volume articulating the shape of the church all around. The two churches come from different historical periods, but both present the complex will to design a central space developing into the naves of a church.

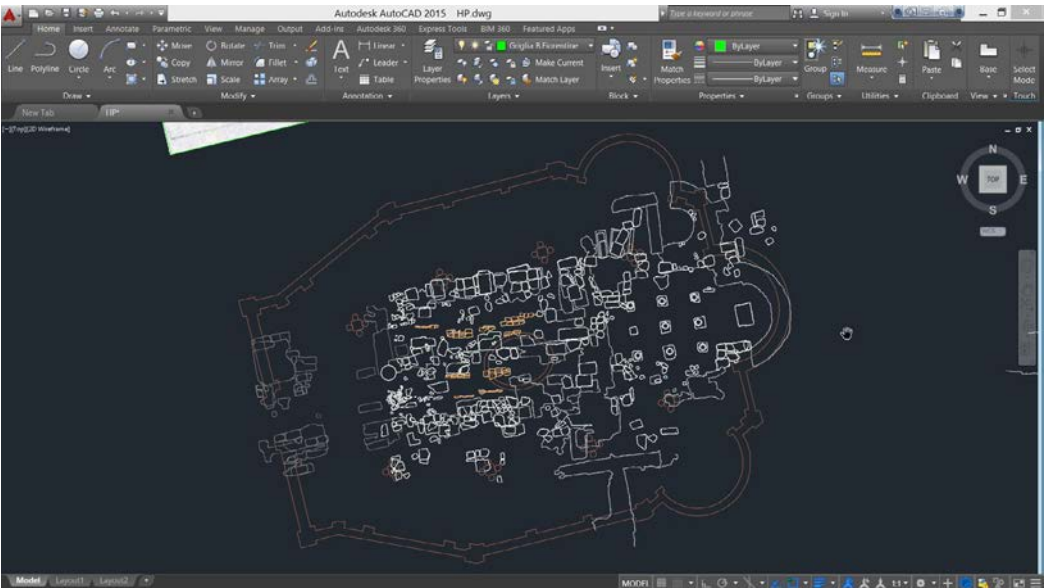
The digital reconstruction moved from the plant view made by Vasari the young: once oriented and putted in scale (the drawing has clear notes to help it), it has been the start of any further development.

The first reflection can come from placing this first drawing over the ruins of the St. Mary and Stefano church. They look compliant, it is possible to suppose the St. Donato built over the previous church, a renewal of the Cathedral in place of a double Cathedral.

No other evidences can support this idea, but this is something happened in other context, the old church leave space for the new one, the ancient basement remains beneath the new building. This hypothesis should explain why there are remains of the St. Mary and Stefano, they were underground at the time



Figures 20 – Frequently published, the plant of the St. Donato Cathedral from Giorgio Vasari the Young is a well known reference for the Romanesque architecture.



Figures 21 – Matching of plants between the St. Mary and Stefano and the St. Donato.

of the demolition and so they remained. Obviously there is no way to demonstrate this, but in the lack of any archaeological finds this can take place in the various

number of ideas about this place. The definition of the digital reconstruction was here operated using directly a 3D modelling process, starting from the inside

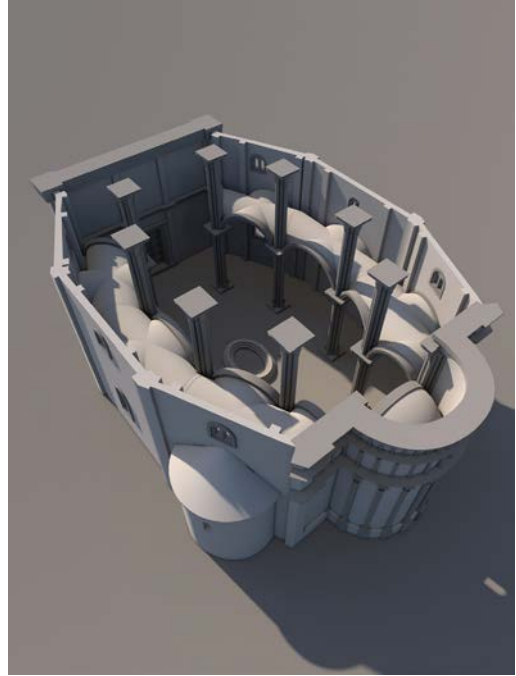


Figure 22 and 23 – Digital reconstruction of the St. Donato Cathedral (Giorgio Verdiani and Mirco Pucci).

and then going to the apses, then back to the interior and in the end completing the external sides. For the interior a *matroneo* (women's gallery) has been thought to match the San Vitale in Ravenna structure.

The development of the model confirm the complex and rich characteristic of this architecture, confirming it as one of the most peculiar lost building from that age.

General Dissemination

As a first test for the possible export and sharing of the models coming from this research, all the main models were brought inside the Sketchfab.com online community, this interesting service and site allows high quality real time browsing and at the same time protects the original 3D contents from unauthorized access and download.

The results are easy to browse in high quality graphic, both the models coming from the main and the secondary surveys are well integrated inside the website interface. In this way, technology enthusiast and scholars can browse and analyse the 3D models of this monumental and mysterious area

appreciating the size and the articulation of each part of this complex puzzle.

Conclusions

The virtual reconstruction of the St. Mary and Stefano church and of the St. Donato was just the first step of a complex work, the models defined interpolating between existing architecture and inverse design procedures allow 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. While the presence of the underground chapel, gives not enough suggestions to be used as a possible reference in locating of the main monument. In the end the total destruction applied to all the buildings of the area and the numerous rearrangements of the terrain seems to have destroyed everything to such a level that the main question seems to be "why did only the

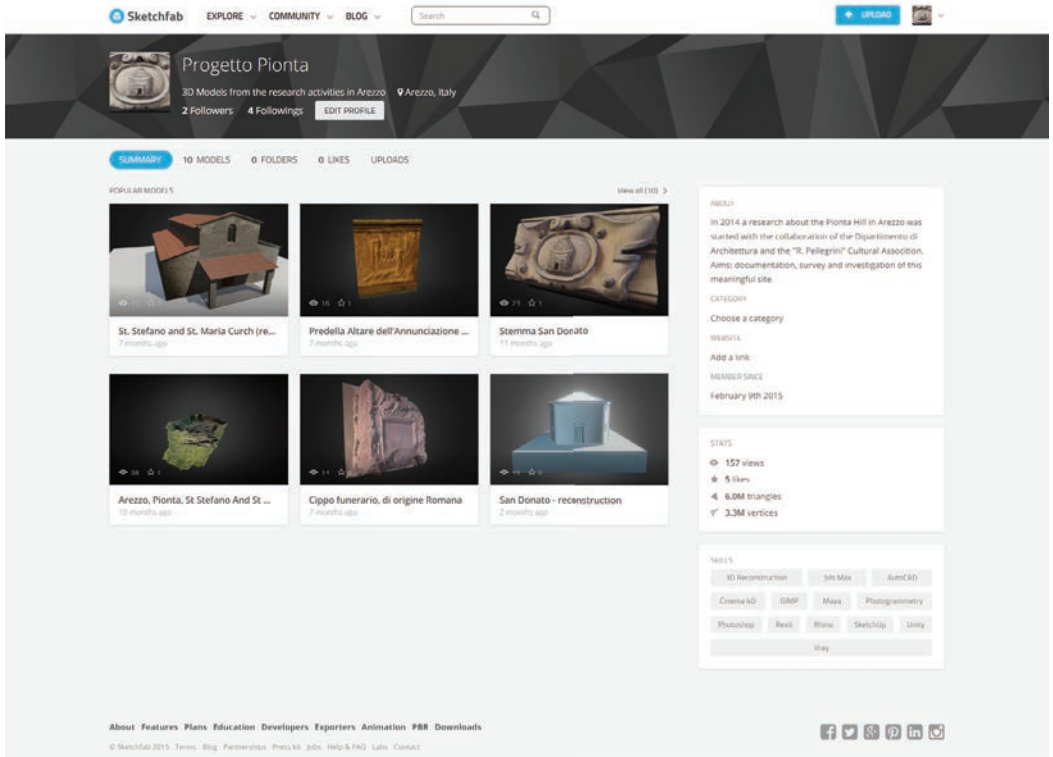


Figure 24 – The “Progetto Pionta” profile in the www.sketchfab.com community.

St. Mary and Stefano Church ruins remain intact enough to be read?”

Such a question may be able to 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 about this rich and unlucky part of the town.

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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 May 2015 a group of scholars from different countries met in Valencia to discuss about the relationship between Architecture, Archaeology and contemporary City Planning. This book collects the final papers from that meeting.



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