Visualizing cityscapes of Classical antiquity : from early modern reconstruction drawings to digital 3D models

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English Summary

Visualizing cityscapes of classical antiquity: From early modern reconstruction drawings to digital 3D models

The fascination for ancient ruins as a testimony of a distant past links the present day (digital) archeologist to the early modern antiquarian, as does the attempt to create a visual representation of their possible original appearance. Visual reconstructions of past cityscapes can in fact be found as early as the 15th century and continue nowadays to be created using computer-based approaches. Analysing visual reconstructions made in the early and late modern period allows us to follow the path of formation of a scientific method of archaeological inquiry: The first, light-hearted attempts, such as those made by 15th century Cyriac of Ancona, made way for more scientific efforts to account for the reliability of the proposed reconstruction, in light of an increased awareness of all the unknowns that had to be catered for through conjectures. This can be seen for example in the works of the late 18th century British scholar Sir William Gell, and of the 19th century Italian archaeologist Giuseppe Gatteschi.

The introduction of computer-based 3D modelling has dramatically increased the amount of 3D reconstructions of archaeological evidence, which nowadays have become ubiquitous, especially for communicating the results of archaeological research to a larger public. What previously was the product of an artist's hands (e.g. Alan Sorrell) is now resulting from the mathematical representation of the object of inquiry in three dimensions via specific software, which can be experienced in a photorealistic and immersive environment. This change in medium has contributed to transferring archaeological visualizations from the realm of artistic and atmospheric recreations of ancient sceneries to a computer-generated environment which is perceived as more trustworthy and objective. This however has raised concerns among scholars regarding the ethics of such digital representations which give prominence to a crystallized image of the past and do not account for the complexity of the archaeological record.

Moreover, especially in the early days of computer graphics, big companies saw archaeology as a particularly exciting field of application to show-case the latest technological improvements, often resulting in 3D visualizations that lack the input of archaeologists and were devoid of any scientific value. This situation has originated a debate among researchers in this field, which highlighted three main problematic aspects related to the creation of 3D archaeological reconstructions, namely 1) the lack of intellectual transparency regarding data, hypotheses and methods employed; 2) the creation of only one single model, which does not account for other plausible interpretations of the archaeological dataset; and 3) their use mainly as sophisticated, digital counterpart of traditional illustrations, while little attention is paid to their role as simulation and analysis tools.

Since these points have been only rarely addressed in practise, with this research I aimed to fill this gap, by focussing on the urban site of Koroneia, in Boeotia, Central Greece as a case study. The site has been investigated by means of non-destructive methods within the Boeotia Survey Project since 2006 and offered a challenging dataset to develop a GIS-based and intellectually transparent 3D visualization. Specifically, the methodology proposed in this work uses in an innovative way tools that are employed in geo-design and modern urban planning, integrating GIS with a rule-based modelling approach (Esri CityEngine). With a strong focus on the automation and iteration of the reconstruction process, our visualization allows an intuitive insight into hidden relationships and associations among data, and the creation and evaluation of alternative reconstruction hypotheses (chapter 6).

This practical implementation represents the final stage of a reflection on the use of visual reconstructions in archaeology that is proposed in this book. This study started with the analysis of the productions of the early and late modern period (chapter 2) and ended with the current applications of 3D digital reconstructions, with a special focus on cityscapes (chapter 3). This work has moreover produced a synthesis of the current state of the available data on Koroneia (chapter 4), and of the state of the knowledge of the urban development of Graeco-Roman towns in Greece from the Archaic period to Late Antiquity (chapter 5), which served as comparative material for suggesting alternative reconstruction hypotheses for Koroneia's urban layout.

With this research I hope to have made a practical contribution to a new understanding and use of 3D reconstructions, which should be considered not as static images of the past, but as working tools and 'laboratories' where multiple reconstructions and hypotheses can be visualized, evaluated and discussed.