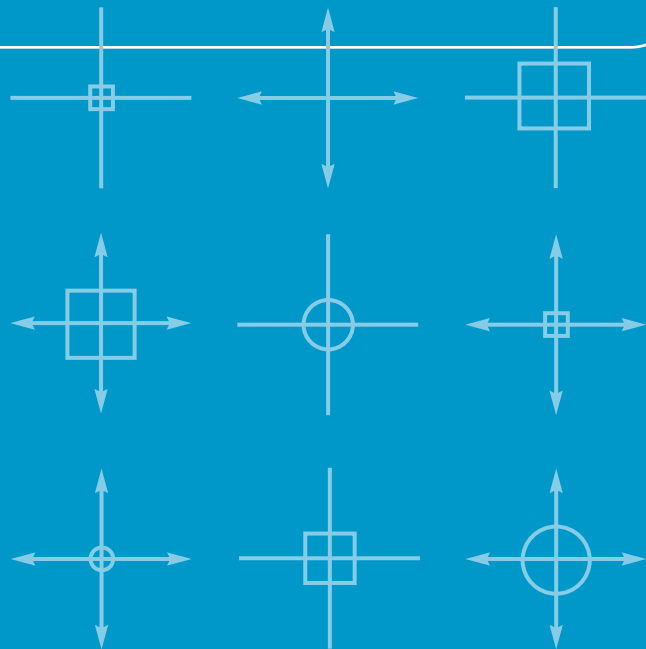


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Virtual Archaeology and Historical Revisionism

The Neglected Heritage of Greek Siracusa

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Abstract: Founded in Sicily by the Corinthians in 733 BC, Siracusa was the birthplace of poets and thinkers as Epicharmus and Archimedes, visited by many prominent figures of Greek culture as Pindar, Aeschylus and Plato, and over centuries it became one of the most prominent cities of the Greek Mediterranean. Nonetheless, regardless the historical background and the imposing visible remains of that past emerging everywhere in the actual urban area, Siracusa, since 2005 World Heritage site, has never played the role of quintessential archetype of Greek city in the mainstream. Against this scenario a proper action of historical revisionism over all the media should be undertaken for recovering the neglected heritage of ancient Siracusa in order to reconstitute to this once splendid archetype of Greek culture the deserved role of key-site. This paper elucidates a virtual archaeology project, undertaken by a team of scholars of the IBAM-CNR and The Arcadia University - TCGS, aimed to the digital reconstruction of Ortigia, the core district of the Greek Syracuse. The main goal of this exercise has been the production of the 3D documentary 'Siracusa 3D reborn', that represents an original advance in the knowledge of the Greek background of the city. In this perspective, the choice of providing 'passive' cognitive tools embedded with communicational and emotional components did not affect the scientific accuracy with which the reconstructive process has been carried out. Main monuments of Ortigia are described and analyzed in the context of a full 3D stereoscopic representation employing techniques of modern cinema industry for elucidating and explaining its historical and archaeological characteristics. The reconstructive workflow followed a meticulous methodological plan based on the published data and aimed to define a previously unavailable topographic profile of the city, portrayed in two main chronological phases, Archaic and Late Classical.

Keywords: virtual archaeology; archaeological 3D modeling; reconstructive analysis; Greek architecture.

Virtual Archaeology and historical revisionism

Sometimes, the lack of attractiveness for cultural and archaeological tourism of certain sites, even those with outstanding historical background, lies in a series of factors including misinterpretation/underestimation of that background by the community living in the cities where those sites are located, miscommunication on local and media level of messages related to it or simply limited accessibility. The successful policies applied in the last decades in Malta, both aimed to develop the image of the island's historical and cultural heritage, first among the local people and then to advertise this image outside, represent a good example of cultural reconstruction and proper communication of the heritage (BLACK 1996).

The result of these efforts at site presentation to international public is the emergence of distinctive physical form in which visitor centers, 3D theater and multimedia installations are often central elements. In particular, the use of virtual archaeology solutions, as interactive applications and 3D reconstructions, is becoming crucial for its ability to convey archaeological and ethnographic information into a product aimed to intellectual comprehension and sensory enjoyment (LADEIRA, BLAKE 2004).

In this perspective, the role of Virtual Archaeology becomes crucial for contributing to a proper process of historical revisionism of that archaeological heritage neglected by inappropriate marketing and communication policies.

Greek Siracusa and the public eye

Siracusa, founded in Sicily by the Corinthians in 733 BC and conquered by the Romans in 212 BC, over centuries became one of the most beautiful, influential and wealthy among the Greek cities of the Mediterranean basin. Several prominent poets and philosophers who greatly contributed to the fortune of Greek culture abroad as Sappho, Simonides, Bacchylides, Pindar, Aeschylus and Plato visited Syracuse and lived there parts of their lives. The city itself was the birthplace of many thinkers as Epicharmus, Sophron, Philistus, Theocritus and - above all - Archimedes the work of which is a cornerstone of Greek thought (DAIX WESCOAT 1989). The majesty of temples, the magnificence of public and spectacle buildings, the robustness of fortifications, the technical level of naval engineering and the masterpieces of sculpture, architecture and painting produced in the workshops were once the tangible signs of the supremacy of Greek Syracuse (PAIPETIS, CECCARELLI 2010).

Nonetheless, regardless the historical background and the imposing visible remains of the Greek colony emerging everywhere in the actual urban area, Syracuse whose historical city center, Ortigia, has been UNESCO World Heritage site since 2005¹ has never played the role of quintessential archetype of Greek city in the mainstream.

Back to the case of Syracuse, reasons of this bias come from the fact that the majority of monuments of Greek city were uncovered between the end of 19th and the beginning of 20th century, due to the work of Paolo Orsi, a founding figure of Sicilian archaeology, and published in Italian language according to the narrative style and concept of the past of that period (LEIGHTON 1989), or they were discovered in the last few decades during rescue excavations the results of which were just preliminary announced (VOZA 1999), published in scientific reports oriented to specialists (BASILE, MIRABELLA 2003) if not totally unpublished. The lack of proper informative panels and installations by the monuments and the absence of a main web portal for the cultural heritage of Siracusa, that leaves the field open to a multitude of dis-informative websites, contribute to neglect the role of Greek Siracusa in the mainstream. Furthermore, the Greek heritage seems to be underestimated somehow even among the local community.

¹ <http://whc.unesco.org/en/list/1200>, accessed 25th February 2014

On the other side, the absence in recent times of international scientific events aimed to promote the Greek art and archaeology of the city diverts several foreign scholars who keep thinking that everything have been already discovered, studied and published many decades ago.

This apparent weak appeal over the local community together with the partial and insufficient communication of the results and dissemination of knowledge have blocked both further touristic policies and new scientific researches. It emerges clearly from this frame that the communication methods of Syracuse's past has conditioned the impact on the public eye of the splendid Greek heritage of the city, consequently limiting eventual and potential economic developments.

Historical revision and virtual archaeology: 'Siracusa ed Reborn'

Against this scenario a proper action of revisionism over all the media should be undertake for restoring and improving the communication of this neglected part of Syracuse's in order to retribute to this once splendid archetype of Greek culture the deserved role in the international mainstream.

A solution to this long standing issue has been provided by the recent advances in the field of virtual archaeology, a discipline aimed to 'bring back the past' through the meticulous and scientific 3D reconstruction of ancient environments breaking language barriers and cultural limits via visual messages.

A virtual archaeology project about Greek Syracuse, has been undertaken by a team of scholars of the Information Technology Laboratory of the Istituto per i Beni Archeologici e Monumentali - Consiglio Nazionale delle Ricerche² and The Arcadia University – The College of Global Studies (Arcadia Sicily Center)³. Its aim has been the overall digital reconstruction of Ortigia, the core district of the Greek Syracuse, for the production of the 3D documentary 'Siracusa 3D reborn' that since May 2013 is regularly on screen in a 3D theater located in the historical center of Syracuse that is the only visual informative source about the Greek city both for tourists and scholars.

In this paper the entire project pipeline will not be presented and thoroughly discussed due to page limits. Instead it has been preferred to emphasize the potential use that can be done of the documentary for increasing the awareness among local people, enhancing touristic attraction policies and supporting scholars in the test of their hypotheses of historical and archaeological reconstructions. Theoretical approaches, reconstructive criticalities and technical aspects will be stressed elsewhere.

Since an overall work about archaeology of Greek Ortigia did not exist, the first step of this project consisted of the data collection of all the publication about single monuments or excavations carried out since the end of the 19th century. Old and new data were reinterpreted and compared with the available hypotheses about the urban development, siding the more reasonable interpretation and trying to go beyond academic disputes. At the same time a multitude of graphic data, plans, top views, section views, elevation views and

² <http://www.itlab.ibam.cnr.it>

³ <http://www.arcadia.edu/abroad/mcas>

architectural reconstructive studies, mainly present in the older scientific production, were retrieved and corrected with the recent advances in the field of research on Greek architecture and sculpture.

Following the recommendations and the statements of the Principles of Seville (CARRILLO GEA et al. 2013) and the London Charter (DENARD 2012), this reconstructive process proceeds by means of a systematic study which is as 'transparent' and intelligible as possible. In particular, this charter declares that methods of analysis, surveying techniques and interpretations must all be clear, comprehensible and reusable. Only analyses of the preliminary data can validate outcomes of a reconstructive study and ensure that new generations are able to revise results without necessarily starting from scratch. Scientific transparency is thus the main indispensable premise that 'measures' quality and scientific rigor of each application and study based on virtual archaeology.

Meticulous historical researches and direct analysis of ancient sources provided the historical scenario for setting the storyboard of a multi-language documentary. Being this project a pioneering tool for communicating the ancient Greek heritage of Ortigia to local people and foreign visitors, narrative criteria have been crucial.

According to cultural tourism tendencies in Europe, people accessing key cultural attractions - as UNESCO world heritage sites - are generally in the higher levels of scholarization (VAN DER BORG, RUSSO 2008). Furthermore, internet, TV, cinema and even videogames have contributed to accustom the public to a very technical languages for historical contents. In this perspective, it has been decided to avoid simplifications and to keep a certain high technical language entrusting the power of visualization for contextualizing historical events and monuments.

A 2,500 words text has been arranged covering the history of the core part of the Greek colony of Syracuse, Ortigia, from the foundation in 733 BC to the time when Archimedes defended the city during the Roman siege, in 231-212 BC. The narrative has been divided in two blocks representing the two main archaeological phases in the urban and monumental development of Ortigia, 7th-5th centuries BC and 4th-3rd centuries (EVANS 2009). First, the monumental development of Ortigia is illustrated through its main steps: the design of road network and blocks of houses (fig. 1), the construction of earliest cult buildings temples and public areas (Figs. 2-4) as the temple of Apollo (fig. 5), and the temples of Artemis and Athena on the acropolis (Figs. 3), all chronologically related to Archaic and early Classical period. Then, the drastic transformation of the city, during the Classical and Hellenistic phases is elucidated, showing the progressive destruction of entire blocks and the construction of fortification walls, gates, barracks, dockyards and military installations. Particular emphasis has been given to the recreation of ancient artifacts known just from descriptions provided by ancient sources, as the splendid revolving doors of the temple of Athena (fig. 6), and to the animation of digital characters as the Corinthian colonists (Figs. 7, 9) who sailed towards Ortigia for founding Syracuse (fig. 5). An emphasis was also given to the recreation of siege machines (fig. 10) and devices designed by Archimedes and above all to the reconstruction of the 'Syrakosia', the colossal warship he designed and produced for the king Hieron II (fig. 8), representing a unique masterpiece in ancient naval engineering (CASTAGNINO BERLINGHIERI 2010). All the recreation process has been based on the respect of the transparency concept as conceived in the above mentioned charts (fig. 11). A large use of ancient sources helped to increase the dramatic effect of the narrative.

Once the 2D set of data related to each monument has been prepared and the storyboard has been completed the 3D modeling and production phase started out.

Although the primary goal of this project was to bridge a communication gap about the Greek background of Syracuse, and the expectations of the commissioning company were mainly oriented toward the production of a 'touristic attraction', the meticulousness in the archaeological and historical analysis made the final product significantly helpful for the scholars.

The short production time of this easy learning documentary, dramatic and engaging at the same time, blending history and archaeology with modern computer animation techniques, deeply conditioned the productive pipeline. It in fact caused the simplification of many necessary processes during the design phase and the elimination of several others. Neither animatic for the control of complex movements nor detailed storyboards for scene development were used. The entire production has been established on a simple narrative based on illustrative texts and it is aimed to visually clarify through images and reconstructions those historical and archaeological contexts relevant for the understanding of features of the Greek city. Obviously, this approach brought to a more educational than narrative movie. However, the choice of providing 'passive' cognitive tools with a remarkable illustrative component has not diminished the emotional and communicational aspects expected by the commissioning company.

Main monuments of Ortigia are described and analyzed in the context of a full 3D stereoscopic representation employing techniques of modern cinema industry for elucidating and explaining its historical and archaeological characteristics.

Therefore, the visitor can learn those peculiar architectural and urban features of the Greek city, without disregarding those characters that played 'key roles' in the diffusion of Greek culture in the Mediterranean. Emphasis is also given to reconstructions of war machines and unique inventions designed by Archimedes, the most brilliant mind of Greek era. The reconstructive workflow followed a meticulous methodological plan based on the published data and aimed to define a previously unavailable topographic profile of the city, portrayed in two main chronological phases, Archaic and Late Classical. After this initial moment of research and historical interpretation of the ancient context, a storyboard with an intentional didactic narrative has been arranged for representing the diachronic development of urban transformations together with main events that marked the history of the city.

3D models have been produced and elaborated in Maxon and Cinema4D environments and rendered on a 64 core Render Farm. All the scenes have been processed in post-production with Adobe After Effects, where motion blur, color grading and compositing of complex particles for sea foam, smoke and fire effects have been added.

Theoretical background and production pipeline

What does it make a visit to a heritage site an unforgettable experience for a tourist? What does it make an approach to a heritage site a fully satisfying moment of scientific analysis for a scholar? The answer to both questions is the same, a physical experience, the only exercise that leaves a vivid memory in the visitor's mind. The physical experience is the cornerstone of many key heritage sites where the good conditions of the ancient monuments allow the observer to catch a glimpse of the ancient life. In the case of limited accessibility to archaeological sites and poor preservation conditions, virtual archaeology comes into play.

The digital recreation of ancient environments can integrate a traditional visit or autoptic study providing a full immersive sensorial experience that enhances the process of learning.

Furthermore, the development of such projects bring to the achievement of new cognitive tools usable by the archaeologists for benchmarking their hypotheses about topography of ancient cities and the relationship between man, artifact and landscape (MOSER 2005).

The Siracusa 3D Reborn project and the related movie on screen in the Ortigia 3D theater represents the initial attempt to put under revision the concept of Greek heritage of the city, first among the local people and then among foreign visitors. In fact, as above mentioned, the development of such virtual archaeology projects risk to turn out pointless if not inserted into a wider planning scheme in which local government and citizen community have to play the main roles.

Besides further potential researches on the digital reconstruction of other districts of the Greek city or on the exportation of 3D multimedia on mobile devices inserted in a network of augmented reality view spots, that are both options to be explored in the next future by the authors, a relevant point in the research agenda is about the proper use of Siracusa 3D Reborn in a general plan of heritage industry.

Nowadays, archaeologists play an important role in the relationship between archaeology, tourism and heritage, and yet until recently they only rarely chose to actively engage these fields. By uncovering evidence of past societies, they provide significant resources that modern people use in defining their identities through the exploration of their heritage. By providing the material remains of cultural heritage, they also provide the materials for an expanding heritage tourism industry (PACIFICO, VOGEL 2012). In this perspective, the modern role of archaeologists, as intellectual, beyond the borders of specialist studies and academic isolation entails serious obligations and responsibilities (HAMILAKIS 1999) that cannot be centered just on preservation of monuments but also on their public interpretation (BINKS 1986).

The product achieved has not to be considered as a simple scientific exercise carried out by an interdisciplinary team of scholars aimed to create a touristic attraction, but it represents at the same time a seminal advance in the knowledge of the Greek background of the city, a pivotal planning experience that could activate more local actors in a joined effort of further improving the current image of the city on the public eye.

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Figures



Fig. 1 – Aerial view of Ortigia in the 4th century BC, with urban setting, fortifications and dockyards designed by the tyrant Dionysius the Elder (432-367 BC)



Fig. 2 – Aerial view of the acropolis of Ortigia in the 5th century BC, with Doric temple of Athena (left) and the Ionic temple of Artemis (right)



Fig. 3 – Aerial view of the acropolis of Ortigia in the 5th century BC, with Doric temple of Athena (left) and the Ionic temple of Artemis (right)



Fig. 4 – Digital reenactment of a daily life in the market by the acropolis



Fig. 5 – 3D perspective cross-section of the temple of Apollo (6th century BC)

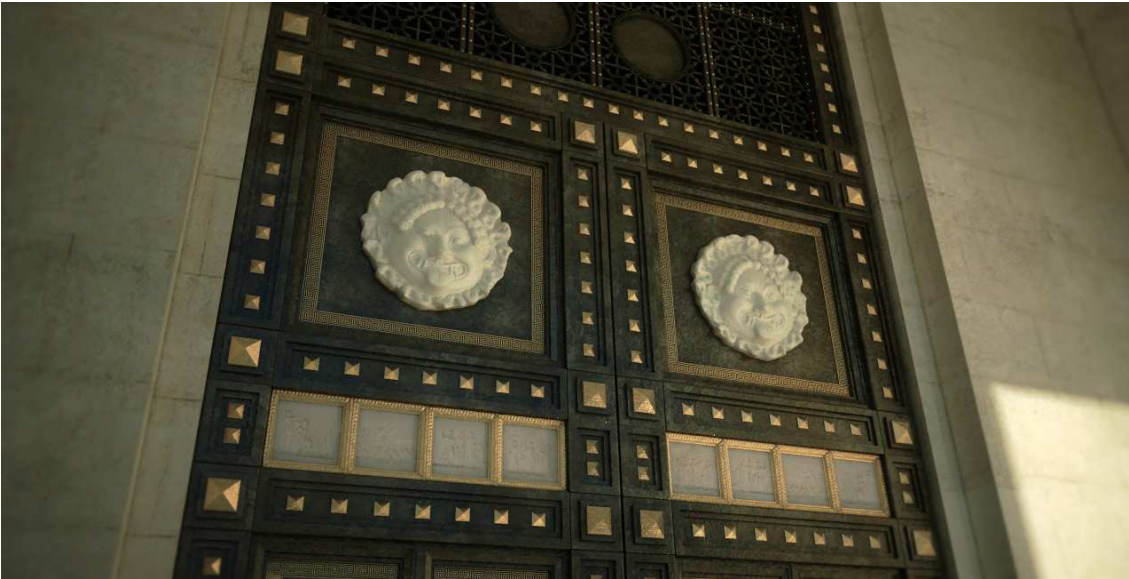


Fig. 6 – Detail of the virtual model of the revolving doors of the temple of Athena according to the description of ancient sources



Fig. 7 – Digital reenactment of the arrival of Corinthian colonists at Ortigia, for the foundation of Syracuse



Fig. 8 – The colossal mercantile ship, Syrakosia, designed by Archimedes for the king of Syracuse, Hieron II, at the end of 3rd century BC



Fig. 9 – The avatar of Archias, leader of the Corinthian colonial expedition that founded Syracuse in 733 BC



Fig. 10 – Reconstruction of a catapult (lithobolos) designed and produced at Syracuse in the 4th century BC by the will of tyrants Dionysius the Elder

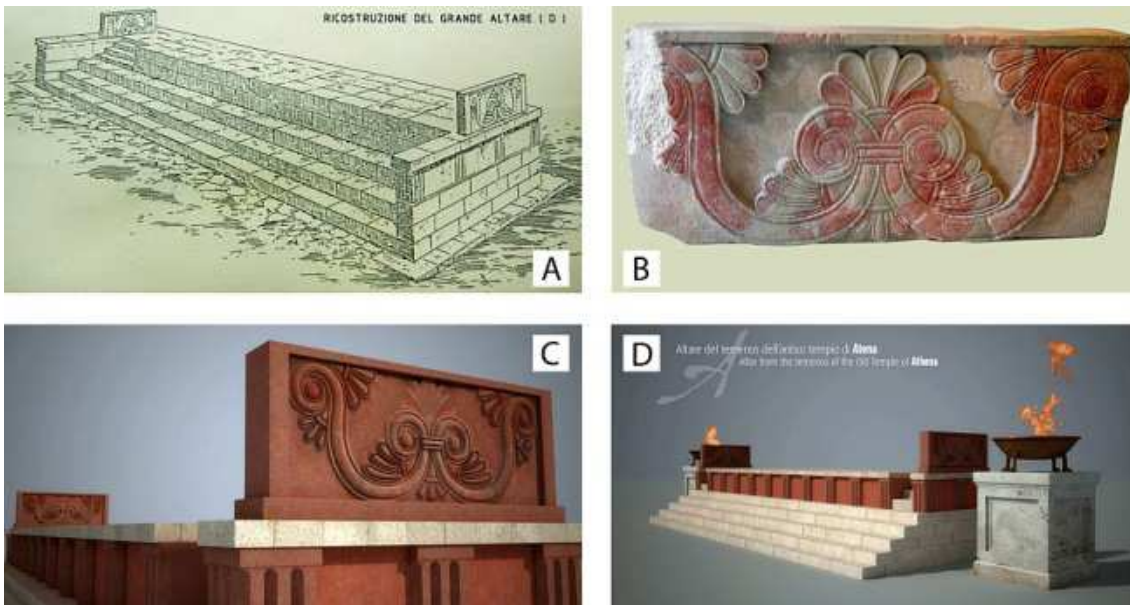


Fig. 11 – A) Reconstruction of Altar D designed by Rosario Carta in 1919; B) Side parapet of the Altar D, photo of the find in the museum P. Orsi, Syracuse ; C) -D) 3D model of the Altar D from Siracusa 3D Reborn

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