

A Virtual Reconstruction of the Baptistry of the
Episcopal Basilica at Stobi (Republic of Macedonia)

By:

Jade Stella Wells

A Major Research Paper submitted to the Graduate Program in Classical Studies

in conformity with the requirements for the Degree of Master of Arts

Department of Classics

Queen's University

Kingston, Ontario, Canada

September 2018

Copyright © Jade Stella Wells, 2018

ABSTRACT

In the last decade of the sixth century CE, the baptistery of the Episcopal Basilica at Stobi, presently located in the Republic of Macedonia, collapsed, which destroyed the roof and the interior support structure of the baptistery. When the building was excavated in 1971, the stratigraphy was difficult to interpret; scholars originally believed that the baptistery had been undisturbed, even though there was no evidence of the roof present in the stratigraphy. To date, two very different reconstructions have been made. The first (figs. 7-8), made by William Dinsmoor in 1975, was disproved by subsequent archeological discoveries. A second reconstruction (fig. 9) was published in 2006 by James Wiseman, but failed to include any supporting evidence from comparanda. Since no adequate reconstruction attempt has been made, this paper will put forth a new reconstruction for the baptistery, supported by a photogrammetry-derived 3D model and evidence of similar baptisteries from the same period. Additional research topics which have not been addressed in the existing scholarship of the baptistery will also be discussed, including the provenance of the *kantharos* and the function of the structure found underneath the baptistery.

Acknowledgements

The completion of this project has been made possible by the support of so many individuals. I give the greatest thanks to my graduate supervisor, Dr. George Bevan, who suggested this topic to me. Dr. Bevan surpassed the duties of a supervisor and met with me every week for two years to provide guidance and inspiration in my research. I would also like to thank Mishko Tutkovski, the Acting Director and Silvana Blaževska, the Former Director, of National Institution Stobi, for allowing me to conduct field research in 2017, and the opportunity to complete this Major Research Project on the Stobi baptistery. I would also like to thank all the Stobi and Balkan Heritage Field School staff, who were part of the 2017 field season, including the supervisors: Zlatko Kovancaliev, Goce Pavlovski, and especially my supervisor Jovan Radnjanski, who sent me a large quantity of published scholarship on Stobi. In addition, I thank the Queen's University Classics Department for their financial support in awarding me with the Classics Travel Grant in 2017. I must also give recognition to the professionals and students: Miglena Raykovska, Mariana Filova, Ian Longo, and students from the four-week intensive course on Advanced Photographic Documentation of Archeological Materials held in 2015 by the Balkan Heritage Field School and Queen's University, who worked on the photogrammetric models of the baptistery which served as the basis for the 3D reconstruction.

I would also personally like to thank my parents, Wayne and Irene Wells, my former teacher, Margaret-Anne Gillis, and my friends, especially Ryland Patterson, for their encouragement and support over the last two years.

Table of Contents

1.0 Introduction	1
2.0 Methodology	3
3.0 History of Ancient Stobi	9
3.1 From its foundation to the Roman Imperial Era	9
3.2 Stobi in Late Antiquity	12
3.3 Excavation History	18
4.0 Christianity at Stobi	20
4.1 Christian Administration	20
4.2 Baptism in the Fourth to Sixth Centuries CE	22
5.0 The Stobi Baptistery	25
5.1 Floor Plan of the Stobi Baptistery	25
5.2 The <i>Kantharos</i>	29
5.3 Excavation of the Stobi Baptistery	33
5.4 The Bathhouse	38
5.5 Chronology of the Baptistery	41
6.0 Prior Reconstructions	44
7.0 Comparanda	48
7.1 The Lateran Baptistery	51
7.2 Ambrosian Baptisteries	52
7.3 Provençal Baptisteries	54
8.0 WorkFlow	56
8.1 Digital Documentation & Data Processing	56
8.2 Preparation of 3D models and 3D reconstruction	60
8.3 Results	64
9.0 Conclusions	64
Bibliography	67
Figures	75

1.0 Introduction

The Episcopal Baptistery at Stobi (circa late fourth to late sixth century CE) in the Republic of Macedonia is an example of a well preserved early Christian baptistery. Unlike many other early baptisteries, it was not completely remodeled following Late Antiquity, but it does present some challenges of archaeological interpretation.¹ The baptistery had three phases before it was destroyed by an earthquake in the late sixth century CE; now only the ruins remain (fig. 18).² The stratigraphy of the baptistery makes it difficult to establish a reconstruction for the final phase. There have been two prior attempts to reconstruct the final phase by the excavators who were present during the excavations in the 1970s. The first was made by William Dinsmoor Jr. in 1973, which included a timber pitched roof (fig. 8), but archeological evidence from the 1973 excavation season and the comparanda strongly reject Dinsmoor's reconstruction.³ No one has directly contested Dinsmoor's reconstruction, but James Wiseman, the lead American archeologist in the 1970s, published a second reconstruction (fig. 9) in 2006, which suggests that he believed that Dinsmoor's reconstruction was inadequate.⁴ Wiseman's reconstruction is also

¹ Most well preserved baptisteries from the fourth to the sixth century CE were constantly in use up to modernity, like the Lateran Baptistery or the Orthodox Baptistery of Ravenna. See Olof Brandt, "The Lateran Baptistery and the Diffusion of Octagonal Baptisteries from Rome to Constantinople," *ACIAC* 14 (2006), 221-7, and Spiro K. Kostof, *The Orthodox Baptistery of Ravenna*, (New Haven: Yale University Press, 1965).

² For the history of the baptistery, see section 5.5.

³ It was originally believed that the baptistery was undisturbed between its collapse at the end of the sixth century CE until its excavation in 1971, which influenced Dinsmoor's theories on the roofing, but evidence of looting was discovered in 1973. See William Dinsmoor, "The Baptistery: Its Roofing and Related Problems," In *Studies in the Antiquities of Stobi*, Volume 2, edited by James Wiseman and Dordje Mano-Zisi, (Beograd: Naučino Delo, 1975), and James Wiseman and Dordje Mano-Zisi, "Excavations at Stobi, 1971," *American Journal of Archaeology* 76, no. 4 (Oct., 1972), 422-424, accessed September 5, 2017, <http://www.jstor.org/stable/502874>. and James Wiseman and Dordje Mano-Zisi, "Excavations at Stobi, 1973-1974," *Journal of Field Archeology* 1, no. ½ (1974), 144, accessed September 5, 2017, <http://www.jstor.org/stable/529709>. Section 5.3 for a discussion on these findings.

⁴ This reconstruction is in James Wiseman, "Environmental Deterioration at Stobi: Climate Change or Human Agency?," in *Opening Addresses, Contributions and Bibliography of the New Members of the Macedonian Academy of Sciences and Arts*, (Skopje, Macedonia, 2006). 256, Fig.15.

problematic, since it was not supported by any comparanda, nor does his paper present an argument to support this reconstruction.⁵

According to the 2008 *ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites*, also known as the *Burra Charter*, all visual reconstructions should be supported by historical and archaeological sources, and accompanied by a written analysis to summarize the evidence.⁶ More recently, *The London Charter* (2009) and the *Seville Principles* (2011) have added additional guidelines to the standards of visual reconstruction.⁷ These charters recommend that all visual reconstructions should include a rationale of the methodology and a discussion of workflow to be legitimate.⁸ These charters determine what requirements are necessary to make an academically rigorous virtual reconstruction. Since no current reconstruction of the baptistery meets these guidelines, a new reconstruction is required. This is particularly important for the baptistery today, since it is being restored for physical anastylosis in August 2018. The main intent of this paper is to present a new 3D reconstruction (figs. 54-55) accompanied by a discussion about the methodology of the 3D model itself, which is supported by the history and comparanda.

⁵ The entire article was related to the collapse of the city, and only briefly mentions the baptistery in passing. Neither the reconstruction nor the architecture is discussed in the paper at all. See Wiseman, "Environmental Deterioration at Stobi," 256, Fig.15.

⁶ "ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites: Prepared under the Auspices of the ICOMOS International Scientific Committee on Interpretation and Presentation of Cultural Heritage Sites. Ratified by the 16th General Assembly of ICOMOS, Québec (Canada), on 4 October 2008." *International Journal of Cultural Property* 15, no. 4 (2008): 2.4, 8. accessed July 12 2018, doi:10.1017/S0940739108080417.

⁷ *The London Charter for the Computer-Based Visualization of Cultural Heritage*, ed. Hugh Denard, (London: King's College, 2009): 1-13. accessed July 12 2018, http://www.londoncharter.org/fileadmin/templates/main/docs/london_charter_2_1_en.pdf. See also Victor Manuel López-Mencherero and Alfredo Grande, "International Guidelines for Virtual Archeology: The Seville Principles," in *Good Practice in Archeological Diagnostics. Natural Science in Archaeology*, eds. C., Slapšak and B., Vermeulen F. (Cham: Springer, 2013): 269-83. accessed July 12 2018, https://doi.org/10.1007/978-3-319-01784-6_16.

⁸ The intent of the charters was to define the basic objectives and principles of the use of 3D visualization methods in relation to intellectual integrity, reliability, transparency, documentation, standards and sustainability and access. "*The London Charter*" article. 2-3, 5-6. and "*The Seville Principles*," principles 1-8.

This paper will also put forth some new theories related to the history of the baptistery, namely the original function of the marble *kantharos*, and the function of the buildings below the baptistery.⁹ I will argue that the *kantharos* originally came from a garden, supported by comparanda found *in situ* in the bay of Naples.¹⁰ It is even probable that the original function of the *kantharos* was a fountain. This theory is supported by frescoes at Pompeii, in which similar vessels are depicted as fountains (fig 26-27). I will also argue that the early *piscina* (fig. 28), discovered below the baptistery was part of a bathhouse.¹¹ There is a well established tradition in the Eastern and Western Roman Empire of baptisteries being built on the ruins of bathhouses to reuse the preexisting hydraulic infrastructure.¹² This relationship is also present at Stobi, demonstrated by the *piscina* below the baptistery and because the southeastern corner of the baptistery was built atop an earlier bathhouse to the southeast of the baptistery.¹³ Given the comparanda, the presence of this early bathhouse, the baptistery, and the *piscina* are clear indications that the Stobi baptistery was built on a bathhouse.

2.0 Methodology

The following definitions will explain the differences between physical and virtual conservation, restoration, and reconstruction, to make the goals of this virtual reconstruction

⁹ See Section 5.2 for the *kantharos*, and 5.4 for the bathhouse.

¹⁰ Monumental stone *krateres* and *kantharoi* were used interchangeably, see Section 5.2 for further discussion. Examples include the Borghese krater from the Gardens of Sallust, and the *krater* from the Villa of Oplontis (fig. 24). See Robert Cohon, "The Typology, History and Authenticity of Roman Marble Craters", *Monumenta Artis Romanae* 18, (1993): 312-220, accessed November 2, 2017, doi:10.1017/S104775940001165X.

¹¹ For the discovery of the early *piscina* see, James Wiseman, "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1987-78," *Journal of Field Archeology* 5, no. 4 (1978): 411, accessed September 5, 2017, <http://www.jstor.org/stable/529493>.

¹² For example, the Lateran Baptistery, The Baptistery at Nocera, The Orthodox Baptistery, the Butrint Baptistery and Baptistery of Parthicopolis. See Section 4.5.

¹³ See section 5.3 and 5.4. See also Wiseman, "Stobi in Yugoslavian Macedonia," 425-426 and James Wiseman, "Archeology and History of Stobi, Macedonia," In *Rome and the Provinces*, edited by Charles B. McClendon (New Haven: Society of the Archaeological Institute of Maceria, 1986), 41, 56; fn. 58.

project clear. According to the *Burra Charter*, conservation refers to the maintenance of a place, in its form, to retain its cultural significance.¹⁴ It is different from restoration, which is defined as “returning a place to a known earlier state by reassembling existing elements to the greatest degree possible without the introduction of new material”.¹⁵ One type of restoration, called anastylosis, refers to the restoration of monuments and buildings and it is the term used in this paper to discuss the restoration of architecture. Reconstruction is similar to the principal of restoration, since it involves returning a place to a known earlier state, but it is distinguished by the introduction of new material to the point of completion.¹⁶ Therefore, the goal of any reconstruction project is to restore an object or place to a previously known state by reassembling the preexisting elements, and to complete the reconstruction by introducing new material.

Physical reconstructions are usually performed to restore cultural significance to a place particularly after destructions from war or natural disasters.¹⁷ Currently, physical reconstructions are only performed when the form of the reconstruction can be proven definitively, but the legitimacy of even these reconstructions are still debated. One recent example is the Bel-Temple and Triumphal Arch from the first century CE Roman city of Palmyra, in Syria. Since Palmyra was destroyed by jihadists in 2015, Syria’s government has been planning to reconstruct the city,

¹⁴ See *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013*, (Burra: Australia ICOMOS: 2013): art. 1, accessed July 12, 2018, <https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf>.

¹⁵ See *The Burra Charter*, art. 1.

¹⁶ See *The Burra Charter*, art. 1.

¹⁷ See for example the reconstruction of the Stoa of Attalos, in Athens by the American School of Classical Studies in Athens in the 1950’s. See Nikki Sakka, “‘A Debt to Ancient Wisdom and Beauty’: The Reconstruction of the Stoa of Attalos in the Ancient Agora of Athens,” *Hesperia: The Journal of the American School of Classical Studies at Athens* 82, no. 1 (2013): 203-227, accessed August 8, 2018, <https://www.jstor.org/stable/10.2972/hesperia.82.1.0203>.

a plan which has been met by some criticism from cultural heritage professionals.¹⁸ In cases where the form the building is less certain, physical reconstructions are condemned because they are too speculative and the margin for error is high, especially since reconstruction is destructive and damages the original elements in the process. One of the best example of an incorrect reconstruction is Sir Arthur Evans' reconstruction of the Palace of Knossos during the 1920s, in which he imposed early 20th century biases on his reconstruction of Minoan architecture, ultimately falsifying Minoan history.¹⁹ Damage to the site and the falsification of history are precisely the reason why physical reconstructions have been condemned since the publication of the *Venice Charter* in 1964.²⁰ Instead of physical reconstructions, physical anastylosis is the preferred method of physical restoration.²¹ The physical anastylosis of the Baptistery at Stobi is underway, and expected to be completed in August 2018.

Despite the downsides to physical reconstructions, graphic reconstructions are valuable tools for experimental research and interpretation, and have no impact on the physical remains. The first graphic reconstructions were 2D drawings and engravings of Greco-Roman antiquities made in the Renaissance.²² Technical drawings were the standard form of graphic

¹⁸ The reconstruction of building in Palmyra was presented to the ICOMOS advisory committee. See Maamoun Abdulkarim, "Challenges facing cultural institutions in times of conflict: Syrian Cultural Heritage," in *Post-Trauma Reconstruction: Colloquium at ICOMOS Headquarters- 4 March 2016* vol. 2 (Chareton-le-Pont, 2016):9-11, accessed August 8, 2018, http://openarchive.icomos.org/1707/3/ICOMOS-Post-Trauma_Reconstruction_Proceedings-VOL_2_Final.pdf. See also this critical analysis by Elly Harrowell, "Looking for the future in the rubble of Palmyra: Destruction, reconstruction and identity," *Geoforum* 69 (2016): 81-83.

¹⁹ Louise Hitchcock and Paul Kounaris present a discussion of Evans' reconstructions at Knossos. Louise Hitchcock and Paul Koudounaris, "Virtual Discourse: Arthur Evans and The Reconstructions of The Minoan Palace at Knossos," in *Labyrinth Revisited: Rethinking 'Minoan' Archaeology*, ed. Y. Hamilakis, (Oxford: Oxbow, 2002), 40-58.

²⁰ The 1964 Venice charter condemned physical reconstructions except in extreme circumstances. "International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter 1974)," in *the Second International Congress of Architects and Technicians of Historic Monuments*, (Venice, 1964): 1-4, accessed July 12, 2018, https://www.icomos.org/charters/venice_e.pdf.

²¹ "The Venice Charter," 3; art. 15.

²² By the end of the mid sixteenth century workshops produced engravings of Greco-Roman art and architecture, which were sold to travelers as souvenirs. For more information on the collection see, Bates Lowry, "Notes on the Speculum Romanae Magnificentiae and Related Publications," *The Art Bulletin* 34, no. 1 (1952): 47. accessed June

reconstructions for archaeology well into the 1990s, and was even used for Dinsmoor's 1995 reconstruction of the baptistery (fig.5-8). These technical drawings were made using orthographic projection, which includes views of the object which correspond to a cartesian axis, such as front, back, left, top, bottom, and section drawings.²³ Orthographic projection continued to be the standard format for the presentation of graphic reconstructions in a 2D space, even after computer-based visualizations became the more popular method of graphic reconstruction in the early 21st century.²⁴ The implementation of computer-based visualizations in archaeology has come to be known as Virtual Archaeology, a term originally coined by Paul Reilly in 1991 to describe the computer simulation of archaeological excavations.²⁵ Virtual Archaeology is defined as "the scientific discipline that seeks to research and develop ways of using computer-based visualizations for the comprehensive management of archaeological heritage."²⁶ It is an umbrella term used to refer to many practices in virtual archeology, like virtual anastylosis and virtual reconstruction, which have the same definitions as physical anastylosis and reconstruction but are performed virtually.

23, 2018, doi:10.2307/3047391. For an example of this, see the Renaissance reconstruction of the Lateran by Antonio Lafrefi, see fig. 32.

²³ M. Callieri, P. Cignoni, R. Scopigno, G. Gori, M. Risaliti, "Beyond Manual Drafting: A Restoration-Oriented System," *Journal of Cultural Heritage* 7 (2006): 214-216, accessed August 8, 2018, doi:10.1016/j.culher.2006.06.002.

²⁴ Early techniques for graphic reconstruction involve scanning a traditional hand drawing of an artifact or plan, which is then traced over the original scanned image in computer software such as *CorelDRAW* or *CAD*. Other techniques for pottery reconstruction involve scanning a traditional hand drawing. In the 90's these drawings were adapted for 3D modeling in CAD by rotating a profile drawing by a given diameter to produce a three-dimensional wire-frame model of an artefact to make it 3D, which could then be rendered and given texture. See Gary Lock, *Using Computers in Archeology: Towards virtual pasts*, (London: Taylor & Francis Group, 2003), 136,152. See also N. Ryan, "Computer Based Visualization of the Past: technical 'realism' and historical credibility," in *Imaging the Past: Electronic Imaging and Computer Graphics in Museums and Archeology*, ed. P. Pain, T. Higgins and J. L and, (London: The British Museum, 1996): 182-196. The production of these early computer-based-visualizations lead to the publication of Guides to Good Practice for CAD (2002) and Virtual Reality (2002) from the Arts and Humanities Data Service.

²⁵ See Paul Riley, "Towards a Virtual Archaeology," in *Computer Applications in Archaeology*, 133-139. (Oxford: British Archaeological Reports, 1990).

²⁶ This definition of Virtual Archaeology is from the Seville Principles. See Lopéz-Mencher and Grande, "The Seville Principles," 282.

Virtual reconstructions have become the popular method of reconstruction since they are quickly made, photorealistic, and do not damage the original material culture. Virtual reconstructions have, however, been met with criticism over lack of historical authenticity. Often reconstructions are presented to an unsuspecting public isolated from any background information and academic debate relating to the uncertainties inherent within the interpretation.²⁷ This is because the viewer perceives any photorealistic 3D reconstruction as the product of indisputable scientific research, presented by experts. A related problem can also be observed in the lack of transparency regarding workflow used to create the 3D reconstructions, specifically to differentiate reconstructed portions from the original model and the traceability of particular decisions in the reconstruction back to underlying data, whether measurements in the field or historical sources. Without a discussion of methods and workflow it is impossible to tell whether academically rigorous practices were used, which fact can affect the academic integrity of the model.

The concerns put forth above over dubious 3D reconstructions led to the creation of charters that provide guidelines for the best practices for computer-based visualizations of cultural heritage. According to the *London Charter* (2009), the methodology of a project must also meet the criteria of suitability, documentation, sustainability, and feasibility of access.²⁸ These criteria ensure that virtual visualizations are supported by historical research and the most appropriate methods for the rendering of virtual reconstructions. Suitability refers to the evaluation of different types of computer-based visualization to determine the most appropriate method to achieve the aims of the project.²⁹ Documentation refers to the documentation of all

²⁷ According to Gary Lock, “the danger is at its most where images stand alone, without explanation, as ‘the’ presented version of the past.” Gary Lock, *Using Computers in Archaeology*, 155.

²⁸ *The London Charter*, art. 2.2.

²⁹ *The London Charter*, art. 2.2.

aspects of the project related to historical research and documentation of process.³⁰ The documentation of the process is intended to add transparency to the visualization, and involves a discussion of the decisions made during the creation of the visualization. Sustainability refers to the choices made to ensure the long-term sustainability of the results of the visualization, that is, to archive the final project.³¹ Finally, feasibility of access means the final visualization should be published in such a way that it will be available to the public to ensure the maximum possible benefits are achieved for the study, particularly regarding the understanding, and interpretation of cultural heritage.³²

The above criteria provides the foundation for the methods chosen for the 3D reconstruction of the baptistery at Stobi. The goal of the virtual reconstruction of the baptistery is to provide an up-to-date reconstruction of the baptistery that can be used as a scholarly tool to determine the most likely reconstruction supported by the history and comparanda. This 3D reconstruction was made before the physical anastylosis, which was completed in April 2018. This virtual reconstruction is not photorealistic and appears obviously different from the real baptistery to highlight the differences between the 3D reconstruction from the current form and texture of the baptistery. I have done this both in the interests of time, and to avoid the tendency in the field to use photorealism as an illusion to convince the viewer of the reconstruction's validity. This reconstruction will serve as one attempt in the history of reconstruction iterations of the Stobi baptistery and is not the final reconstruction. The background information and historical evidence in Section 5 and 7, will support the form which the reconstruction is modelled

³⁰ *The London Charter*, art. 4.4; 4.6.

³¹ *The London Charter*, art. 5-5.1

³² *The London Charter*, art. 6.

on. The decisions made regarding the workflow of the project are discussed in Section 8, which contain the workflow met the criteria of suitability, sustainability, and feasibility of access.

3.0 History of Ancient Stobi

3.1 From its foundation to the Roman Imperial Era

The city of Stobi was founded in the late fourth century BCE and was almost continuously occupied until it was abandoned in the mid sixth century CE.³³ During the last decade of the sixth century, the city collapsed and was subsequently buried by dust storms.³⁴ The excavators reconstructed the history of Stobi from ancient sources and epigraphy, but the archeological evidence contributes the majority of the evidence for the history of the site. The earliest written references to Stobi are from the first century BCE Roman historian Livy and the Greek geographer Strabo.³⁵ These early references described Stobi as an ancient Paeonian city, which was founded at the intersection of the Erigón (Crna) and Axiós (Vardar) rivers in the modern Republic of Macedonia (fig. 1).³⁶ Archeologists originally believed that Stobi was founded by the Paeonians as early as the sixth century BCE, due to the presence of some disturbed prehistoric materials that were interpreted with Livy and Strabo's in mind.³⁷ In 1997, the lack of

³³ There is a hiatus in the archeological record that lead the excavators to believe that the site was unoccupied from the late second to first century BCE. See Wiseman, "Archaeology and History at Stobi, Macedonia," 38. The rest of the dates will be discussed below.

³⁴ Dated by coin hoards dating to the end of the sixth century CE. See Section 3.2

³⁵ Livy's *History of Rome* 39.53.14-16 and Strabo, *Geography* 7. Fragment 4.

³⁶ The Paeonians were a Thracian tribe who inhabited the region between the Axiós and Strymon rivers. For a history of the Paeonians, see Irwin L. Merker, "The Ancient Kingdom of Paonia (With two Plates)," in *Balkan Studies* 6, no. 1 (1965), 35.

³⁷ This idea was first put forth by J.G. von Hahn and Leon Heuzey. See J.G. von Hahn, "Reise von Belgrade nach Salonik," *Denkschrift Wien* 11, pt. 2 (1861): 175, 231-236, and Leon Heuzey, "Découverte des ruines de Stobi," *RA* 2 no. 9 (1873):25-54. This hypothesis was also accepted in the early works of Wiseman and Mano-Zissi. See also James Wiseman and Djordje Mano-Zissi. "Excavations at Stobi, 1970," *American Journal of Archaeology*, 75, no. 4 (Oct., 1971): 395-401. <http://www.jstor.org/stable/502971>. Ivan Mikulčić, an archaeologist from the joint American-Yugoslavian excavations in the 1970's, dated several disturbed artifacts to the seventh to early sixth century BCE. See Wiseman, "Archaeology and History at Stobi, Macedonia," 37. Other fifth century BCE artifacts

sound archeological evidence prompted the re-dating of the foundation of Stobi to no earlier than the late fourth to early third century BCE, when there is a greater quantity of archeological remains.³⁸

In the Hellenistic period Stobi became a Macedonian city, but evidence of Hellenistic Stobi is still modest. Some Hellenistic material was found on the acropolis, including a coin minted by Philip V of Macedon.³⁹ There are no intact Hellenistic structures or inscriptions, but some Hellenistic cemeteries dating to the late third century BCE have been found in the northwestern area of the city.⁴⁰ The style of grave goods, coins, and radiocarbon dating put these graves in the second and first century BCE.⁴¹ The variety of burial customs and domestic and imported grave goods suggest that Stobi had a diverse population of Paeonian natives, Illyric natives, Greeks, and Macedonians. In 168 BCE the Romans conquered Macedonia and divided it into four republics; as part of the third republic, Stobi was a commercial city known for its salt

were lost or destroyed in the 1963 Skopje earthquake, see Djordje Mano-Zissi, "K pitanju straatigraphije u Stobima," *Zbornik Narodog Muzeja* 2, (1958-59): 355-357, cited in Wiseman and Mano-Zissi, "Excavations at Stobi, 1970," 395, n.3.

³⁸ Wiseman admits that this date may still be too early, since fully reliable archeological evidence is only available in the second century BCE. See Wiseman, "Archaeology and History at Stobi," 37.

³⁹ The coin minted by Philip V is catalogue number 71-529, published in Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 412.

⁴⁰ The main Hellenistic cemetery was found below the courtyard of the House of Peristerias and contained inhumation and cremation graves. See Viktorija Sokolovska, "Investigations in the House of Peristerias," in *Studies in the Antiquities of Stobi* 2, ed. James Wiseman and Djordje Mano-Zisi, (Beograd: Naučno Delo, 1975), 135-136. There were other Hellenistic burials in the West Cemetery, outside the city walls and west of the Porta Heraclea (Fig. 1). See Ivan Mikulčić, "The West Cemetery: Excavations in 1965." *Studies in the Antiquities of Stobi* 1, ed. James Wiseman and Djordje Mano-Zissi, (University of Texas, 1973), 98-142, and Ivan Mikulčić, "Some New Factors in the History of Stobi," in *Studies of the Antiquities of Stobi* 3, ed. Blaga Aleksova and James Wiseman (Skopje: Grafički zavod Goce Delčev, 1981), 217. The earliest Hellenistic graves date to the third century BCE. See Salvatore Valastro Jr., and Al B. Wesolowsky, "The Carbon-14 Dating Program of the West Cemetery," in *Studies in the Antiquities of Stobi* 3, ed. Blaga Aleksova and James Wiseman, (Skopje: Grafički zavod Goce Delčev, 1981), 301-310.

⁴¹ Valastro, and Wesolowsky, "The Carbon-14 Dating Program of the West Cemetery," 301-310.

trade.⁴² In 149 CE, Rome converted Macedonia into a single Roman province.⁴³ The Roman forces in Macedonia spent the rest of the late second and first century BCE defending Macedonia from the invading Scordisci, Thracians, and Bessi. There is a hiatus in the archeological record at Stobi from the late second century to the early first century BCE. According to Wiseman and Mano-Zissi, the Scordisci raided Stobi in 119 BCE, which left the site unoccupied for about a century.⁴⁴

In the Roman imperial period, there is more literary and archaeological evidence demonstrating that Stobi was a prosperous city. Pliny the Elder calls Stobi a “town of Roman citizens” (*oppidium civium Romanorum*).⁴⁵ The city was also given *municipium* status and minted its own coinage from the reign of Emperor Titus to that of Elagabalus (69-222 CE).⁴⁶ Archaeological evidence suggests that the city expanded considerably in the early imperial period and extended almost to the left bank of the Crna (fig. 1). The areas below the Central Basilica and the Civil Basilica were residential and commercial structures, and the lower city even expanded onto the banks of the Erigón. A Roman villa (the Casa Romana) and a bath were

⁴² Beginning in 217 BCE, Macedonia was at war with Rome. Rome defeated the Macedonia 168 BCE at the battle of Pydna in Macedonia. For a history of these events see, Erich S. Gruen, “Macedonia and the Settlement of 167 B.C., in *Philip II Alexander the Great, and the Macedonian Heritage*, eds. W.L. Adams and E.N. Borza (Lanham: University Press of America, 1982), 258. In *Histories* 49.29.5-9, Livy describes the divisions of the four Macedonian territories. Only a few lines later, in 49.29.12-13, Livy writes that Stobi was part of the third district, designated as a city where salt was sold.

⁴³ Macedonia revolted against Rome and instigated the Fourth Macedonian War but was defeated in 146 BCE. See John Vanderspoel, “Provincia Macedonia,” in *A Companion to Ancient Macedonia*, eds. Joseph Roisman and Ian Worthington, (West Sussex: Wiley-Blackwell, 2010), 251.

⁴⁴ This hypothesis is published in Wiseman, “Archaeology and History at Stobi,” 38. In the second century, the Scordisci frequently invaded Macedonia and defeated Roman forces. There are reports of Scordisci raids in Macedonia in 141 CE, circa 135 CE and 119 CE. See Vanderspoel, “Provincia Macedonia,” 258. Since the Scordisci travelled south and invaded the area around Argos in Orestis in 119 BCE, it is plausible that they travelled through the Axiós Valley, and invaded Stobi, but there is no archeological proof of the Scordisci to support this theory.

⁴⁵ Pliny the Elder, *Natural History*, 4.17.

⁴⁶ These coins (catalogue numbers S2-II-302A to S20II-312A) were minted with variations of MVNICIPI STOBENSIVM on the obverse and reverse, which were published in the catalogue Pere Pau Ripollès, Andrew Burnett, Michael Amandry, Ian Carradice et. al, (eds.) *Roman Provincial Coinage: Consolidated Supplement I-III (1992-2015)* (London: British Museum Press, 2015), 191-193.

built in the first century CE, while the theater and the Synagogue of Polycharmos were built in the second century CE (fig. 1).

3.2 Stobi in Late Antiquity

An earthquake struck Stobi circa 300 CE, shifting some of the monumental marble blocks in the auditorium of the Theater (fig. 1).⁴⁷ Despite the earthquake, the city thrived and became wealthy over the fourth century; public bathhouses were constructed, and palatial residences were built on the acropolis for Stobi's upper class (fig. 1). By the early fourth century, Stobi was also a prominent Christian center, which had a bishop and an episcopal complex. Though there must have been several bishops on the episcopal throne at Stobi over the fourth to sixth centuries CE, we only know the names of four.⁴⁸ The earliest known bishop was Budius, who was listed as one of the bishops in attendance at the Council of Nicea in 325 CE.⁴⁹ In 388 CE, Stobi became the temporary residence of Emperor Theodosius, who issued two anti-heretical edicts in the city.⁵⁰ By the third quarter of the fourth century, the religious diversity in the city, which included

⁴⁷ Elizabeth Gebhard believes that the earthquake destroyed a wall in the *scene*. Gebhard dated the destruction from pottery found below the floor of the scene building, see Elizabeth R. Gebhard, "Evidence for an Earthquake in the Theater at Stobi, c. AD 300," *Archaeoseismology. Occasional Papers of the British School at Athens*, eds. S. Stiros and R. Jones, (1996), 55.

⁴⁸ Bishop Budius was the Bishop of Stobi in the early 4th century CE, known from his attendance at the Council of Nicea in 325 CE. Bishop Eustathios (first half of the fifth century) is known from the mosaic in the nave of Episcopal Basilica I. Snively writes that he is known for renovating and enlarging Episcopal Basilica I. Bishop Nicholas, Stobi's Bishop in the mid fifth century, attended the Council of Chalcedon in 451 CE and Bishop Philip, known from Inscriptions from the lintel from Phase II of the Episcopal Basilica, is believed to be responsible for the construction of Episcopal Basilica II, however his might date to after 475 CE or possible later, to the reconstruction of the second phase in the 520's or 530's. For Eustathios see James Wiseman, "The Early Churches and The Christian Community in Stobi, Macedonia" in *Acta Congressus Internationalis XVI Archeologiae Christianae* (Vatican City: Pontificio Istitutio di Archeologia Cristiana, 2006) 797-803, fig.6 and Carolyn S. Snively, "Macedonia in Late Antiquity," *A Companion to Ancient Macedonia*, eds. Joseph Roisman and Ian Worthington, (West Sussex: Wiley-Blackwell, 2010), 560. For Nicholas see *The Acts of the Council of Chalcedon*, vol. 2, trans. Richard Price and Michael Gaddis, (Liverpool: Liverpool University Press, 2005), 9. For Philip see Snively, "Macedonia in Late Antiquity," 560; n. 59, who cites Feissel's catalogue of inscriptions, specifically no. 274 for Bishop Philip of Stobi in Feissel, *Recueil*. See also Blaga Alexova, "The Old Episcopal Basilica at Stobi," *Archaeologia Jugoslavica* 22 (1982): 50-63.

⁴⁹ Carolyn S. Snively, "Macedonia in Late Antiquity," 560.

⁵⁰These edicts are *Codex Theodosianus* 16.4.2 and 16.5.15.

pagans and Jews, was rapidly disappearing as Christianity achieved dominance as the state religion, by the reign of Theodosius I.⁵¹ Finally, at the end of the fourth century, the pagan theater was closed, and many of its marble seats were used in the construction of other buildings at Stobi, and in the new fortification wall.⁵² After the death of Emperor Theodosius in 395 CE, when the Roman Empire was permanently divided into eastern and western halves, Stobi belonged to the Eastern Empire, as part of the eastern Prefecture of Illyricum, although ecclesiastic administration would go back and forth between Rome and Constantinople.⁵³

Between the late fourth century to the early fifth century, Stobi suffered a series of destructions. At the end of the fourth century, the Erigón river flooded twice and destroyed the Casa Romana and nearby bathhouse, which resulted in the abandonment of the lower city (fig. 1).⁵⁴ These floods weakened the base of a large ridge, Orlova Cuka or Eagle Ridge, on the opposite side of the Erigón from the Casa Romana, and part of it collapsed, causing a landslide.⁵⁵

⁵¹ The Nemeseum, the sanctuary to Nemesis in the scene of the theater was still in use in 375-8 CE, dated by the latest coin found in a coin hoard, see Elizabeth Gebhard, "The Theater at Stobi: A Summary," in *The Studies of the Antiquities of Stobi* 3 eds. Blaga Aleksova and James Wiseman, (Skopje: Goce Delčev, 1981), 18. The Synagogue was also still in use in the late fourth century, dated by a remodeling. Hemans, "Late Antique Residence at Stobi, Yugoslavia," 20-1. Hemans, Frederick P, "Late Antique Residences at Stobi, Yugoslavia," (Boston: Boston University, 1986), 20-1. Accessed January 10, 2018, <https://hdl.handle.net/2144/26885>.

⁵² Also dated by the coin hoard in the *Nemeseum* which were minted during the reigns of the emperors Gratian (367-283 CE), Valentinian I (364-375 CE), and Valens (338-278 CE), See Wiseman, "Archaeology and History at Stobi," 42.

⁵³ See Michael Kulikowski, "'The Notitia Dignitatum' as a Historical Source," *Historia: Zeitschrift für Alte Geschichte* H. 3 (2000): 362-4. See also Timothy D. Barnes, *The New Empire of Diocletian and Constantine* (Cambridge: Harvard University Press, 1982), 139. See also M. Panov, 'Illyricum between East and West: Administrative Changes at the End of the Fourth and the First Half of the Fifth Century', in F.K. Haarer and E. Jeffreys (eds.), *Proceedings of the 21st International Congress of Byzantine Studies*, London 21–26 August 2006, 3 (2006), pp. 33–4.

⁵⁴ The Flood has been dated by the latest coin found in fluvial deposits in the Casa Romana, see Wiseman, "Environmental Deterioration at Stobi," 93, 237. The flooding of the Erigón was a continuous problem up until 1969, when a dam was installed 20km upstream near the village of Vozartsi. See Robert L. Folk "The Geologic Framework of Stobi," in *Studies in the Antiquities of Stobi* 51, ed. James Wiseman (University of Texas, 1973), 39-42.

⁵⁵ The landslide was identified by Robert L. Folk, "Geologic Urban Hind planning: An Example from a Hellenistic-Byzantine City, Stobi, Yugoslavian Macedonia," *Environmental Geology* I (1975) 14-17. The missing section of Eagle Ridge (Orlova Cuka) is still visible on the face of the hill. Wiseman says that the landslide was so large that it must have rerouted the Erigón river causing even more flooding in the lower city. See Wiseman, "Environmental Deterioration and Human Agency in Ancient Macedonia," 93.

As a result of these natural disasters, a new wall (fig. 1) was built 100m back from the river as a floodbank to protect the city from future flooding.⁵⁶ Despite the floods and the abandonment of the lower city, life at Stobi was still very prosperous. Upwards of 30% of the excavated city are the visible remains of large fifth-century churches and palatial residences.⁵⁷ The city became Christian-oriented, and the time of religious toleration ended. The final non-Christian religious building, the Synagogue of Polycharmos, was converted into a Basilica in the mid-fifth century.⁵⁸ In the mid fifth century, another one of Stobi's bishops, Nicholas, attended the Council of Chalcedon in 451 CE, but in late fifth century there is evidence of a new bishop, Philip.⁵⁹

In the mid-fifth century the province of Macedonia was split into two provinces: Macedonia Prima and Macedonia Secunda. According to the *Synekdemos* of Hierocles, a sixth century administrative list, Stobi became the capital of Macedonia Secunda (fig. 2).⁶⁰ Stobi's status as a capital city made it a prime target for looting by migrating barbarian tribes. Around the middle of the fifth century, Stobi was destroyed; evidence of the destruction has been found in the West Cemetery, Domus Fullonica, and the Episcopal Complex; these destruction deposits all have a *terminus post quem* of 425-440 CE.⁶¹ The excavators attribute this destruction to the

⁵⁶ The wall was constructed out of spolia from the theater. Wiseman, "Environmental Deterioration and Human Agency in Ancient Macedonia," 96.

⁵⁷ These churches include the Episcopal Basilica, the Central Basilica, the North Basilica and the extramural basilicas. The palatial residences include the Theodosian Palace, House of the Psalms. Two additional baths were also built, see fig. 1. See Wiseman, "The Early Churches and The Christian Community in Stobi," 797-803.

⁵⁸ Known as the Synagogue Basilica. See Wiseman, "Archaeology and History at Stobi, Macedonia," 43.

⁵⁹ His attendance is recorded in the list of attendees for the second session of the Council in 451 CE. See *The Acts of the Council of Chalcedon 2*, 9. Philip was called the οἰκοδόμος of the church in an inscription on the lintel of the entrance to the nave from the narthex. The inscription is Stobi inventory number I-70-41, see Wiseman, "Stobi," 43; n. 87.

⁶⁰ Since Stobi was the first city listed by Hierocles, the excavators have interpreted that Stobi was the capital city of the Province of Macedonia Secunda. Hierocles *Synekdemos*, 641.1-9.

⁶¹ Some of latest coins found in the destruction of the Domus Fullonica were from the reigns of Theodosius II and Valentinian III, minted by 450 CE or 455 CE at the latest. While the coins found above the Episcopal Basilica I are from the reigns of Marcian (450-457) and Leon I (457-474), ensuring that the destruction happened circa 450 CE. Mikulčić, "Some New Factors in the History of Stobi," 217-221.

Huns, who invaded the Eastern Roman Empire throughout the 440s and devastated the Balkans circa 445.⁶² In the destruction debris at the Domus Fullonica, a compound bow and an arrowhead, was found which Mikulčić interpreted as evidence of the Hunnic invasion of Stobi.⁶³ According to the fragmentary, late fifth-century historian Malchus, Stobi was invaded again in 479 CE by the Ostrogoths, but there is no material evidence to support this claim.⁶⁴ Snively has suggested that perhaps Stobi paid-off the Ostrogoths to avoid destruction.⁶⁵ Following the destruction of the city by the Huns, Stobi was rebuilt. The Episcopal Complex, including the baptistery and basilica, were lavishly remodeled. The new Episcopal Basilica (Phase II) was built on top of a four-meter-high artificial terrace and towered above the rest of the city. Two additional churches, the Extra Muros Basilica and the North Basilica, were also built at this time.

In the mid-sixth century the administration of Macedonia was reorganized a number of times. In 535 CE, Emperor Justinian transferred ecclesiastical control over Macedonia Secunda to Justiniana Prima, as stated in an official decree, *Novella 11*.⁶⁶ Then between 535 CE and 545 CE, Macedonia Secunda may have been reattached to Macedonia Prima. In Justinian's *Novella 131.3* of 545 CE, Macedonia Secunda is absent from the list of provinces subject to Justiniana

⁶² Circa 445 CE Attila devastated the Balkans, marching as far south as Thermopylae in Greece. Hunnic destruction has been documented at several sites in the Macedonia. See Snively, "Late Antique Macedonia, 555.

⁶³ The bow was found in front of the door to the adjoining room. For drawing of the bow and arrow see Mikulčić, "Some New Factors in the History at Stobi," 220, 225. Fig. 7-9.

⁶⁴ Wiseman cites the destruction deposits in the Domus Fullonica and Episcopal Basilica for the invasion of the Goths, Wiseman, "Archaeology and History at Stobi, Macedonia," 43. But Mikulčić dated these destructions to the Hunnic invasions c. 450, which have been addressed above. Mikulčić, "Some New Factors in the History of Stobi," 217-221. Malchus, Fragment 18, in Roger C. Blockley, "Malchus, Byzantine History, Fragments 18-20," in *The Fragmentary Classicising Historians of the Later Roman Empire: Eunapius, Olympiodorus, Priscus and Malchus, Vol. 2: Text, Translation and Historical Notes.*, Liverpool: Cairns, 1983.

⁶⁵ This hypothesis can be found in Snively "Late Antique Macedonia," 556.

⁶⁶ See *Novella 11* in English translation from S. P. Scott, *The Civil Law*, XVI, Cincinnati, 1932. Edition of Latin text from Johann Friedrich Hombergk (ed), *Novellae Constitutiones Justiniani: Sancratissimi Principis Ex Graeco in Latinum Conversae et Notis Illustratae* (Typis & Impensis Philippi Casimiri Mulleri, 1717) 162-164., https://archive.org/details/bub_gb_o2IH8Ck6I70C.162-3.

Prima.⁶⁷ Scholars have interpreted this omission as evidence that Macedonia Prima and Secunda were amalgamated, especially since Procopius of Caesarea, the sixth-century historian and legal advisor to Justinian's military commander Belisarius, only mentions one Macedonia in his work *De Aedificiis*, the "Buildings of Justinian".⁶⁸

At the beginning of the sixth century, the city was still recovering from the destruction circa 450 CE.⁶⁹ In general, the sixth century was a period of decline, and a number of issues led to the eventual abandonment of the city in the late sixth century.⁷⁰ An underlying cause was that the climate had become very arid, leading to frequent dust storms, which eventually buried the city.⁷¹ The two separate layers of windblown dust found in the baptistery are interpreted as buildup from these dust storms.⁷² Other immediate causes were the threat of plague and Slavic and Avar invasions which were both prevalent in Macedonia in the second half of the sixth century.⁷³ Scholars have suggested that these threats prompted the inhabitants to abandon the city.⁷⁴ The strongest piece of evidence for the abandonment of the city comes from the presence

⁶⁷ Justinian I, *Novellae*, 131.3.

⁶⁸ Procopius, *De Aedificiis*, 4. 4.1-3.

⁶⁹ The frescoes painted during the remodelling of the Episcopal Basilica date to the late fifth or very early sixth century based on style. See Wiseman and Mano-Zissi, "Excavations at Stobi, 1970," 400, n.24.

⁷⁰ A small earthquake might have struck Stobi in the early sixth century CE, which destroyed the Domus Fullonica (fig. 1). Several walls had fallen to the east and in one roof the remains of a crushed skeleton was found by excavators in 1974. Mikulčić originally attributed this destruction to the earthquake in Dardania in 518 recorded by the sixth century chronicler, Marcellinus Comes, but later believed that the earthquake was too far north to affect Stobi. See Mikulčić, "Some New Factors in the History of Stobi," 222-223.

⁷¹ The earliest layer of around 0.2-0.4m of windblown dust coincides with the abandonment of the baptistery before the collapse, while the second layer of dust about 6m deep coincides with the burial of the city, post collapse. See Folk, "The Geologic Framework of Stobi," 39-42. See also the excavation of the baptistery in Section 5.3

⁷² Folk believed that the death of vegetation in the area during Late Antiquity caused these dust storms. See Folk, "The Geologic Framework of Stobi," 39-42.

⁷³ The Slavs are first mentioned as a tribe of raiders on the Danube frontier in the early fifth century CE. Procopius wrote that the territories between the Black Sea and the Danube were "impossible for the Romans to traverse" because of the continuous raids. Procopius. *Wars* 7.14.4-6, 3.1.10.

⁷⁴ Perhaps into the remote mountains to wait for the invaders to pass. Wiseman has hypothesized that the plague would have infected the inhabitants at Stobi in the mid sixth century, since it was a centrally located commercial center. See Wiseman, "Environmental Deterioration at Stobi," 239.

of the first layer of windblown dust (about 40 cm deep) which covered the baptistery floor below the later destruction layer, which suggests that the baptistery was abandoned for a long time before the final collapse of the building.⁷⁵ Other evidence of abandonment comes from the looting of the crypt below the Episcopal Basilica and the metal pipe below the mosaic floor in the baptistery.⁷⁶ It is obvious that the looting occurred sometime during this abandonment, otherwise such important church buildings would have been repaired if they were still in use.

In the last decade of the sixth century, the city was abandoned. The roofs and parts of the walls of the buildings in the city collapsed and were never repaired. This destruction has been dated to the final decade of the sixth century by coins from the reign of Justin II, found in the Theodosian Palace, the baptistery, and elsewhere.⁷⁷ An older theory concerning the collapse of Stobi suggested that it was destroyed by the Avar/Slavic invasions, but the archeologists now believe that the city was destroyed by an unrecorded earthquake based on the breadth of the destruction.⁷⁸ The collapse of the city and the frequency of the dust storms made Stobi an inhospitable place and the city was never inhabited *en masse* again. These dust storms eventually buried the city in about six meters of windblown dust, and the location of the city was eventually lost until its rediscovery in the late 19th century.

⁷⁵ Found in the Episcopal Basilica and baptistery. See Section 5.3 and 5.5.

⁷⁶ The metal drainage pipe below the *piscina* was looted before the destruction (fig. 2.16). The burial crypt within the terrace wall of the Episcopal Baptistery was also plundered at this time. Wiseman, "The City in Macedonia Secunda," 309-310. See section 3.5 for the excavation of the Stobi Baptistery, and 4 for chronology.

⁷⁷ The inventory number of these coins are 71-708, 71-471, and 72-63, found in the 1972 excavation. See Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398, n. 26.

⁷⁸ According to Wiseman, an earthquake best explains the extent of the destruction and the massive collapse of buildings. For the Slavic invasion see Hemans, "Late Antique Residences at Stobi, Yugoslavia," 26; Wiseman, "Archaeology and History at Stobi, Macedonia," 49. For the earthquake see Wiseman, "Environmental Deterioration at Stobi: Climate Change or Human Agency?," 240.

3.3 Excavation History

At the beginning of the 20th century, L.Heuzey and J.G. Hahn used the geographical references in Livy's *Histories* and Strabo's *Geography*, to locate Stobi at the conflux of the Axiós and Erigón rivers.⁷⁹ The two earliest excavation campaigns at Stobi occurred in 1914, during the First World War, when Stobi was part of the Kingdom of Serbia.⁸⁰ During these excavations, the basilica in Palikura (a nearby modern village), the Cemetery Basilica, and parts of the Episcopal Basilica were discovered (fig. 1), but most of the excavation material was lost during the German retreat. After World War I ended, the National Museum of Belgrade held the first institutional excavations at Stobi from 1924-1934.⁸¹ During this period, they managed to excavate large parts of the city.⁸² Unfortunately the rapid pace of these excavations led to the neglect of the stratigraphy and proper documentation of the excavation.⁸³ These excavation efforts ended because of the danger presented by World War II. After the war concluded, the Archaeological Museum in Skopje and the National Institute for Protection of Cultural Monuments resumed excavations and began conservation work from 1955-1969, but information on these excavations is also limited.⁸⁴ The first systematic excavations began in the 1970s as the

⁷⁹ Strabo, *Geography*, 7. Fragment 4, and Livy, *Histories*, 39.53.14-16. See also James Wiseman, "Archaeology and History at Stobi, Macedonia," 49.

⁸⁰ The date of the first excavation was 1916-1918, led by German officer Hald. The second excavation occurred in 1918, led by the architect F. Krichen from the Makedonische Landeskundliche Kommission. See James Wiseman, "Archaeology and History at Stobi, Macedonia," 49.

⁸¹ See Djordje Mano-Zissi, "Forward," In *Studies in the Antiquities of Stobi*, Vol. 1, ed. Wiseman, James and Mano-Zissi Djordje, (University of Texas, 1973), 46.

⁸² Buildings excavated included the Episcopal Basilica, the Episcopal Residence, the Via Sacra, the Porta Heraclea, the Domus Fullonica, the North Basilica, the Central Basilica, the Synagogue, the House of Psalms (House of Polycharmos), the Large and Small Bath, the House of Peristeria, the Theodosian Palace, the House of Parthenius, the Cemetery Basilica and the Basilica in Palikura. Mano-Zissi, "Forward," 46.

⁸³ National Institution Stobi, "Excavations & Conservation.,"; James Wiseman, "Archaeology and History at Stobi, Macedonia," 49.

⁸⁴ During their multiple excavation seasons, they managed to excavate the North Basilica, the Civil Basilica, the House of Psalms, and the Palace of Peristeria. The team also conserved the Large and Small Baths, the House of Psalms, the Central Basilica, Synagogue Basilica, the City Fountain and the Theatre. Mano-Zissi, "Forward," VIII.

result of a joint American-Yugoslavian team lead by Wiseman and Mano-Zissi.⁸⁵ Their excavations lasted from 1970-1979, at which time they made extensive advances in the excavation and documentation of Stobi.⁸⁶ Following the excavations lead by the joint American-Yugoslavian team, a series of excavations were led by various organizations from 1980 to 2008.⁸⁷ Their work continued the excavations of previously excavated buildings throughout the city, the western cemetery, and the suburban area outside the city walls.

In 2008 the government of the Republic of Macedonia founded the National Institution Stobi to maintain and manage Stobi as an archeological site and tourist attraction.⁸⁸ From 1998-2017, the director of NI Stobi was Silvana Blaževska, who lead the excavation and conservation of the site, then in 2018, Mishko Tutovski was appointed acting director.⁸⁹ NI Stobi collaborated with the Balkan Heritage Foundation to create annual conservation and excavation field school

Mano-Zissi only mentions the AMS from 1955-1957 but the NIS website says 1955-1969 and includes the National Institute of Cultural Monuments.

⁸⁵ The project was funded by the U.S Foreign Currency Program and the Smithsonian Institution administered the funds. James Wiseman, "Preface," in *Studies in the Antiquities of Stobi*, vol. 1, ed. James Wiseman. (University of Texas, 1973), XIII.

⁸⁶ Their excavations included the pre-excavated buildings, new areas where they revealed the baptistry of the Episcopal Basilica, the Old Episcopal Basilica, the Building with the Arches, the Casa Romana and the inner defense wall. See National Institution Stobi, "Excavations & Conservation."

⁸⁷ Throughout the 1980s the National Museum of Titov Veles, directed by Blaga Alexsova (1982-1985), continued the excavations at the basilicas. In 1992 and 1995 the Western Cemetery was excavated by the Museum of Macedonia and the National Institute for the Protection of Cultural Monuments, where they discovered the Extra Muros Basilica and excavated 1501 graves. The "Building with Arches" was also excavated from 2003-2008. National Institution Stobi, "Excavations & Conservation."

⁸⁸ On August 26th, 2008, NI Stobi was founded as an independent institution under the Ministry of Culture. Full rights conferred on February 28th, 2009. See "About Us," National Institution Stobi, accessed December 2, 2017. <http://www.stobi.mk/Templates/Pages/StandardPage.aspx?page=266>.

⁸⁹ From 2008 to 2013, excavations were carried out in the easternmost parts of the city, which revealed sixty meters of eastern defensive wall and the Temple of Isis. In the outskirts of the other areas of the city, excavations were also carried out in the northwestern fortification wall, the Western Cemetery and "the Building with Arches" (fig. 1). Inside the central part of the city, excavations were conducted in the theater, the Episcopal Basilica and the Semicircular Court. National Institution Stobi, "About Us." <http://www.stobi.mk/Templates/Pages/StandardPage.aspx?page=266>.

opportunities at Stobi in 2012.⁹⁰ In 2015, the Balkan Heritage Field School and NI Stobi partnered with Dr. George Bevan of Queen's University, Canada, to teach a new field course focused on the digital documentation of the monuments and artifacts at Stobi. The students at this field school focused on GIS, digital mapping, and digital photogrammetry, the results of which included the creation of the 3D photogrammetric models of the architectural elements (fig 48) and ruins of the Episcopal Baptistery (fig. 48), which form the foundation of the reconstruction in this paper.

4.0 Christianity at Stobi

4.1 Christian Administration

The following description on the administration of Macedonia closely follows the arrangement recorded in the *Notitia Dignitatum*, or *Register of Dignitaries*, which is a major source for civil and ecclesiastical administration in the late fourth and early fifth centuries.⁹¹ The civil administration of the province of Macedonia and Macedonia Salutaris was governed by a proconsul and was part of the Eastern Empire after the division of the empire in 395 CE. In ecclesiastical administration, these provinces were grouped into a larger diocese, and then into a praetorian prefecture.⁹² The Diocese of Macedonia included the provinces of Macedonia, part of Macedonia Salutaris, Achaia, Crete, Thessaly, Ancient Epirus, and New Epirus.⁹³ The Diocese

⁹⁰ This excavation was responsible for the excavation and documentation of two rooms from a sixth century CE building near the Porta Heraclea. The most important finds from this excavation included three infant graves. National Institution Stobi, "Excavations & Conservation."

⁹¹ See *Notitia Dignitatum, In Partis Orientibus. 3*. Edition of translation from *Notitia Dignitatum or Register of Dignitaries, in Translations and Reprints from Original Sources of European History 6*, trans. William Farley (Philadelphia: University of Pennsylvania Press, 1857).

⁹² Caroline Snively, "Macedonia in Late Antiquity," 546.

⁹³ The other part of Macedonia Salutaris belonged to the Diocese of Dacia. See *Notitia Dignitatum, In Partis Orientibus. 3*.

of Macedonia and Thrace formed the Praetorian Prefecture of Illyricum under the control of the Eastern Empire.⁹⁴

In the offices of the ecclesiastical administration, an archbishop oversaw the entire diocese. The archbishop of Macedonia was located in Thessaloniki from the late fourth to early fifth century CE, but in 535 CE, the archbishopric was transferred to Justiniana Prima.⁹⁵ Below the office of the archbishop, the second highest office was that of the metropolitan bishop, who oversaw the local bishops in each province.⁹⁶ Since the title of metropolitan was held by the bishop of the capital city of a province, Wiseman believed that Stobi was the metropolitan of the province of Macedonia Secunda before 535 CE, but there is no evidence to support this claim. The local bishops also oversaw the lower clergy in their bishopric, including one or more churches in their locality. Additional duties included electing and ordaining other bishops and clergy and performing baptisms.⁹⁷ The local bishop presided over an episcopal complex which included an episcopal basilica, baptistery, and residence.

The first purpose-built church at Stobi was the Early Church, which is now below the Episcopal Basilica, built circa 300-350 CE (fig. 4).⁹⁸ The Episcopal Complex at Stobi was a large ecclesiastical center in which the bishops of Stobi lived and worked. The final phases of the

⁹⁴ This division is recorded in the *Notitia Dignitatum*, in Partibus Orientis, 3.

⁹⁵ The transfer of power was recorded in Justinian's Novella 11. See the translation from S. P. Scott, *The Civil Law* 16, (Cincinnati, 1932).

⁹⁶ The metropolis was the capital city of the province and the seat of provincial government, because of this the metropolitan and the governor were located in the same city. David Hunt, "The Church as a Public Institution," in *The Cambridge Ancient History*, ed. Averil Cameron and Peter Garnsey, (Cambridge: Cambridge University Press, 1997), 244, accessed June 15, 2018, doi:10.1017/CHOL9780521302005.009. In some cases, the archbishop also held the office of metropolitan see Hall, "The Organization of the Church," 731. It was written in Canon that "the bishop in the metropolis undertakes responsibility for the whole province because it is in the metropolis that all those with business to settle assemble from everywhere." Translation in Hunt, "The Church as a Public Institution," 242.

⁹⁷ Philip Schaff, *History of the Church: Nicene and Post-Nicene Christianity A.D. 311-600* 1. (Edinburgh: T. & T. Clark, 1891), 264. See also Hunt, "The Church as a Public Institution," 244.

⁹⁸ Blaga Aleksova, "The Episcopal Basilica," 155; Blaga Aleksova, "The Old Episcopal basilica at Stobi," 50-62; Blaga Aleksova, "The Early Christian basilicas at Stobi," *CorsiRav* 33, (1986): 25-38.

Episcopal Complex included a large basilica, baptistery and residence that were joined by a number of corridors. The baptistery was the most lavish in the city, and it must have also been the most sacred, as suggested by the crypt below the southern aisle of the basilica that could have functioned as a *martyrium*.

More churches were constructed at Stobi from the late fourth to sixth century. By the end of the sixth century, there were seven churches present inside and outside the walls of the city. The four churches (fig.1) inside the city walls were the Episcopal Basilica, the Synagogue Basilica, the Civil Basilica, and the North Basilica, and the three outside the city walls were the Cemetery Basilica, the Extra Muros Basilica, and the Palikura Basilica (fig. 1).⁹⁹ There were also three baptisteries at Stobi, the Episcopal Baptistery (fig. 20), the Cruciform Baptistery of the North Basilica (fig. 23), and the Baptistery of the Extra Muros Basilica (fig. 22).

4.2 Baptism in the Fourth to Sixth Centuries CE

It was common for a city to have multiple baptisteries, since baptisms were only performed on a few days each year, ideally on Easter and Pentecost, but also on Christmas, the Epiphany, and on Feasts.¹⁰⁰ A single church could only perform a limited number of baptisms because of this time constraint, which was further limited since the bishop or priest could only baptize one catechumen at a time. The ceremony itself had a number of steps which varied between region,

⁹⁹ A building located across the Erigón river was tentatively identified as a church, and was named the Basilica Trans Erigón, but its function is uncertain, so it was not included in this paper. See Carolyn Sue Snively, "The Early Christian Basilicas of Stobi: A Study of Form, Function and Location," (PhD diss., The University of Texas at Austin, 1979), 243.

¹⁰⁰ Since many church fathers preached against the performance of baptism on Christmas, Epiphany, and the Feasts, other bishops were likely performing it at these other times. See Siricius of Rome *Letter 2*; Pope Leo I rejected the practice of Baptism at Epiphany. See *Letter 16*; and Ambrose only performed baptism on Holy Saturday Night, before Easter Sunday. See *Sacr 1.2-3-3*; *Mys 1.3.4*; Maximus of Rome performed Baptisms on Easter. See Maximus, 55.1. Texts cited in Ferguson, *Baptism in the Early Church: History, Theology, and Liturgy in the First Five Centuries*, (Michigan: Eerdmans Publishing Co, 2009), 445-7.

but they are generally as follows: 1) disrobement, 2) the anointment, 3) consecration of the waters, 4) triple immersion and confession, 5) the gift of the white robe, 6) the gift of the Spiritual Seal, and 7) procession from the baptistry toward the church for the Eucharist.¹⁰¹

The triple immersion and confession were the main components of the ceremony. The baptizand was submerged in the *piscina*, or ritual pool, three times and was asked to confirm their faith.¹⁰² The triple immersion was a metaphor for the death and rebirth of Jesus. According to Ambrose the baptism proceeded as follows:

You were asked, “Do you believe in God the Father Almighty?” You said, “I believe,” and you dipped (mersisti, sank down), that is you were buried. Again, you were asked, “Do you believe in our Lord Jesus Christ, and in his cross?” You said “I believe, “and dipped; therefore, you were also buried with Christ; for he who is buried with Christ rises again with Christ. A third time you were asked, “Do you believe also in the Holy Spirit?” You said, “I believe,” and dipped a third time, that the triple confession might absolve the manifold fall of your former life.¹⁰³

Interrogatus es ‘Credis in deum patrem omnipotentem?’ Dixisti: ‘Credo,’ et mersisti, hoc est: sepultus es. Iterum interrogatus es: ‘Credis in dominum nostrum Iesum Christum et in crucem eius?’ Dixisti: ‘Credo’ et mersisti. Ideo et Christo es consepultus. Qui enim Christo consepелitur, cum Christo resurgit. Tertio interrogatus es: ‘Credis et in spiritum sanctum?’ Dixisti: ‘Credo,’ tertio mersisti, ut multiplicem lapsum superioris aetatis absolueret trina confessio.¹⁰⁴

Early Christians understood that the baptism was a symbolic death of their former life, and a rebirth as a Christian in which all their prior sins were forgiven, and they were promised eternal

¹⁰¹ This is the order of steps listed by Everett Ferguson, based on his reconstruction of baptismal liturgy from the Patristic authors. See Everett Ferguson, *Baptism in the Early Church*, 550-560.

¹⁰² The triple immersion has been interpreted in many ways including the death of Christ, Christ rising on the third day, and the Trinity. Chromatius Sermon 19.2 ; Apostolic Constitution 3.16.4, Canon 50 On Christ rising on the third day as an interpretation for triple immersion see John the Baptist 6 in the New Testament , as cited by Ferguson, *Baptism in the Early Church*, 554-556.

¹⁰³ Ambrose, *De Sacramentis* 2.7.20. Translated by Ferguson, *Baptism in the Early Church*, 566.

¹⁰⁴ Ambrose, *De Sacramentis* 2.7.20. Edition of Latin text from Ambrose, *De Sacramentis*, 34.

salvation in the afterlife.¹⁰⁵ After the final immersion the baptizand would become a neophyte, a newly baptized person.¹⁰⁶

The liturgy of baptism used in the fourth and fifth centuries CE was intended for adults. This was reflected in the architecture of baptism, which featured large *piscinae*, for adult full immersion baptism. In the fifth and especially sixth century, the liturgy of baptism evolved to include infant baptism.¹⁰⁷ According to John the Deacon, a deacon in Rome at the end of the fifth and beginning of the sixth century, infant baptism followed the same ritual as adult baptism, except the infant was held by a sponsor who would assent to the confession for the infant.¹⁰⁸ Therefore, infant baptism was also performed through immersion, but the infant was held by the bishop or sponsor.

Since pre-existing baptisteries were built for adult full immersion baptism, most baptisteries were not equipped for infant baptism. The *piscina*, for example, was usually built low to the ground to accommodate an able-bodied adult to stand in the pool. At Stobi, the large *piscina* was impractical for infant baptism, given its size and placement close to the floor, especially since the infant had to be dipped in the *piscina* by the bishop or guardian. The excavators believed that the large marble *kantharos*, was added as a more practical vessel for

¹⁰⁵ The *Apostolic Constitutions* warns against the perils of only a single immersion. If the bishop or presbyter performs only one immersion the baptizand is only immersed into their death and will not receive eternal salvation. "If any bishop or presbyter does not perform three immersions or the one initiation, but one immersion that is given into the death of the Lord, let him be deprived. For the Lord did not say, 'Immerse into my death,' but 'Go and make disciples of all the nations, immersing them into the name of the Father and the Son and the Holy Spirit.'" Canon 50. Translation by Ferguson, *Baptism in the Early Church*, 567.

¹⁰⁶ Ferguson, *Baptism in the Early Church*, 567.

¹⁰⁷ The practice of infant baptism came from the emergency baptism of sick children who were expected to die, to so ensure their entrance into heaven upon their death. The practice was generally accepted, but a number of bishops argued against infant baptism since infants were incapable of understanding or assenting to the baptism and since they had not committed any sins. See Ferguson, *Baptism in the Early Church*, 857.

¹⁰⁸ John the Deacon, *Letter to Senarius*, 7. "...all these things are done, even to infants, who by reason of their youth understand nothing... When they are presented by their parents or others, it is necessary that their salvation should come through other people's profession, since their damnation came by another's fault." Translation from Ferguson, "Baptism in the Early Church," 786.

infant baptism.¹⁰⁹ The *kantharos* provided an appropriately sized vessel for an infant, at standing height for the priest. According to the excavators, a triangular section was even cut out from the lip of the *kantharos* (fig.46) to make it easier for the bishop to reach in and perform the immersion baptism.¹¹⁰

There are some examples of other sixth century CE baptisteries that were built with large and small *piscinae* to accommodate both adults and infants. In the baptistery of the Casa Herrera Basilica, in Spain, built circa 500 CE, two small oval *piscinae* were built into the floor, 0.4-0.7m wide and 0.55m deep, accompanied one large rectangular pool 3-4m long and 0.52m wide.¹¹¹ These small oval pools have been interpreted as miniature *piscinae* for infant baptism.¹¹² Similar arrangements have also been found in the sixth century CE baptistery of Torre de Palma and San Pedro de Alcantara in Portugal.¹¹³ The *kantharos* at Stobi was used in a similar manner, as the body of the *kantharos* could be filled with water and the infant would be dipped into the *kantharos*.¹¹⁴

5.0 The Stobi Baptistery

5.1 Floor Plan of the Stobi Baptistery

The Stobi baptistry (fig. 16) was a separate freestanding structure, which abutted the Episcopal Basilica on the south side. Each of the four exterior walls were approximately 9.4m long,

¹⁰⁹The theory was first proposed in the excavation report of the baptistery in 1972, see Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 423. and Dinsmoor, "The Baptistery," 21. See also Section 5.3

¹¹⁰This was first recorded in Dinsmoor, "The Baptistery," 21.

¹¹¹This description is from Ferguson, *Baptism in the Early Church*, 848.

¹¹²L. Caballero Zoreda and T. Ulbert, "La Basilica Paleocristiana de Casa Herrera en las cercanías de Merida," *Excavaciones arqueológicas en España* 89 (1976) cited by Ferguson, "Baptism in the Early Church," 848.

¹¹³The multi-sized *piscinae* at Casa Herrera and Torre de Palma were central to Ulbert's thesis that baptisteries with multiple fonts were used for adult and infant baptism at the same time see Ulbert, *Früchristliche Basiliken*, 157-159, 179, cited by Ferguson, "Baptism in the Early Church," 848-9.

¹¹⁴See Section 5.2 for more information on the Stobi *kantharos*.

forming a square exterior (fig. 5).¹¹⁵ The north wall is the only wall that is preserved at its full height, standing nearly 4m tall (fig. 18). It was reinforced by the southern terrace wall of the Episcopal Basilica, a situation which preserved its structural integrity until today. The other three walls were in varying states of deterioration. For example, the south wall has a maximum height of 2m. The principal entrance of the baptistery is located on the southern wall and is 1.5m wide (fig. 5). There was also one additional door located in corner of each building. The interior walls of the baptistery were curved, making the interior floor plan a rotunda articulated by four semicircular niches. Each niche was spanned by conches, which are concave hemispherical niches, in the upper section of the walls, but only the northeast and northwest conches are still intact.

The *piscina* (fig. 20) located at the center of the room, was used for adult full immersion baptism. The inside of the *piscina* is roughly circular in shape and is 2.4m in diameter and 1.33m deep. The outside of the *piscina* is surrounded by a thick brick parapet wall, 0.85-1.0m wide, which rises circa 0.63m above the mosaic floor. The exterior of the parapet wall was articulated by two concave semicircular niches in the eastern and western sides of the parapet wall. There were also four equal gaps built into the parapet wall, three of which were filled with short staircases down into the basin of the *piscina*, while the fourth gap contained a large marble *kantharos* (figs. 6, 19). The entire *piscina* was faced with slabs of alternating marble and slate on, but the marble facing was badly damaged and is only partially intact.¹¹⁶ There were two series of Ionic columns in the baptistery, one large and one small set that were decorated with

¹¹⁵ Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 422.

¹¹⁶ See Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 422.

bands of red, yellow, and black around the shaft (fig. 6).¹¹⁷ The large order of columns stood around the periphery of the *piscina* on the mosaic floor.¹¹⁸ Dinsmoor determined that the small set of Ionic columns sat on top of the parapet walls to hold a superstructure for the roof (figs. 6-7).¹¹⁹

The mosaic floor was laid in *opus tessellatum*, a type of mosaic made with *tesserae* that are larger than 0.004m and reflects the iconography of early baptism. A braided guillotine pattern separated the mosaic into four separate panels, which contain stylized representations of *kantharoi*, peacocks, and deer (fig. 5). These scenes are surrounded with stylized vegetation and other birds. The entire mosaic is a visual representation of the opening lines from Psalm 41.2: “As the deer longs for water fountains, so my soul longs for you my God (*Quemadmodum desiderat cervus ad fontes, aquarum ita desiderat anima mea ad te Deus*).”¹²⁰ Psalm 41.2 was a typical theme in baptismal decoration and its earliest depiction can be found in the fourth century Lateran Baptistery, but it is frequently depicted in baptisteries in the Balkans and Greece.¹²¹

¹¹⁷This decoration is no longer visible, but it is included in the excavation reports, see Wiseman and Mano-Zissi, “Excavations at Stobi, 1971,” 422. Similar bands have been found on the columns in the baptistery at Caričin Grad, see Hoddinott, *Early Byzantine Churches in Macedonia and Southern Serbia*, 208.

¹¹⁸ One large column base was found *in situ* at the near the northwest side of the *piscina* bonded to the mosaic floor with a plaster and lime mortar bedding (fig. 2.8) The other five square mortar beddings were also found evenly distributed around the *piscina*, while the accompanying column bases was found close to their mortar beddings, see Wiseman and Mano-Zissi, “Excavations at Stobi, 1971,” 422.

¹¹⁹ It is obvious that the smaller set of columns had to have been located above the level of the mosaic floor since the fragmentary remains of some of the columns were found within the baptismal pool. Dinsmoor, “The Baptistery,” 19-20. See figures 10-11 for the arrangement of the destruction debris of the columns inside the *piscina*. Wiseman and Mano-Zissi, “Environmental Deterioration and Human Agency. 97, fig. 10.

¹²⁰ Psalm 41.2 Jerome. *Vulgate Bible*. Bible Foundation and On-Line Book Initiative. ftp.std.com /obi/Religion/Vulgate.

¹²¹In the Constantinian version of the Lateran, seven silver stags stood on the walls of the *piscina*, see fig. 31. See also Brandt, “The Lateran Baptistery,” 221-7. For other depictions of Psalms 41.2, see for example the Baptistery of San Giovanni in Fonte, the Ohrid Baptistery in Macedonia; the baptistery at Salona in Croatia, the Butrint Baptistery in Bulgaria; the Basilica at Heraklea Lynkestis, see Jensen, *Baptismal Imagery in Early Christianity*, 185.

The walls of the baptistery were decorated with frescoes of biblical scenes.¹²² During the excavation, most of the fresco fragments were found in the destruction debris. The northwest conch contained the largest portion of intact fresco before it was removed for conservation. Examinations of these fragments revealed that there were two phases of fresco decoration in the baptistery: an older phase of figural decoration (Phase 1), and a later geometric phase (Phase 2). At some point in antiquity, the fresco decoration was remodeled, and the figural frescoes were covered with a layer of yellow-green lime plaster, which was used as a primer for the new geometric decoration. Since the layer of lime protected the older frescos from decay, the Phase 1 frescos were in much better condition than the Phase 2 frescos. As a result, the conservators documented them and then removed the second phase of frescos to reveal the figural decoration beneath.

Caroline Downing, an American archaeologist who reconstructed much of the figural fresco fragments, believed that each of the four conches depicted an evangelist.¹²³ Two of these evangelists are still visible in the conches of the Stobi baptistry: Matthew in the northeastern conch, and either Mark or John in the south eastern conch.¹²⁴ Between the conches, the frescos on the four walls depicted scenes from the life of Christ. The fresco on the east wall, for example, might depict Christ performing a healing miracle.¹²⁵ The frescos from Phase 2 are

¹²²The description found in this paragraph are a summary of Downing's findings. See Downing, "Wall Paintings from the Baptistery at Stobi," *Macedonia and Early Depictions of Christ and the Evangelists*, *Dumbarton Oaks Papers*, 52 (1998):259-80. Accessed June 2, 2017, doi:10.2307/1291785.

¹²³ Downing, "Wall Paintings from the Baptistery at Stobi," 271.

¹²⁴ The middle-aged figure with dark hair and a beard in the southeastern conch, tentatively identified by Downing as Mark, resembles other depictions of Mark. see A.M. Friend Jr., "The Portraits of the Evangelists in Greek and Latin Manuscripts," *Art Studies* 5 (1927) 115-47. Downing believes that the design may follow the same order as the depictions of the Evangelists from the baptistry of Sta. Restituta in Naples. See Downing, "Wall Paintings from the Baptistery at Stobi", 271.

¹²⁵ Downing, "Wall Paintings from the Baptistery at Stobi," 271.

considerably cruder and consist mainly of geometric motifs.¹²⁶ The largest portion of fresco from the second phase was from the northeastern conch. The remains depict a large red-orange cross decorated with white “jewels,” and flanked by a candelabra or flaming torches.¹²⁷ The rest of the Phase 2 frescos were too deteriorated to reconstruct.

5.2 The *Kantharos*

According to the excavators, the large marble *kantharos* (0.85m in height), found in the southwestern niche of the *piscina*, was added to the baptistery in the late fifth or early sixth century CE to be used as a second *piscina* for infant baptism.¹²⁸ At that time, the southwestern niche in the *piscina* was modified so that the base of the *kantharos* (fig. 6) was buried below the level of the mosaic floor (fig. 53).¹²⁹ Dinsmoor believed that the *kantharos* was set lower into the *piscina* than it actually was, so that sections from the sides of the niche were removed to accommodate the volute handles in the *kantharos* (figs. 6-7), but recent work in the Stobi baptistery has disproved Dinsmoor’s measurements. The *kantharos* was installed in the physical anastylosis of the baptistery in the original mortar, proving that the volute handles would have been above the height of the *piscina* walls (fig. 53).¹³⁰ The excavators from the 1970s also believed that the notch in the rim and the drain were early sixth century additions (fig. 46).¹³¹ Dinsmoor dated the construction of the vessel to the second century BCE from the form of the

¹²⁶ An analysis of paint pigments from the phases of fresco painting have revealed that that the blue paint used in the creation of the 1st phase was made from azurite, a rare and expensive pigment, while the blue used in the second pigment was made from crushed glass. Downing, “Wall Paintings from the Baptistery at Stobi,” 271.

¹²⁷ This later layer was documented then removed with surgical scalpels to reveal the earlier more intact fresco decoration. See Downing, “Wall Paintings from the Baptistery at Stobi,” 262.

¹²⁸ Wiseman and Mano-Zissi, “Excavations at Stobi, 1972,” 423.

¹²⁹ This was determined by Dinsmoor based on his measurements of the *kantharos* and the parapet wall see, Dinsmoor, “The Baptistery,” 21.

¹³⁰ Dinsmoor, “The Baptistery,” 21-22.

¹³¹ This was first recorded in Dinsmoor, “The Baptistery,” 21.

vase, but did not include any specific comparanda.¹³² To date, no one has suggested what the original function of the *kantharos* was, or attempted to analyze the comparanda.

Large stone *kantharoi* were made to resemble ceramic *kantharoi*, which were used as ritual wine cups. In form they are similar to *krateres*, which were used to mix water with wine. The monumental stone versions of both *kantharoi* and *krateres* were used as decorations in gardens and villas and were employed interchangeably. There are only two other known examples of a monumental stone vases reused in a Christian ecclesiastical context, the second century CE marble *krater* in the Orthodox Baptistery at Ravenna, and the *kantharos* from the Petra Church.¹³³ Both of these vessels are thought to have come from a pagan religious context based on the sculptural decoration on each. The *krater* from the Orthodox baptistery depicts a *bas-relief* of Jupiter and may have belonged to the Temple of Jupiter in the suburb of Caesarea, while the *kantharos* from the Petra Church had sculptural panthers as volute handles, which has been interpreted as being associated with Dionysus.¹³⁴ However both of these theories are conjectural since the original function of these vessels are unknown.

Out of the 60 large marble *kantharoi/krateres* that have been catalogued, very few of them have been found *in situ*.¹³⁵ The vessels that have been found *in situ* were from gardens and villas in the Bay of Naples, where they were used as sculptural decorations.¹³⁶ The Borghese

¹³² Dinsmoor, "The Baptistery: Its Roofing and Related Problems," 15. Further, standard typological dating used for ceramic vessels does not apply to monumental stone vessels.

¹³³ Large marble *krateres* are much more common than that of the *kantharos* any may serve as comparanda in this case since they are similar vessels. Over 60 examples of the original ancient Roman genre of marble *krateres* exist, however most are fragmentary some examples of these are the Borghese-Louvre *krater* (cat.no 23), Pisa *krater* (cat. no.26) and New York *krateres* (cat no.22) to name a few, see, Robert Cohon "The typology, history and authenticity of Roman marble craters", 313. Zbingniew T. Fiema, Chrysanthos Kanellopoulos, and Patricia Maynor Bikai, *The Petra Church*, (Amman: American Center of Oriental Research, 2001), no. 335.

¹³⁴ Kostof, *The Orthodox Baptistery of Ravenna*, 142.

¹³⁵ Cohon, "The typology, history and authenticity of Roman marble craters", 319.

¹³⁶ These types of *krater* were often decorated with reliefs of Dionysian scenes, For examples of *krateres* with Dionysiac scenes see the Naples vase from the Villa of the Papyri, the Townley Vase from the villa at Lanuvium and

krater, for example was discovered in the Gardens of Sallust, and others were found in gardens at the Villa of Oplontis (fig. 24), Villa San Marco in Stabiae, the Villa of the Papyri, and the Villa at Lanuvium.¹³⁷ The context of these *kraters* were only preserved by the eruption of Mount Vesuvius in 79 CE, otherwise these vessels would likely have been reused in Late Antiquity as well. It is probable that many of the other displaced *kantharoi* and *krateres* were also from similar contexts. This theory is further supported by frequent depictions of *kantharoi* and *krateres* as garden decoration from frescoes in the Bay of Naples; these scenes are featured in Pompeii in the House of the Orchard, the House of the Marine Venus (fig. 26), twice in the Villa at Torre Annuziata (fig. 27) and the House of Romulus and Remus.¹³⁸ The frequency with which these depictions appear clearly demonstrates that large stone *kantharoi* and *krateres* were common decorative elements. Given the comparanda, it is highly likely that the Stobi *kantharos* was originally sculptural decoration in a public or private garden.

There is also additional evidence which suggests that the Stobi *kantharos* originally functioned as a sculptural fountain. Sculptural fountains and water features were particularly popular in Roman gardens. In the Bay of Naples, the marble *krateres* in the Villa of Oplontis (fig. 24) and the Villa San Marco in Stabiae were found *in situ* and were employed as decorative fountains.¹³⁹ These *kraters* were placed in small pools, where a pipe drew water up the foot and into the belly of the vase, so that the *krater* would overflow, turning the vase into a fountain.

the vase with the dancing warriors from the villa at Oplontis, Cohon, "The typology, history and authenticity of Roman marble craters" , 314.

¹³⁷ All the *krateres* except for the one from Stabiae are listed in Cohon, "The typology, history and authenticity of Roman marble craters", 319. The *Krater* fountain from Stabiae is from Jashemski, "The Gardens of Pompeii," 82, fig. 181.

¹³⁸ The *krater* frescoes in garden scenes can be seen in Jashemski, "The Gardens of Pompeii,". See specifically the frescoes in House of Romulus and Remus (82, fig. 130), the House of the Epebe (58, fig. 93), The two from the Villa at Torre Annuziata (307, figs. 470-1).

¹³⁹ Cohon, Robert "The typology, history, and authenticity of Roman marble craters", 319.

Other evidence for vase fountains comes from frescoes depicting *kantharoi* as fountains, like in the House of the Marine Venus in Pompeii (fig. 26), the Villa at Torre Annunziata (fig. 27), and in the House of Romulus and Remus.¹⁴⁰ These six examples from the Bay of Naples alone are not coincidental, clearly *krater* fountains were common decorative elements. The comparanda provides an alternate history for the drain in the body of the *kantharos*. Given this design, it is probable that the drain in the Stobi *kantharos* was an original component, suggesting that the original function of the *kantharos* was a fountain.

The originality of the drain would explain the placement of the drainage hole. The drainage hole was drilled on the bottom side of the belly of the *kantharos*, almost under the volute handle (fig. 56). Since the absolute orientation of the *kantharos* in the baptistery is known, the drainage hole faced towards eastern wall of the *piscina*. This position is awkward, since the position of the drainage hole could not easily drain into the *piscina*, without spilling into the corner of the niche first. If the drainage hole was added specifically for its use in the baptistery, the stonemasons likely would have placed the drainage hole in the center of the *kantharos* so that the water would drain more effectively into the *piscina*. It is more likely that the drainage hole was original, and not the result of poor planning at Stobi. As a result of this orientation, it is possible that a drainage pipe was connected directly to the *kantharos* so that water would not spill into the niche.

¹⁴⁰ The fountain *krater* frescoes are published in Jashemski, "The Gardens of Pompeii,". See specifically the frescoes in House of Romulus and Remus (82, fig. 130), The two from the Villa at Torre Annunziata (307, figs. 470-1).

5.3 Excavation of the Stobi Baptistery

The baptistery was discovered and excavated by the Joint American and Yugoslavian team, led by Wiseman and Mano-Zissi.¹⁴¹ The excavations began May 24th, 1971 and continued until 1978.¹⁴² During the first excavation season in 1971, the excavators completely excavated the interior of the baptistery, indicated by the floor plan in Figure 2.9. The following will describe the stratigraphy present in the baptistery from the latest to earliest layers. The baptistery was buried under circa 5m of windblown dust, which coincides with the post-abandonment burial of the rest of the site.¹⁴³ Below the windblown dust, the excavators found the debris from the collapse of the baptistery, which was mostly composed of elements from the interior of the baptistery, including broken columns, the *kantharos* and fresco fragments mixed with more windblown dust (figs. 10-11); according to Dinsmoor, only a small amount of roof tiles and brick from the roof were found in the debris.¹⁴⁴ Two sets of Ionic columns were found, one large order and one small order, for a total of two sets of six columns (fig. 21), but one small Ionic capital was missing, which was found outside of the baptistery in 1973. The *piscina* itself was also damaged, and most of the brick and mortar core of the *piscina* itself was exposed (fig. 11). The southwestern niche of the font contained the broken marble base of the *kantharos* (fig. 11), while the body of the *kantharos* was found in the destruction debris inside the *piscina*.

¹⁴¹ See the published 1971 excavation report, Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 407-424.

¹⁴² Wiseman and Mano-Zissi, "Excavations at Stobi, 1970," 400; Wiseman, "Excavations at Stobi, 1971," 407; See also Wiseman, "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1977-78," 412.

¹⁴³ Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 422.

¹⁴⁴ One would normally expect to find roof debris immediately below the fill, which is usually the latest layer in the stratigraphy of a ruined building, but only a few roof tiles were present inside the baptistery. No definite amount of roof debris was mentioned nor are there any published photos of the excavated roof debris. See Dinsmoor, "The Baptistery," 24; Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 423-424.

Below the destruction layer there was a second layer of windblown dust that covered the mosaic floor and was approximately 0.2 to 0.3m thick.¹⁴⁵ This layer of windblown dust has been interpreted as evidence that the baptistery was abandoned for some time before it collapsed. When the layer of dust was removed, it revealed that some sections of the mosaic floor had been mutilated in antiquity. A strip of the mosaic floor had been removed by looters who stole the metal drainage pipe below the baptistery floor (fig.14).¹⁴⁶ There was also evidence of ancient repairs with cement to the mosaic floor.¹⁴⁷ The most significant find related to the chronology of the collapse was a coin, minted from 569-70 CE, found on the baptistery floor, that provides a *terminus post quem* for the destruction of the baptistery.¹⁴⁸ Other finds included two mullion columns and a quantity of window glass, which suggest that there were at least two windows present in the final construction of the baptistery, but the locations of these finds were never published.¹⁴⁹ The results of this excavation lead Wiseman and Mano-Zissi to believe that the baptistery had been undisturbed following its destruction.¹⁵⁰

The second excavation season of the baptistery lasted from May 22nd until August 18th in 1972.¹⁵¹ During this field season, the area around the baptistery was excavated, which exposed the entire exterior of the baptistery walls. The areas to the south and east of the baptistery also

¹⁴⁵ Wiseman and Mano-Zissi believe that this layer of windblown dust protected the mosaic floor during the destruction of the baptistery, see Wiseman and Mano-Zissi, "The City in Macedonia Secunda," 310.

¹⁴⁶ This looting of the pipe destroyed part of the mosaic, which had been hacked through in antiquity. Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398.

¹⁴⁷ Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 422.

¹⁴⁸ The destruction debris was dated from a coin (no. 71-708) from 569-70 CE found on the mosaic floor provides a *terminus post quem* for the destruction of the baptistery. E. Mott Davis, et al, "Radiocarbon Dates from Stobi," Studies in the Antiquities of Stobi, Vol. 1, ed. James Wiseman, James and Djordje Mano-zisi, 30, (University of Texas, 1973) For evidence for an earthquake see Wiseman, "Environmental Deterioration at Stobi: Climate Change or Human Agency?," 240.

¹⁴⁹ Wiseman and Mano-Zissi do not include the locations that the columns or glass were found, see Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 422.

¹⁵⁰ Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 423-424.

¹⁵¹ The summary of events which took place during the 1972 season come from the 1972 excavation reports. James Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 391-403.

had about 4-5m of windblown dust, under which there was a layer of roof debris, which included a larger quantity of roof tiles.¹⁵² Major discoveries included a small quadrilateral anteroom, which was connected to the baptistery through the southern door, and an eastern hallway, approximately 3m wide that ran parallel to the eastern wall of the baptistery. The wall for this hallway was destroyed down to its foundations sometime during antiquity.

The anteroom (fig. 15) had three phases of floor levels.¹⁵³ The latest floor (III) was made of packed earth, but the second phase was a mortar paved floor, which had a small collecting basin and drain in the northwest quarter of the room (fig. 17), which was built below a small pipe. The basin and drain run north-south below the mosaic floor, and therefore belongs to an older phase of the baptistery which predates the construction of the mosaic floor. Over 60 coins were found in the area around the basin, and three additional coins were found in the drain; the coins ranged in date from 425-450 CE.¹⁵⁴ Therefore, these coins provide a *terminus post quem* of 450 CE for the construction of the mosaic floor, since the mosaic floor was built above the level of the basin.¹⁵⁵

¹⁵² Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398.

¹⁵³ The latest floor was made of packed earth, but there were also two earlier floors found below.

¹⁵⁴ These coins are part of LOT 650, coin catalogue numbers: 72-127, 153, 209, 212. Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398. Part of the mortar paving of Floor 2 was removed and that area was excavated to the level of Floor 1. The deposit material from the area excavated indicated a date of the fifth century CE, similar to that of the deposit near the basin LOT 653, includes 17 coins of the 4th to mid-5th century, the latest identifiable coin (72-244) was minted in 425-450 CE Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398. According to Wiseman and Mano-Zissi, this deposit is at the same level as the baptistery mosaic and may put the construction date of the mosaic to after 450 CE, but complicated chronology could make an earlier date.

¹⁵⁵ Part of the mortar paving of Floor 2 was removed and that area was excavated to the level of Floor I. The deposit material from the area excavated indicated a date of the 5th C, similar to that of the deposit near the basin LOT 653 - includes 17 coins of the 4th to mid-5th century, the latest identifiable coin (72-244) was minted in A.D 425-450 CE Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398. According to Wiseman and Mano-Zissi, this deposit is at the same level as the baptistery mosaic and may put the construction date of the mosaic to after 450 CE But complicated chronology could make an earlier date, see Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398.

In addition to the excavations, conservation and restoration of the walls and mosaics were performed inside the baptistery. The conservators decided to raze the southern, eastern, and western walls to the level of ancient repair and then rebuild the walls to a height sufficient to support a temporary sloped wooden roof over the entire structure.¹⁵⁶ In the interior of the baptistery, conservators also restored the *piscina*, and repaired the mosaic floor (fig. 13).

Three important discoveries, which took place between 1973 and 1978, are central to the arguments presented in this paper. In 1973, the missing small Ionic capital was found outside the eastern baptistery wall, which belonging to a column in the central room.¹⁵⁷ It was discovered in the layer of wind-blown dust that covered the floor.¹⁵⁸ This discovery proved that the baptistery had been disturbed, sometime after its destruction in the late sixth century CE. In order for the column capital to be removed from the collapsed baptistery, the bricks and roof tiles from the roof debris must have been removed first, therefore providing an explanation for the lack of roof debris present in the 1971 excavation. This discovery also called into question Dinsmoor's reconstruction of the roofing of the baptistery, which was dependent on the baptistery being undisturbed.¹⁵⁹ This discovery also likely prompted Wiseman to publish a new reconstruction in 2006, though he nowhere makes explicit the deficiencies in Dinsmoor's reconstruction attempt.¹⁶⁰

In 1978, evidence of a second corridor was found to the west of the baptistery which was also dismantled in antiquity. Therefore, there were originally two corridors, which flanked the eastern and western walls of the baptistery, although they were dismantled in a later phase of the

¹⁵⁶ Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 399.

¹⁵⁷ See excavation report, Wiseman and Mano-Zissi, "Excavations at Stobi, 1973-1974," 117-148.

¹⁵⁸ Wiseman and Mano-Zissi, "Excavations at Stobi, 1973-1974," 144.

¹⁵⁹ This mainly refers to Dinsmoor's reconstruction of a pitched roof over the Stobi baptistery. This reconstruction was reliant on the baptistery being undisturbed, see figure 8 and Dinsmoor, "The Baptistery," 24-25.

¹⁶⁰ See Sections 5 and 7 below for the new reconstruction of the baptistery.

baptistery. Excavators also investigated the foundations of the wall and determined that the wall of the western corridor, named Wall 13, and the western wall of the baptistery were laid at the same level and were made of the same material, a find that suggested that the Western corridor was part of the original construction of the baptistery.¹⁶¹ From this discovery it was inferred that the eastern corridor, discovered in 1972, was also original. Therefore, the first phase of the baptistery had two roofed corridors (fig. 15).

In 1977, the excavators found an early *piscina* located directly below the basin of the *piscina* in the baptistery (fig. 28).¹⁶² Excavations were carried out from 1977 to 1978, which determined that the early *piscina* was roughly the same size as the *piscina* built above it.¹⁶³ The bottom of the *piscina* was filled with pink watertight *horasan* mortar which is used elsewhere at Stobi to hold water.¹⁶⁴ The presence of the *horasan* mortar suggests that the early *piscina* also held water, but the excavators were unsure of the original function. Wiseman suggested that this *piscina* may have been an early baptismal pool for the Early Church, but there is little evidence to prove the early *piscina* was a Christian building.¹⁶⁵ The only other piece of material cultural from the same level as the early *piscina*, was a gold ornament described as a four pointed star or cross, which was dated only to the “Late Roman” period without a more precise estimation.¹⁶⁶

¹⁶¹ The wall extended all the way to the south terrace wall of the basilica, which left a vertical scar on the terrace wall where it was bonded to the wall. Wiseman, “Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1977-78,” 424. See also Wiseman, “Stobi in Yugoslavian Macedonia,” 424.

¹⁶² Since the early *piscina* was located below the later *piscina*, it was not possible to full excavate the early *piscina*. A few test trenches were made on the eastern and southwestern sides. From these trenches the relative reconstruction was made. Wiseman, “Stobi in Yugoslavian Macedonia,” 411.

¹⁶³ The diameter of the pool was 1.65m, and was surrounded by a circular, possibly stepped wall and parapet with an outer diameter of 4.20m, Wiseman, “Stobi in Yugoslavian Macedonia,” 411.

¹⁶⁴ The same mortar was used for the later baptistery *piscina*. Wiseman, “Stobi in Yugoslavian Macedonia,” 411.

¹⁶⁵ Wiseman, “Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1977-78,” 412.

¹⁶⁶ Inv. No. MF-78-105. Lot 2998. The back of the small gold ornament has a loop applied to the center of the back.

Wiseman used this gold ornament, which he believed was a cross, as evidence that the *piscina* was used in an early Christian context.¹⁶⁷

The style of the ornament, though, does not resemble early Christian crosses from the period, and it is most likely a star. The shape of this ornament is not used as a cross in Late antiquity; if one examines other depictions of crosses found at Stobi they depict a typical Greek cross, or the Christogram. Two bronze crosses found at Stobi were traditional Greek crosses, one cross was found in a shop on the acropolis dated to the late fifth to sixth century CE, while the other was found in the corridor between the Narthex and the Baptistery.¹⁶⁸ There are also many other depictions of Greek crosses on column capitals from the baptistery, the Episcopal Basilica, and cross reliquary crypt in the Central Basilica.¹⁶⁹ Another type of cross, the crystogram, was inscribed on the seats of Christian patrons in the theater from the third and fourth century CE.¹⁷⁰ These examples from Stobi demonstrate that the gold ornament was not a cross, and there is no evidence to prove that the early *piscina* had an ecclesiastical function. A more likely possibility is that the early *piscina* belonged to a bathhouse; this theory will be discussed in the following section.

5.4 The Bathhouse

The archaeological evidence and comparanda suggest that the baptistery was built on the remains of a bathhouse. At least ten other baptistries were built on bathhouses across the Roman Empire, including the Lateran Baptistery in Rome, The Baptistry at Nocera, The Orthodox

¹⁶⁷Wiseman, "Stobi in Yugoslavian Macedonia," 411.

¹⁶⁸ For the cross found on the acropolis see Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," pl. 86, fig. 12. For the cross south of the narthex see Wiseman and Mano-Zissi, "Stobi," 291, fig. 23.

¹⁶⁹The small cross shaped reliquary was in Wiseman and Mano-Zissi, "Stobi," 295-6, fig. 29.

¹⁷⁰ See for example seat number 2.3.3-5 in Wiseman, "A Distinguished Macedonian Family of the Roman Imperial Period," *American Journal of Archaeology*, 88, no. 4 (1984): Pl. 76, Fig. 11a.

Baptistery at Ravenna, the Butrint Baptistery in Albania, and the Baptistery of Parthicopolis, in Bulgaria.¹⁷¹ This situation was motivated by obvious convenience, since bathhouses already had pools and plumbing installed. Baptistery design also shares similarities with the design of bathhouses, most notably a rotund plan with a *piscina* in the center, which was common in *frigidaria* and *caldaria*. The same plan used at the Stobi baptistery is employed in at least 24 bathhouses across the Eastern and Western Roman Empires.¹⁷² According to Wiseman, the southwest corner of the baptistery was built on top of an older building, Building E (fig. 4), which he later identified as a lavish bathhouse.¹⁷³ The construction of the southern baptistery wall over part of the bathhouse, coupled with the discovery of the early *piscina* below the baptistery floor, is a clear indication that the baptistery was built on the remains of this bathhouse.¹⁷⁴

It is not a coincidence that at least 24 bathhouses employed the exact same floor plan as the baptistery, described as a square niched-rotunda.¹⁷⁵ This plan is found for bathhouses across the Eastern and Western provinces, but there is a concentration of this room style found in Rome, where it was used in the Baths of Trajan (fig. 29), the Baths of Agrippa, the Baths of Diocletian,

¹⁷¹ Temple lists the Lateran and The Orthodox Baptistery at Ravenna. See Temple, "Conversion and Political Expedience: Imperial Themes in the Early Christian Baptistery," 7; as well as Jensen in Jensen, *Living Water*, 236; Jensen also lists the baptistery at Nocera (230), and the Butrint Baptistery (236). For the Butrint Baptistery see also Mitchell, *The Butrint Baptistery and its Mosaics*, 76. For the Baptistery at Chimiez, The Church of St Demetrius, The Church of St. George and The Orthodox Church Complex at Salona see Ferguson, *Baptism in the Early Church*, 844,830,832,834; For the Baptistery at Parthicopolis see Petrova, "The Baptistery of the Episcopal Basilica in Parthicopolis," *Niš and Byzantium: Fifteen International Symposium* 15, ed. Miša Rakocija. (2017): 56.

¹⁷²For more information on bathhouse architecture see Inge Nielsen, *Thermae et Balnea*, trans. Peter Crab (Denmark: Aarhus University Press, 1993), 31.

¹⁷³ The relationship between Building E (fig. 4), and the baptistery was first discussed in 1978 before Building E was identified as a Bathhouse in 1986. In the 1978 reports, Wiseman writes that the SE corner of the baptistery was built on top of this earlier building. Wiseman describes this Bathhouse as elegant. See Wiseman, "Stobi in Yugoslavian Macedonia," 425-426 and Wiseman, "Archeology and History of Stobi, Macedonia," 41, 56, n. 58.

¹⁷⁴ Wiseman says that this structure (later named Building E, the Bathhouse), was only partially investigated, but it is obvious that the southeast corner of the Baptistery cuts into the corner of this early structure, and the latter baptistery wall was overlaid with this earlier building. See Wiseman, "Stobi in Yugoslavian Macedonia," 225.

¹⁷⁵For more information on bathhouse architecture see Nielsen, *Thermae et Balnea*, 31.

and the Baths of Maxentius.¹⁷⁶ It was also used farther afield for the Baths at Henchir-Thina in Tunisia and the Agora Baths in Selimiye, Turkey.¹⁷⁷ The closest geographic example to Stobi is from the *caldarium* in the City Baths in Sofia, modern day Bulgaria.¹⁷⁸ This type of room was used for a variety of different functions, such as *solaria*, *tepidaria*, *unctoria*, *caldaria*, and *palaestrae*, but were most commonly employed in *frigidaria*. From these numerous examples, this room style was a common element in bathhouse architecture.

Although the architectural similarities between the Stobi baptistery plan and other bathhouses, and the comparanda do not necessarily prove that the Stobi baptistery was built on a bathhouse, the archeological evidence strongly supports this argument. According to Wiseman, the southwest corner of the baptistery was built over top of a Building E, the bathhouse (fig. 4), and therefore predates the mid-fifth century construction of the baptistery.¹⁷⁹ Only a small part of this bathhouse has been excavated, as demonstrated by the plan in Figure 4, a fact that indicates that the true extent of the bathhouse remains unknown. In general, bathhouses were large buildings with many rooms. Even the Small Bath at Stobi (fig. 1) is much larger than the size of Building E that has been identified. From the location of other early buildings in the immediate vicinity, it is obvious that the bathhouse did not extend farther east, since the 2nd century CE theater (fig. 4) is situated immediately to the east. The placement of the pre-excavated walls of the bathhouse suggest that the building extended north between the baptistery, the theater, and the Episcopal Basilica. The location of the bathhouse clearly indicates that this bathhouse once

¹⁷⁶ For the Baths of Trajan (85, fig. 53), the Baths of Agrippa (83, fig. 49), the Baths of Diocletian (89, fig. 59), the Baths of Maxentius (90, fig. 60) see Nielsen, *Thermae et Balnea*.

¹⁷⁷ For the Large Bath at Henchir-Thina (171, fig. 190), the Agora Baths in Selimiye (209, fig. 253), see Nielsen, *Thermae et Balnea*.

¹⁷⁸ The plan is published in Neilson, *Thermae et Balnea*, 159, fig. 173.

¹⁷⁹ See Wiseman, "Stobi in Yugoslavian Macedonia," 425-426, and Wiseman, "Archeology and History of Stobi," 46, n. 58.

included the area of the baptistery. This argument is made stronger by the existence of the early *piscina*, which was likely a *piscina* for this bathhouse. Since several other baptisteries were also built on the foundations of bathhouses, it is highly likely that the same is true for the Stobi baptistery, given the overwhelming archeological evidence and the comparanda.

5.5 Chronology of the Baptistery

As has been argued, the first phase of the baptistery was built on the remains of an early bathhouse, in the fourth, or early fifth, century CE.¹⁸⁰ At this time, the baptistery was on the same level as the Early Church, and could only be entered through the anteroom.¹⁸¹ The original baptistery was probably roofed with a dome, as was common for baptisteries at this time.¹⁸² Two roofed corridors flanked the baptistery on the west and east sides, which could only be entered through the four corner doors inside the baptistery (fig.15).¹⁸³ The interior of the baptistery looked almost the same as it did in its final phase, but with less decoration. The floorplan was roughly a rotunda (fig. 5) that was articulated by four semicircular niches in each corner. The walls were decorated with figural frescoes of the life of Christ.¹⁸⁴ The *piscina* was made of unfaced brick with a mortar core and all four niches in the parapet walls had short staircases to enter the *piscina*.¹⁸⁵

¹⁸⁰ Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398-299; Wiseman, *A Guide*, 66.

¹⁸¹ Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398.

¹⁸² See for example the dome in Orthodox baptistery at Ravenna or the dome of the baptistery of Santa Maria at Nocera. Kostof, *The Orthodox Baptistery of Ravenna*, 142; and Rogers Andrew Stalley, *Early Medieval Architecture*, (Oxford History of Art, 1999), 60.

¹⁸³ Wiseman. "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1987-78", 425.

¹⁸⁴ These frescos date to the end of the fourth century or the early fifth century based on stylistic similarities to art made during the reign of Theodosius I. Downing, "Wall Paintings from the Baptistery at Stobi," 260. James Wiseman, "Archaeology and History at Stobi, Macedonia," 43; For more information on the decoration, see Downing, "Wall Paintings from the Baptistery at Stobi," and Section 5.1.

¹⁸⁵ Dinsmoor, "The Baptistery: Its Roofing and Related Problems," 16.

The baptistery was destroyed in the mid fifth century, around 450 CE, coinciding, so the excavators argued, with an attack by Attila's Huns.¹⁸⁶ This destruction caused the collapse of the roof, but most of the early walls remained intact since the Phase 1 frescoes were preserved until the final destruction of the building. After the destruction, the debris was removed, and the baptistery was remodeled beginning phase 2. These repairs continued throughout the latter half of the fifth century CE and into the sixth century CE. At the same time the Episcopal Basilica was remodeled and was now built on a high artificial terrace that was 4m higher than the baptistery.¹⁸⁷ The baptistry, consequently, could only be reached by a stairway descending from the narthex, through the basement of the old peristyle court (Building D) and through a secondary courtyard (Fig. 4).

The mosaic floor was the first major addition to the baptistery after 450 CE, dated by the *terminus post quem* from the coins found below the mosaic floor.¹⁸⁸ Once the mosaic was finished, marble and slate facing was added to the *piscina*.¹⁸⁹ Next, the mortar beddings for the columns were applied directly on top of the mosaic.¹⁹⁰ Since there are no mortar beddings for the small order of columns, Dinsmoor correctly believed that the location of the large columns show the probable location of the small order of columns on top of the *piscina* walls. These columns were employed to work in tandem to support a superstructure for the roof.¹⁹¹ A thin layer of lime

¹⁸⁶ Mikulčić found Hunnic style weaponry around 450 CE destruction in the Domus Fullonica. See Mikulčić, "Some New Factor in the History of Stobi," 217-221. See also Section 3.2 for a history of Stobi in the fifth century.

¹⁸⁷ Wiseman. "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1987-78." 425.

¹⁸⁸ Over 60 coins were found in the basin which ranged in date from 425-450 CE. See Section 5.3 and Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 398.

¹⁸⁹ The encrusted faces on the piscina had to have been added after the mosaic was already finished since thin sections of the mosaic are covered by the facing of the font.

¹⁹⁰ While only one column base was found in situ, the locations of the five other columns are known, since the square mortar beddings remain *in situ*. See Dinsmoor, "The Baptistery," 20.

¹⁹¹ Like the kind found at Santa Constanza in Rome or the Baptistery at Nocera. See Jensen, *Living Water*, 226, 283-9.

was applied over the old frescos as a base layer, and new simple geometric motifs were painted on top.¹⁹²

In the late fifth or early sixth century, a few additional changes were made to the baptistery (phase 3). The *kantharos* was added to the southwestern niche of the *piscina* so that the handles of the *kantharos* were aligned with the *piscina* walls (fig. 53).¹⁹³ The western and eastern corridors were also dismantled, and in Phase 3, the baptistery only consisted of an anteroom and the main baptismal chamber. The small area to the west of the baptistery was also transformed into a courtyard; benches were constructed along the courtyard walls and a plaster floor was laid over the whole area that covered the foundations of the western corridor wall. This area served as a waiting area for catechumen before the baptism took place. Now the baptistry could be entered directly from any of the five doors.¹⁹⁴

Sometime in the late sixth century Stobi was almost entirely abandoned. In the baptistery, the abandonment was dated to after 569-570 CE by a coin (no. 71-708) which was found on the mosaic floor.¹⁹⁵ Elsewhere in the city, four other coin hoards that were hidden at the site provide a *terminus post quem* of 585 CE for this final abandonment.¹⁹⁶ After the abandonment, parts of the city were looted, including the baptistery. The lead drainage pipe under the mosaic floor was

¹⁹² See Downing, "Wall Paintings from the Baptistery at Stobi," 262 for a discussion of the frescos. See also Section 5.1.

¹⁹³ See Dinsmoor, "The Baptistery: Its Roofing and Related Problems," 21.

¹⁹⁴ Wiseman, "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1987-78." 425.

¹⁹⁵ This coin (catalogue no. 71-708) was minted in 569-70 CE. See E. Mott Davis, et al, "Radiocarbon Dates from Stobi," *Studies in the Antiquities of Stobi*, Vol. 1, ed. James Wiseman, James and Djordje Mano-Zissi (University of Texas, 1973), 30. For evidence for an earthquake see Wiseman, "Environmental Deterioration at Stobi: Climate Change or Human Agency?", 240.

¹⁹⁶ Coin hoard B discovered in a pot inside a pit in the "Casino". The latest coins were minted in 583/4. Coin hoard C was discovered in the west room of the house of Peristerius which contained coins minted as late as 584/585. Coin Hoard D, E and F also had coins minted as late as 584/85. Maja Jadjji-Maheva, "Early Byzantine Coin Circulation in Macedonia Secunda," *Cercetări numismatice* 15, (2009), 123-126.

stolen, destroying part of the mosaic (fig. 14).¹⁹⁷ The baptistery remained abandoned for a significant length of time, allowing for the accumulation of 0.2 to 0.4m of windblown dust inside the main baptismal chamber before the collapse of the baptistery. In the last decade of the sixth century, the baptistry roof collapsed, an event which destroyed part of the walls and both sets of Ionic columns. According to Wiseman, the collapse was caused by an earthquake which destroyed the city.¹⁹⁸ Sometime after the collapse of the city, the baptistry was looted, which is evident from the discovery of one of the small Ionic column capitals to the east of the baptistery.¹⁹⁹ In order for this column to be removed, most of the roof debris was removed first, including most of the brick and tiles. This last phase of looting is crucial evidence for the reconstruction of the roofing.

6.0 Prior Reconstructions

In the early 1970s, Dinsmoor made the first reconstruction of the baptistery, in which he accurately determined that the small set of Ionic columns sat on top of the *piscina* walls to work in tandem to support the roof, since the small columns were the same height as the large columns when they were placed on the *piscina* walls (figs. 6-7).²⁰⁰ This arrangement has been used in every reconstruction to date, and was recently used successfully in the physical anastylosis of the baptistery.²⁰¹ Apart from this central colonnade, there are some problems with

¹⁹⁷ The looting of the baptistery was determined to be contemporary with the crypt. See Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," 398.

¹⁹⁸ For evidence for an earthquake see Wiseman, "Environmental Deterioration at Stobi: Climate Change or Human Agency?," 240.

¹⁹⁹ See excavation report, Wiseman and Mano-Zissi, "Excavations at Stobi, 1973-1974," 117-48.

²⁰⁰ Dinsmoor also ruled out the use of a baldacchino over top of the columns, since their equal heights indicated that both sets of columns worked in tandem to support a superstructure for the roof (fig. 7). Dinsmoor, "The Baptistery," 20-21.

²⁰¹ Compare Dinsmoor's reconstruction (fig. 7) with the placement of columns in the reconstruction published in Wiseman (fig. 9). Wiseman, "Environmental Deterioration at Stobi," 556, fig. 15.

Dinsmoor's reconstruction, particularly with the orientation of the *kantharos* and the design of the roof. Since it has already been established that Dinsmoor's measurements of the *kantharos* were incorrect, and the *kantharos* originally sat high enough for the marble volutes to clear to *piscina* walls (fig. 53), the following discussion will focus on Dinsmoor's reconstruction of the roof.

The lack of roof debris found in the central room during the excavation makes any roofing reconstruction conjectural.²⁰² Dinsmoor believed that the lack of debris indicated which type of roof was used in the baptistery, since the excavators originally believed that the baptistery was undisturbed. Dinsmoor used his reconstruction to explain why there were roof tiles on the east, west and south sides of the baptistery, but not in the central room.²⁰³ He proposed that the roof was made of wood (fig. 8), since wood decomposes over time, a fact which would explain the lack of debris in the central room.²⁰⁴ He further suggested that the shape of the wooden roof was a pitched roof, a hypothesis which would explain the presence of roof tiles on either side of the baptistery during the excavation, because the roof tiles would have slid off of the pitched roof during the collapse.²⁰⁵ The final visualization of Dinsmoor's reconstruction (fig. 8) was a timber pitched roof, wherein the highest point of the pitch was at the central north-south axis, parallel with the eastern and western walls (fig. 8).

The discovery of the small Ionic capital in 1973 suggested that the baptistery had been disturbed after its final collapse.²⁰⁶ Since Dinsmoor's argument was dependent on the baptistery

²⁰² The amount of roof debris found was never specified in the excavation reports or Dinsmoor's article. No photos were ever published showing the roof debris either. See Dinsmoor, "The Baptistery," 24; Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 423-424.

²⁰³ See section 5.3 the 1971 Excavation of the baptistery. See also Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 423-4, and Dinsmoor, "The Baptistery," 24-5.

²⁰⁴ Dinsmoor, "The Baptistery," 24.

²⁰⁵ Dinsmoor, "The Baptistery," 25.

²⁰⁶ See the excavation report, Wiseman and Mano-Zissi, "Excavations at Stobi, 1973-1974," 117-148.

being undisturbed, his reconstruction was supported neither by the archeological evidence nor by the comparanda.²⁰⁷ Dinsmoor also failed to include windows in his reconstruction, even though window glass and columns were found during the excavation in 1971.²⁰⁸ These facts suggest that a timber pitched roof was highly unlikely, and that Dinsmoor's reconstruction is inadequate, especially since it is missing important architectural elements.

Apart from Dinsmoor's design, there is an additional problem with the timeline of the publication of Dinsmoor's article. Even though Dinsmoor and the excavators were aware that the baptistery was disturbed as early as 1973, Dinsmoor's article was still published by the lead excavators Wiseman and Mano-Zissi in 1975.²⁰⁹ Given that Dinsmoor's article was published two years after the crucial discoveries that militated against his reconstruction, a fact which Dinsmoor was aware of, his work contains some obvious contradictions. Dinsmoor theorized that a dome would be expected to roof the baptistery, but given the lack of masonry debris in the baptistery itself, a timber pitched roof makes more sense, however at the end of his paper Dinsmoor contradicts himself and writes that the masonry debris and roof tiles were removed in a later vandalism, following the collapse of the baptistery.²¹⁰ The only plausible explanation is that Dinsmoor had completely finished his article prior to the discovery of the column capital in 1973. Apparent evidence for this comes from the body of the article, where Dinsmoor asserts that the baptistery was undisturbed, which was the hypothesis of the excavators in 1971-1972, during which time Dinsmoor must have completed most of his research for his paper. Dinsmoor also signed and dated his reconstruction drawings to "1973" (figs. 6-8), a detail

²⁰⁷ Dinsmoor immediately rules out a dome since there would have been a plethora of brickwork present during the excavation if a dome roofed the baptistery. See Dinsmoor, "The Baptistery," 24.

²⁰⁸ Wiseman and Mano-Zissi do not include the locations that the columns or glass were found, see Wiseman and Mano-Zissi, "Excavations at Stobi, 1972," 422.

²⁰⁹ The article was published in *The Studies of the Antiquities of Stobi* volume 2 in 1975.

²¹⁰ Dinsmoor, "The Baptistery," 24-25.

that purports to show that he completed the visual reconstruction that year, likely before the discovery of the capital. Yet in the text of his article, Dinsmoor does mention that the baptistery was disturbed three times (all within the last three paragraphs of his paper), and, importantly, shows that he was aware of the discovery of the column capital but relegates it to a single footnote.²¹¹ From the placement of these findings at the end of his article, it seems obvious that this information was a later addition, after the article was already completed. This situation is especially problematic, since there are no other published articles to date concerning a roofing reconstruction of the baptistery and Dinsmoor's article and reconstruction are very convincing to a reader who is not familiar with baptistery architecture.

Even though there is no published criticism of Dinsmoor's reconstruction, Wiseman recognized that Dinsmoor's roofing reconstruction was inadequate. Wiseman published a new reconstruction of the baptistery and Episcopal Basilica in 2006 (fig. 9).²¹² Wiseman's reconstruction reused the same interior support structure suggested by Dinsmoor (fig. 7), but drastically changed the roofing. The circular arcade supported a second-storey hexagonal drum, topped by a small circular pitched roof, forming a second-storey above the rest of the roof. This arrangement is called double-shell masonry, whereby a central arcade, drum, and small roof form an independent standing interior shell, while the outer walls and first-floor roof form the second outer shell. Wiseman also added windows to the second-storey drum. The problem with Wiseman's reconstruction is that it was not supported by comparanda, nor did it include any

²¹¹ In this footnote Dinsmoor says although it was believed that the baptistery was undisturbed following its destruction, the small Ionic column found in 1973 was evidence of post-destruction looting. See Dinsmoor, "The Baptistery," 24, n. 11. The first mention of the disturbance in the body of the text is mentioned in the third last paragraph and then once in the final paragraph of the paper. (24-5).

²¹² The reconstruction is from Wiseman, "Environmental Deterioration at Stobi," 256, fig.15.

discussion on the architecture of the baptistery at all.²¹³ According to the *2008 Burra Charter*, the *2009 London Charter*, and the *2013 Seville Principles*, all visual reconstructions must be supported by published historical and archeological evidence.²¹⁴ As a result, Wiseman's reconstruction no longer meets the current standards for virtual reconstructions. To date, an adequate analysis of comparanda for the Stobi baptistery has not been published. To satisfy the current requirements regarding the documentation of supporting evidence for visual reconstructions, an in-depth discussion on the comparanda is conducted below to determine the most likely reconstruction of the roof over the Stobi baptistery.

7.0 Comparanda

There were many Late Antique baptisteries (fourth to sixth century CE) of different shapes, sizes, and styles, but in general most baptisteries were rotund or polygonal.²¹⁵ Some loosely categorized regional variations eventually developed, which were either influenced by a prominent baptistery or regional liturgy.²¹⁶ In the fifth and sixth centuries, Italy favored octagonal baptisteries; southern France preferred a square variety; and in the sixth century, a cruciform style was developing in the Balkans.²¹⁷ The only common feature across all baptisteries was the *piscina*, located at the center of the baptistery. The shape of the *piscina* also varied; some of the most popular shapes were circular, hexagonal, octagonal, cruciform, or

²¹³ The only sentence concerning the roofing of the baptistery states that the roof collapsed in the late 6th or early 7th century. Wiseman, "Environmental deterioration at Stobi," 229.

²¹⁴ *ICOMOS Charter*, art. 2.4, 8, "The London Charter" article. 2-3, 5-6. and "The Seville Principles," principles 1-8.

²¹⁵ Popular shapes were round, and octagonal. Less popular shapes were square, hexagonal and cruciform/lobed. Jensen, "Living Water," 110.

²¹⁶ For example, the late-fourth century CE baptistery of Bishop Ambrose, S. Tecla in Milan, inspired the construction of other octagonal baptisteries in North Italy and Southern France. See Guglielmo de Angelis d'Ossat, "Origine e fortuna dei battisteri ambrosiani," *Arte Lombarda*, 14 (1969), 1-20, cited in Loas, "Provincial Baptisteries," 285. See also Section 5.4.

²¹⁷ For a discussion on baptistery shapes see Jensen, "The Design and Decoration of Early Christian Baptisteries", in *Living Water*, (Boston: Brill, 2011), 179-230.

womb shaped.²¹⁸ It was also common for a baptistery to have a colonnade, located either around the periphery of the room or around the *piscina*. These baptisteries with central colonnades would also have ambulatories roofed with a barrel vault.

Although there are no ancient sources that explain the evolution of baptistry architecture, scholars believe that the mausoleum was the prototype for the purpose-built baptistery.²¹⁹ A Roman mausoleum was a monumental tomb that usually housed the deceased body of the emperor or members of the imperial family. The similarities between both buildings are obvious, most mausolea were also centrally planned buildings, with a sarcophagus in located at the center of the room instead of a *piscina*. The mausoleum of Santa Constanza is very similar to many baptisteries, for example the baptistery at Nocera. One hypothesis which explains why baptisteries were built to resemble mausolea, is that they were both associated with death. Christians believed that a baptism was a symbolic death and burial during the ceremony of baptism.²²⁰ In this way, the baptistery acted as a mausoleum for every baptized Christian.

The lack of standardization has made it difficult to determine what type of roof covered the Stobi baptistery. This problem is best illustrated by the architectural differences between the three baptisteries at Stobi: the Episcopal Baptistery, the Extra Muros Baptistery (fig. 22), and the Cruciform Baptistery (fig. 23). The Extra Muros Baptistery was a rectangular baptistery attached to the Extra Muros Basilica, while the Cruciform baptistery was a tetraconch baptistery, which formed a rounded cross shape, and was attached to the North Basilica.²²¹ The variety of

²¹⁸ For a discussion on font shapes, see Jensen, "Shapes and Depths of Fonts," in *Living Water*, (Boston: Brill, 2011), 225-228.

²¹⁹ Paul Styger argues that many baptistries were originally built to be martyria in Paul Styger, "Nymphäen, Mausoleen, Baptisterien," in *Architectura* 1, (1993), 50-54, and as André Grabar, *Martyrium: recherches sur le culte des reliques et l'art chrétien antique*, vol. 1.(London:Variorum, 1972), 446-7.

²²⁰ See section 4.2 for an explanation of baptismal liturgy.

²²¹ Not much has been written about the Extra Muros Baptistery since its discovery in 1993. It was built in the suburban area outside of the walls to serve the inhabitants that lived there (Map 1). This attachment was built

plans at Stobi illustrates the lack of uniformity in baptistery architecture from the same period, even within a single city.

Besides the lack of standardization for baptistery architecture, the ruined state of most fourth to sixth century CE baptisteries make it difficult to establish roofing conventions for baptistery architecture. Many of the baptisteries from the Balkans that would be considered comparanda to the Stobi baptistery, like the Baptistery at Parthicopolis in Bulgaria or the Baptistery at Carčin Grad in Serbia, are excluded from consideration in my corpus of evidence because their roofing is also conjectural.²²² Other baptisteries from the West, specifically in Italy and Southern France, are better preserved, and some are even still in use today. For the purposes of this paper, only the most intact baptisteries, where knowledge of the original roof is available, will be used as comparanda. This analysis of comparanda is particularly concerned with the relationship between the interior colonnade and the design of the roof. Additional considerations will be given to the height of the baptisteries, and the placement of the windows. Trends among the comparanda will help to determine what the most probable design of the roofing of the Stobi baptistery.

onto the southwestern aisle of the basilica and could be entered through a door in the narthex. The entire attachment was a long rectangle that was divided into three attached rooms. It is probable that the northernmost room attached to the narthex was used as an anteroom for catechumen who were waiting to be baptized. Only the central room has been identified with any certainty as the baptistry, based on the large *piscina* located at the center of the room. Snively, "Salvage Excavations at Stobi," 23. The baptistry was formerly known as the quatrefoil baptistery of Saint John and is also sometimes described as a tetraconch baptistry.

²²² According to the excavation report on the baptistery at Parthicopolis, the baptistery at Stobi was its closest comparanda, in Petrova, "The Baptistery of the Episcopal Basilica in Parthicopolis," 56, and for Carčin Grad see also V. Ivanišević, "Caričin Grad (Justiniana Prima): A New-Discovered City for a 'New' Society," in *Proceedings of the 23rd International Congress of Byzantine Studies. Belgrade, 22–27 August 2016* (Belgrade 2016) 107–126.

7.1 The Lateran Baptistery

The Lateran Baptistery in Rome was the first baptistery built in the Latin West, in the early fourth century CE, but it has been heavily remodeled since its construction.²²³ The Lateran is significant because it was the most important baptistery in Rome and was influential in baptistery art and architecture. The evolution of this baptistery between the first and second phases is particularly important for the architecture of the Stobi Baptistery. The first phase of the Lateran has been reconstructed using the description of the baptistery from the *Liber Pontificalis* (fig. 31).²²⁴ It was a large circular or octagonal baptistery with eight large porphyry columns placed against the walls that was roofed with a dome which spanned the entire interior (fig. 31).²²⁵ Between 432 CE and 440 CE, the Lateran was remodeled by Pope Sixtus III. The columns were moved to the center of the baptistery, forming a circular colonnade around the *piscina*, which was topped with an architrave and a superimposed order of columns, called an epistyle course; this arrangement can still be seen in the Lateran today.²²⁶ According to the sixteenth century reconstruction made by Antonio Lafrefi (fig. 32), these superimposed columns supported a small

²²³ The construction of the baptistry was funded by Constantine I in 312 CE according to the *Liber Pontificalis*. 34. Translated by Louise Ropes Loomis, *The Book of the Popes*, (New York: Columbia University Press), 50-51, 96. See also Jensen, *Living Water*, 186.

²²⁴ For a description of the font and decorations see *Liber Pontificalis*. 34. And for the porphyry columns see *Liber Pontificalis* 57. Translated by Loomis, *The Book of the Popes*, 50-51.

²²⁵ Krautheimer thought the octagonal building was Constantinian see Krautheimer, *Early Christian and Byzantine Architecture*, 90-92, n.47 while Giovanni B. Giovenale believed the round building was converted to an octagonal building sometime in the fifth century CE, Giovanni Battista Giovenale, "Il battistero Lateranense: nelle recenti indagini della Pont," *Commissione di Archeologia Sacra*, vol. 1 (Pontificio Istituto di Archeologia Cristiana, 1929); Jensen, *Living Water: Images, symbols, and settings of early Christian baptism*, 187. See also Brandt, "Il battistero Lateranense," fig. 1.

²²⁶ The remodeling is recorded in the *Liber Pontificalis*: "He erected in the baptistery of the basilica of Constantine the columns which had been collected in the time of Constantine Augustus, eight in number, made of porphyry; and he set them in place and decorated them with letters ad verses" *Liber Pontificalis* 57, trans. Loomis, *The Book of the Popes*, 96. *Hic constituit columnas in baptisterium basilicae Constantinianae, quas a tempore Constantini Augusti fuerant congregatas, ex metallo purphyretico numero VIII, quas erexit cum epistolis suis et versibus extornavit...* in Louis Duchesne and Cyrille Vogel, eds. *Le Liber pontificalis: texte, introduction et commentaire*. vol. 1. (E. de Boccard, 1884).²³⁴

dome, called a cupola, which was the main difference in the roofing of the first and second phase of the Lateran baptistery.²²⁷

If one compares the reconstructions of the Constantinian Lateran (fig. 31) and Pope Sixtus III's Lateran (fig. 32), it is obvious that there is a clear relationship between the placement of the colonnade and the design of the roof. When the colonnade was placed against the walls, the entire baptistery was roofed with a dome, but when the columns were moved to the center of the baptistery, the baptistery was roofed with a small cupola, which was supported by the colonnade. The rest of the roof around the central tower is formed by a shorter shed roof and is an example of double shell construction. This example clearly indicates that the location of the colonnade is directly related to the type of roofing. The design is like Wiseman's reconstruction of the Stobi Baptistery (fig. 9). When the baptisteries from Italy and Provence are examined, the same principle is true: whenever there is a freestanding interior colonnade, the baptistery was roofed with a cupola and double shell construction. Examples of this principle are demonstrated in the architecture of the baptisteries at Reiz (fig. 38) and Saint Sauveur (fig. 39). At the other baptisteries in Albenga (fig. 33), Novara (fig. 35) and Freius (fig. 43), the colonnade was placed against the walls, and were roofed with a high second storey dome, which spanned the entire room. Thus, at the Stobi Baptistery the interior colonnade is clearly an indication that the baptistery was also roofed using this double shell construction and a cupola.

7.2 Ambrosian Baptisteries

Some of the closest parallels to the Stobi baptistery are the Northern Italian Ambrosian Baptisteries, named after the late-fourth century Milanese Bishop Ambrose, who reportedly

²²⁷See also Underwood, "The Fountain of Life in Manuscripts of the Gospels," 45.

helped design the first baptistery of the type, called Saint Tecla.²²⁸ These baptisteries were built on an octagonal floor plan and had niches in the walls and a circular colonnade in the interior (fig. 33).²²⁹ The Ambrosian Style was particularly popular in areas that followed Ambrosian church doctrine and liturgy, as exemplified in the fifth century CE northern Italian baptisteries at Albenga and Novara, and eventually other areas of the Latin west. Some variants of the Ambrosian Style also developed, including the Provençal baptisteries of southern France.

In the two Ambrosian baptisteries used for this investigation, the Albenga Baptistery and the Novara Baptistery, each colonnade was spanned by arches, called an arcade, and was roofed with a dome, like the Constantinian Lateran (fig. 31). The octagonal walls in both baptisteries were the height of a two storey building (figs. 35, 36). A timber pitched roof currently covers the interior of the Albenga Baptistery, but according to the archeological reports, a dome originally roofed the octagonal drum.²³⁰ This dome was removed in the twentieth century by restorers who believed that the cupola was added in the fifteenth century. The dome was later identified as an original part of the paleo-Christian baptistery from the undisturbed stratigraphy found above the dome.²³¹ On the exterior, the first floor niches were roofed with small timber shed roof covered with tiles. There were also a few small windows placed on the ground floor, but the largest windows were built into the second story drum (figs. 33-34).

²²⁸ The conventional argument used to be that the Lateran baptistery inspired the construction of all octagonal baptisteries, but now some scholars suggest that the original 4th century form of the Lateran was circular and that the octagonal walls were added by Pope Sixtus III in the 5th century see Mario Mirabella Roberti and A. Paredi, *Il battistero ambrosiano di San Giovanni alle fonte Milan*, 1974 and Mirabella-Roberti, "La cattedrale antica di Milano e il suo Battistero," *Arte Lombarda* 8 (1963), 77-98.

²²⁹ It is believed that this style was disseminated from S. Tecla in Milan, which inspired the construction of other northern Italian octagonal baptisteries. See Nora Edith Loas, "Provençal Baptisteries," 283; Guglielmo de Angelis d'Ossat, "Origine e fortuna dei battisteri ambrosiani," *Arte Lombarda*, 14 (1969), 1-20.

²³⁰ The history of the baptistery and its conservation is recorded in Valeria Sciarretta, *Il battistero di Albenga*. (Longo, 1977), 47.

²³¹ The conservators discovered that the dome was actually paleo-Christian when paleo-Christian amphorae were found in unconserved sections of the roof. These Amphorae are visible today on the floor of Albenga's interior. Sciarretta, *Il battistero di Albenga*, 47.

An analysis of these baptisteries once again highlights the relationship between the location of the interior colonnade and the roof. In both baptisteries, the engaged arcade was placed against the interior walls which supported the second story walls and dome. This is a clear indication that when the arcade was placed against the walls, the roof over the main chamber of the baptistery was uninterrupted. The difference in the location of the support structure of the Albenga and Novara Baptisteries suggest that the Stobi baptistery was not roofed with a large uninterrupted dome. They do however suggest that the windows still would have been located in the second story, regardless of roof type.

7.3 Provençal Baptisteries

The fifth century CE baptisteries of Provence are the closest surviving comparanda to the Stobi baptistery.²³² They are the only type of baptistery that also has square exterior walls with an octagonal or rotund interior plan, which is the same plan used for the Stobi baptistery.

A few well preserved examples are the Reiz Baptistery (fig. 36-38), the Baptistery of Saint-Sauveur in Aix-En-Provence (fig. 39-40), and the Frejus Baptistery (figs. 41-43).²³³ The architecture of these three Provençal baptisteries provide the best foundation for a reconstruction for the Stobi baptistery for their architectural similarities.

All three baptisteries were roofed with either a cupola or dome determined by the placement of the interior colonnade. At the baptistery at Frejus (fig. 43) the arcade was placed

²³² Formigé and Mâle were integral in establishing the Provençal baptistery type : Jules Formigé, "Remarques diverses sur les baptistères de Provence" in *les Mélanges en hommage à la mémoire de Fr. Martroye* (Soc. Nat. Des ant. De Fr, 1941), 170 ; Émile Mâle, *La Fin du paganisme en Gaule : et les plus anciennes basiliques chrétiennes*, (Flammarion, 1950), 222.

²³³ Information on the Riez baptistery and its history is scarce, there has been no thorough archaeological excavation of the baptistery to date however three investigations took place in the 19th century in the area around the baptistery and one twentieth century excavation took place in 1929-30; Loas, "Provençal Baptisteries: Early Christian Origins and Medieval Afterlife,"⁴, 27.

against the walls, and was roofed with a dome, just like at Albenga and Novara, while the baptisteries at Reiz (fig. 38), and Saint-Sauveur were built in double shell construction, like the second phase of the Lateran.²³⁴ The height of the dome and the location of the windows also varied. At Saint-Sauveur and Frejus, windows were placed in the second story just below the dome. Currently the Riez baptistery is only a single story, with small windows placed in the sides of the first floor walls, but, according to 17th century engravings of the baptistery, it originally had a second story similar to Saint Sauveur.²³⁵ A recent reconstruction attempted to show the evolution the baptistery before and after the restoration in 1817 (fig. 58).²³⁶ Since these three baptisteries are the closest architectural parallels to the Stobi baptistery, they provide the strongest support that the Stobi baptistery was built in double shell construction, wherein the interior arcade supported a cupola dome topped with a pitched roof and roof-tiles on the exterior.

The analysis of the comparanda was made to provide ample support for the following reconstruction of the Stobi Baptistery, and to satisfy the terms of the *London Charter's* and the *Seville Principles'* guidelines for documentation.²³⁷ The comparanda suggest that the most probable form for the reconstruction of the final phase at the Stobi baptistery was a double shell construction, like at Pope Sixtus III's Lateran (fig. 32), Reiz, and Saint Sauveur. Therefore, the comparanda indicates that most of Wiseman's reconstruction (fig. 9) is well founded. The only difference is that Wiseman used a timber pitched roof without a cupola dome in the central

²³⁴ The addition of buttressing and ribs to the Reiz Baptistery was added during the remodelling of the cupola in the 11th or 12th century and was not part of the original fifth century construction. Loas says it is impossible to determine this without proper excavation if a similar copula dome was existed in the original 5th century construction, but it may have reflected a different roofing system Loas, "Provençal Baptisteries" 35,40, and 42.

²³⁵ To see the original engraving by Baltard see Loas, "Provençal Baptisteries," 66, fig. 18.

²³⁶ Loas says that there is no way of knowing what the original orientation and roofing system would have looked like in this later period, but "the eight columns must have played a crucial role in the structural support of the roof in both phases." Loas, "Provençal Baptisteries," 96.

²³⁷ *The London Charter*, article. 2-3, 5-6. and *The Seville Principles*, principles 1-8.

tower, however the results of this analysis strongly suggest the interior of the tower was roofed with a cupola covered by a timber pitched roof and roof tiles. The windows were probably also located in the second storey drum, similar to the placement of the windows in the Albenga Baptistery (fig. 34). Both roofs were covered in roof tiles. These elements will form the design of the final reconstruction (fig. 54-55).

8.0 WorkFlow

The workflow of the project was made to meet the criteria of suitability, sustainability, and feasibility of access proposed by the *London Charter* and the *Seville Principles*.²³⁸ The hardware and software were also chosen for their geometric accuracy, low cost, time effectiveness, or portability. The process of reconstruction had four stages: 1) digital documentation, 2) data processing, 3) preparation of 3D models for reconstruction, and 4) reconstruction of missing architectural elements. Additional steps were taken to ensure that the data is well preserved for the future, and will be available to the public.

8.1 Digital Documentation & Data Processing

Both laser scanning and photogrammetry are well suited techniques for digital documentation and data processing, and can produce non-invasive high quality models, but photogrammetry was chosen for this project due to its portability and comparatively low cost.²³⁹ Photogrammetry is a type of image-based 3D modelling, which creates a photorealistic 3D model (textured mesh)

²³⁸ *The London Charter*, art. 2.2.

²³⁹ The benefits of terrestrial photogrammetry are outlined by Fabio Remondino and Sabry El-Hakim. See Fabio Remondino and Sabry El-Hakim, "Image-based 3D Modelling: A Review," *The Photogrammetric Record* 21, no. 115 (2006): 269-291, accessed August 13, 2018, doi:10.1111/j.1477-9730.2006.00383.x For recent successful projects using laser scanning Remondino, "Heritage Recording and 3D Modeling with Photogrammetry and 3D Scanning," 283.

from digital images using photogrammetric computer software. Data acquisition requires as little as a handheld DSLR camera, a computer, and photogrammetric software to make 3D models for both buildings and individual objects; the versatility of photogrammetry is advantageous for digital documentation in the field.²⁴⁰ Using a technique called triangulation, a single point is plotted from 2D images in a 3D space, given the same point appears in at least two images from different perspectives.²⁴¹ The basic method includes taking a series of high resolution overlapping photographs (60-70% overlap) on all sides of the target object, called “Structure for Motion,” (SfM) photogrammetry (fig. 44).²⁴² While an older photogrammetric technique involved matching two overlapping images at a time, called stereo pairs, SfM was used for this project because SfM software can process a large quantity of images at one time, thereby greatly improving the speed and automation of photogrammetric processing. SfM is a standard tool in virtual archaeology, as demonstrated by many recent projects like the Temple of Neptune in Paestum.²⁴³

The workflow of the photogrammetric documentation and photo processing was completed by the time this project began in September 2016. Dr. George Bevan and students from the Balkan Heritage Field School Course on Digital Documentation photographed the

²⁴⁰ Terrestrial laser scanners (TLS), on the other hand, are expensive and lack terrain flexibility since they must be fixed to a level tripod on flat, stable ground.

²⁴¹Geert Verhoeven, et al., “Undistorting the Past: New Techniques for Orthorectification of Archaeological Aerial Frame Imagery,” in *Good Practices in Archaeological*, 42.

²⁴² The technique was first developed in the 1990s and replace photogrammetric rendering in stereo pairs. M.J. Westoby et al., “ ‘Structure-from-Motion’ Photogrammetry: A low-Cost, Effective tool for Geoscience Application, in *Geomorphology* 30 (2012), 2. A good explanation and workflow of traditional photogrammetric methods, called stereo-photogrammetry, is in Matthew J. Lato, George Bevan and Michael Ferguson, “ Gigapixel Imaging and Photogrammetry: Development of a New Long Range Imaging Technique,” in *Remote Sensing* 4, (2012), 3007-3010. Remondino and El-Hakim have also concluded that the accuracy of the project improved significantly when there are a greater number of images in which a point appears, up to four images of the same point. Remondino and El-Hakim, “Image-based 3D modelling,” 275.

²⁴³T. Cardinale, R. Valva and M. Lucarella, “Advanced Representation Technologies Applied to the Temple of Neptune, The Sphinx and the Metope in the Archaeological Park of Paestum,” *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 50, no. 5 (2013), 36.

baptistery, *kantharos*, and columns in 2015.²⁴⁴ Two DSLR cameras were used for the photography of the baptistery and its elements: the Nikon D7000 (16 megapixels) camera with a 24mm f/2.8 Nikor Lens was used for the columns and *kantharos*, while the Nikon D800E 36.3 MegaPixel camera with a AF-S 50mm f/1.4 Nikkor lens was used for the baptistery. Each element was photographed in a series of strips around the entirety of the objects using SfM photogrammetry (fig. 44). Each set of photographs contained as little as twenty-six photographs for the columns, capitals, and bases, to seventy-five photographs for the *kantharos*. The model of the baptistery contained hundreds of photos.

Because SfM photogrammetry software renders models in a local coordinate framework, it is characterized by scale ambiguity. Additional data is needed to georeference the project in a coordinate reference system (CRS). This is achieved by importing Control Data through the use of a Total Station and Ground Control Points (GCPs). This workflow is more rigorous and helps to correct errors and provides output that is georeferenced, i.e., correctly scaled and oriented within the coordinate system of the site. Control data was acquired for the baptistery using GCPs that were measured with a Leica Total Station to give the model absolute orientation and scale. The columns and *kantharos* were photographed alongside scale bars, with absolute scale and coded targets on them, which are automatically detected by the photogrammetry software to help make well-photographed models accurate. Through the proper use of a high quality camera, and control data, the 3D data can reach a level of millimetric accuracy, of $\pm 0.003\text{m}$.

²⁴⁴ For the photogrammetric model of the *kantharos* see Miglena Raykovska, Mishko Tutovski, Mariana Filova, George Bevan, "The Physical Reconstruction and Photogrammetric documentation of a 6th Ce Baptismal font (*Kantharos*) from Stobi," in *New Antique Doclea 7*, (Podgorica, 2016), 128. For the baptistery itself see Ian Longo, "Three-Dimensional Epigraphic Recording at Stobi (Former Yugoslav Republic of Macedonia): Creating a Virtual Lapidarium," (M.A Major Research Paper, Queen's University, July 2017), 82-84.

Following the data acquisition stage, the photo processing began with the conversion of the photographs from RAW image data, called NEF (Nikon Electronic Format), into JPEGs to be processed in the SfM photogrammetric software *Agisoft Photoscan Professional 2015 Version 1.1*.²⁴⁵ NEF is a type of compressed lossless RAW image format which preserves more information than JPEG, like the information captured by the camera's sensor and includes detailed image metadata. By preserving the image data in NEF, the original photographs can be archived for future use to ensure sustainability for the photogrammetric data used in this project as the additional data in these NEF images allows for different processing options in the future, such as more precise rendering of colours and lighting.

Photoscan was selected for this project because it is a relatively low cost software with survey capabilities. It is also user friendly, making it a valuable asset to this project, since many of the models were made by students in the 2015 Stobi Field School.²⁴⁶ *Photoscan* uses algorithms to detect and describe local features for each image and then match those 2D points throughout multiple images. The software computes the locations of those interest points in a local coordinate frame and produces a sparse 3D point cloud that represents the geometry in the target scenes.²⁴⁷ *Photoscan* has been used successfully in several similar archaeological projects, like the 3D model of the Heraion at Olympia and the reconstruction of the Roman theater of Lecce.²⁴⁸

²⁴⁵This process is described in Raykovska, Tutovski, Filova, and Bevan, "The Physical Reconstruction and Photogrammetric documentation of a 6th Ce Baptismal font (*Kantharos*) from Stobi," 128.

²⁴⁶Remondino, F., et al., 'Low-cost and open-source solutions for automated image orientation – a critical overview', In *Progress in Cultural Heritage Preservation*, ed. M. Ioannides, D. Fritsch, J. Leissner, R. Davies, F. Remondino, & R. Caffo, (2012):40–54.

²⁴⁷ Geert Verhoeven, Christopher Servara, Wilfried Karel, Camillo Ressel, Michael Doneus and Christian Briese, "Undistorting the Past," 43.

²⁴⁸ P. Sapirstein, "Photogrammetry as a Tool for Architectural Analysis: The Digital Architecture Project at Olympia," *Archeological Research in the Digital Age, Proceedings of the 1st Conference on Computer Applications and Quantitative Methods in Archaeology*, ed. Constantinos Papadopoulos and Eleftheria Paliou (2014): 129-39.

In 2016, the photogrammetric models of the baptistery were reassessed for their use in this reconstruction project. Many of the models of the columns, capitals, and bases had grass and gravel that was interfering with the geometry of the model, since the photographs were taken in the field. Most of the columns were also in pieces or missing large sections (fig. 21). Since the columns were being conserved during the 2017 field season it was not possible to photograph them again. Instead, the most complete model from each of the large and small column shafts, capitals, and bases were chosen (six models in total) to represent the entire colonnade. Therefore, all the columns in each set of columns used in the reconstruction (fig. 54) are an exact replica of this single exemplar. This choice affects the accuracy of the final reconstruction, since the columns, capitals and bases vary in height up to 0.1m in total according to Dinsmoor, but this small amount of deviation would not change the reconstruction of the column positions or the means by which the baptistery was roofed. Skilled stone-masons would easily compensate for these small deviations during construction. The other 2015 models of the baptistery (fig. 45) and *kantharos* (fig. 48) were both well suited for the reconstruction.

8.2 Preparation of 3D models and 3D reconstruction

The photogrammetric models of the columns and *kantharos* were cleaned and prepared before their employment in the final reconstruction. The workflow used for these elements will be demonstrated using photographs of the *kantharos*, but the same workflow was applied to the other six models of the columns as well. First, any holes in the models were closed (fig. 49), which is a common step in the workflow of photogrammetric-based reconstructions.²⁴⁹ The

and also, Francesco Gabellone, Ivan Ferrari and Francesco Giuri, "Digital Restoration Using Image-Based 3D Models," *1st International Conference on Metrology for Archeology* (2015): 1-5.

²⁴⁹The method is even included in the book *Digital Techniques for Documenting and Preserving Cultural Heritage*, in Mona Hess and Susie Green, "Structure from Motion," 243. Examples can be seen in in Morteza Daneshmand, et al., "3D Scanning: A Comprehensive Survey," ar Xiv:1810.08863v1 [cs.CV] (2018), 10. A more complex hole filling

models of the elements also had to be simplified to make the file size more manageable for the final visualization software, *SketchUp*. Finally, to ensure that the simplification of the models did not affect the size of the models, each 3D model was compared to the original unaltered photogrammetric model in *CloudCompare*, the open-source mesh measurement software for quality control. The final models were imported into *SketchUp*, where they were situated in the reconstruction of the baptistery.

Holes in photogrammetric data commonly occur when parts of a model cannot be clearly photographed in at least two or more photos. This usually occurs on objects with deep recesses or on the bottom of heavy objects that cannot be flipped over. This was the case for the bottom of the column capitals, bases, and the *kantharos* (fig. 49). These holes are closed using 3D modelling software to replicate the missing portion of the model. This is a necessary step in the preparation of clean models for reconstruction purposes, but there is a danger of falsifying models if there is no clear distinction between the original model and later addition. Lack of transparency in this step may result in the misinterpretation of a piece of material culture. Some virtual reconstruction projects solve this problem by changing the colour or texture of the reconstructed portion, for example using the Davide Borra system of scientific transparency.²⁵⁰ For this project, holes were closed using *Blender*, a 3D modeling software used for video game design, since it is a frequently updated open-source program. In order to preserve the integrity of the photogrammetric model from the reconstructed portion, an edge loop, which is the edge of the 3D model before the hole, was extracted to create an artificial barrier (fig. 51). On the interior of the edge loop, the hole was closed to complete the model using different geometry than the

technique can be found in Santiago Salamanca and Pilar Merchan, "Filling Holes in 3D Meshes using Image Restoration Algorithms," in *Proceedings of the Fourth International Symposium on 3D Data Processing, Visualization and Transmission*, (2008), 1-8.

²⁵⁰ Cited as an example in Bendicho, "The Seville Principles," 276.

triangulation of the rest of the model (fig. 51). This way, the differentiation between the reconstruction and the original model cannot easily be removed since it is embedded in the geometry of the model.

The models of the elements had to be simplified so that the meshes did not exceed the maximum file size that *SketchUp* can handle. The simplification of the models was achieved through mesh decimation in *MeshLab*, the open sources 3D modeling software, the process in which redundant vertices, edges, and triangles are removed.²⁵¹ The number of faces in the mesh of the models were reduced using the “decimate mesh” function. The mesh, which is the term used for the geometry that makes up the 3D model, is composed of thousands of triangles. Since each model contained over 100,000 faces, the mesh was simplified to about 10,000, which did not affect the overall dimensional accuracy of the model itself, but resulted in the loss of some small details in high spatial frequencies. To test the quality of the simplified model, the simplified mesh was compared to the original mesh using *CloudCompare* with the “mesh-to-mesh distance comparison” function (fig. 52). The results of the measurement showed that the simplified model was only 0.000161m different than the original model, indicating that the decimation did not significantly affect the accuracy of the model, at least for the purpose of reconstruction where the geometry of small, high-frequency details, like decoration, are not critical. This process was repeated to each model before the new meshes were then imported into *SketchUp*.

The reconstruction of the baptistery building followed a different workflow. Most 3D reconstructions use the 3D modeling and animation software *3DSMax* or Autodesk’s building

²⁵¹ Decimation is described by Remondino and El-Hakim as a common technique for simplifying large photogrammetric data sets. “The method can iteratively remove vertices that does not pass a certain distance angle criterion” See Remondino and El-Hakim, “Image-based 3D Modelling,” 281.

information modeling software, *Revit*. Instead, *SketchUp* (2017 Version) was used as a user-friendly and low-cost alternative for this project, which helps to ensure the sustainability of the reconstruction process. *SketchUp* was a general-purpose 3D content creation tool made in 2000, that was designed to emulate the feel of working with a pen in paper, but in a 3D space. With the aid of additional plugins and extensions, *SketchUp* can be used as a tool for architectural design. *SketchUp* was also used in the reconstruction of Chichén Itzá, in Mexico, by the University of California in San Diego, with the intent to build a virtual city.²⁵² The 3D models were made using a combination of survey data and building plans which were traced in *SketchUp*.

The mesh of the baptistery was too complex to be simplified in *MeshLab*. Instead, the reconstruction was drawn from the point-cloud data in *SketchUp* using the extension *Undet for SketchUp V2.0*. *Undet for SketchUp* is a point cloud software which enables the user to import and edit point clouds in *SketchUp*. For this reconstruction, the point cloud of the baptistery was imported into *SketchUp*, and the architecture of the baptistery was redrawn by connecting the outline of individual points from the point-cloud to essentially retrace the contours of the baptistery.²⁵³

The rest of the reconstruction was made using the drawing features in *SketchUp*, taking the comparanda into account.²⁵⁴ Additional modifications were made to reconstruct the missing marble and slate facing and the height of the walls. The roofing and octagonal drum was also modelled in *SketchUp*. The models of each column, capital, and base were duplicated to make two series of six columns each. These columns were oriented in the baptistery in accordance with

²⁵² Beniamino Volta, Thomas E. Levy & Geoffrey E. Braswell, "The virtual Chichén Itzá project: modelling an ancient Maya city in Google SketchUp," *Antiquity* 82, no. 321 (2009). 1.

²⁵³ Tutorials are available on the *Undet* website which explain the process, see "Undet for Sketchup V2," Undet, Accessed July 20, 2018, <http://www.undet.com/software/for-sketchup-v1/>.

²⁵⁴ See section 7.0 for a discussion on the baptistery comparanda.

the comparanda and in order to economize on computational resources, and stock texture was applied (fig. 54). Finally, the 3D reconstruction will be available to the public online through *SketchFab*, so that the data is available for educational or research purposes.²⁵⁵

8.3 Results

The final reconstruction was made with double shell construction and was roofed with a cupola dome that was 3.1m in diameter according to measurements taken in *SketchUp* provided by the georeferenced model. The cupola (fig. 55) was covered with an octagonal timber pitched roof, covered with roof tiles, similar to the comparanda. Similarly, when the small set of Ionic columns were placed on top of the *piscina* walls, they equaled about the same height as the tall order of Ionic columns (fig. 54), as Dinsmoor originally suggested. This further confirms the hypothesis that both orders of columns supported a drum and part of the roof in tandem (fig. 54).

9.0 Conclusions

This paper is the longest text devoted to the history and architecture of the baptistry to date. During the course of this paper, I also suggested two new theories for the provenance of the *kantharos* and the function of the early *piscina* below the baptistry.²⁵⁶ Prior to this investigation it was deemed impossible to determine the origin of the *kantharos*, but I strongly suggest that the *kantharos* functioned as sculptural decoration from a garden, as demonstrated by a number of very similar monumental marble vessels called *krateres* found *in situ* in gardens from Pompeii and the Bay of Naples. A few of these marble vessels (fig. 24) found *in situ* even functioned as fountains, in which a pipe drew water into the *krater* through a hole located in the body of the

²⁵⁵ Seville Principles, 16.7.7

²⁵⁶ See Section 5.2 for the *kantharos* and Section 5.4 for the early *piscina*.

vessel. Decorative *krater* fountains must have been common since they are several representations of them in garden frescoes (figs. 26-27). Considering this evidence, it is highly likely that the drainage hole in the Stobi *kantharos* was not a sixth century addition, but rather an original part of the *kantharos* where it was used as a decorative fountain.

Since the discovery of the early *piscina* below the baptistery in 1977, the only theory concerning its function was that it was an early baptismal *piscina* for the early church.²⁵⁷ This theory ignores the established practice of building baptisteries on the foundations of bathhouses to utilize the pre-existing hydraulic infrastructure. Given the number of baptisteries built on the foundations of bathhouses across the Roman Empire, it is very likely that the early *piscina* was part of a bathhouse rather than a baptismal *piscina*. This theory is strengthened by the architectural similarities between the Stobi baptistery and bathhouse architecture; the Stobi baptistery has the exact same floor plan that was used in the design of at least twenty-four bathhouses across the Eastern and Western Roman Empire. There is also strong archeological evidence from Stobi which supports this theory. The southern wall of the baptistery anteroom was built over a section of the wall of building E, the bathhouse. The proximity of the baptistery to the bathhouse suggest that the early *piscina* was originally part of Building E. This summary of the comparanda and archeological evidence strongly suggests that the baptistery was built on top of this bathhouse.

This project is the first reconstruction of the Stobi baptistery that meets the current standards of 3D reconstructions, outlined in the *London Charter* and the *Seville Principles*.²⁵⁸ Unlike the two prior reconstructions made in 1973 and 2006, this reconstruction is supported by comparanda from Italy and Southern France that demonstrate the likelihood that the roof over the

²⁵⁷ See Section 3.5 for the excavation, Section 4.0 for the chronology, and Section 5.4 for the early *piscina*.

²⁵⁸ See section 2.0 for methods.

Stobi baptistery was roofed with double shell construction and a cupola dome (figs. 54-5).²⁵⁹ Since the Stobi baptistery did not have a set of comparanda in place, only the most complete baptisteries, whose roofing was not conjectural, were chosen for the purposes of this project. An analysis of the comparanda revealed that some of the Provençal baptisteries, were the closest architectural parallels to the Stobi baptistery since they had almost identical floor plans. Their architecture provided the basis for the design of the 3D reconstruction.

Even though the Lateran baptistery and the Ambrosian baptisteries had a slightly different layout than the Stobi baptistery, they were key in determining that there was a direct relationship between the placement of the arcade and the type of roof. When the interior arcade was placed against the walls, then an uninterrupted dome spanned the entire baptistery, for example in the Constantinian Phase of the Lateran Baptistery (fig. 31), the Albenga Baptistery (fig. 33-4), the Novara Baptistery (fig. 35), and the Frejus Baptistery (fig. 43). But when the arcade is in the center of the room, then the arcade supports a small second storey cupola, demonstrated by the Pope Sixtus Phase of the Lateran (fig. 32), the Riez Baptistery (fig. 38) and the Baptistery of Saint-Sauveur (fig. 39). When this theory is applied to the Stobi baptistery, the presence of the central arcade clearly indicates that the arcade also held a second storey cupola (fig. 45-5).

The final 3D reconstruction was also made to be used as a scholarly tool.²⁶⁰ During this investigation, it was used to test Dinsmoor's placement of the small columns on the *piscina* walls, before the physical anastylosis was performed in August 2018. Dinsmoor determined that the small order of columns sat on top of the *piscina* walls because they equaled the same height as the large columns on the floor. Since Dinsmoor made these measurements by hand when the

²⁵⁹ See section 7.0 for a discussion of the comparanda.

²⁶⁰ See section 7.3 for the results of the 3D reconstruction.

columns were fragmentary (fig. 21), it was possible that the measurements could vary more than the estimated 0.1m. The 3D reconstruction revealed that Dinsmoor's measurements were correct, and the small and large columns did equal the same height where they were placed back in the baptistery (fig. 54), however since only one column from each set was used for the 3D reconstruction, the individual columns actually varied up to 0.1m according to Dinsmoor.²⁶¹ When the physical anastylosis was performed in August 2018, it revealed that although the columns varied in size, their sizes corresponded between the large and small sets to equal six sets of level tandem columns. The 3D reconstruction will be uploaded to *SketchFab* so that it may continue to be used as a scholarly tool and educational model for future research related to the baptistery.

Bibliography

- Aleksova, Blaga. "Medieval Graves in the North Basilica." In *The Studies in the Antiquities of Stobi 3*. Edited by Blaga Aleksova and James Wiseman, 215-227. Skopje: Goce Delčev, 1981.
- "The Episcopal Basilica: Apse, Central Nave and South Aisle." In *The Studies in the Antiquities of Stobi 3*. Edited by Blaga Aleksova and James Wiseman, 154-162. Skopje: Goce Delčev, 1981.
- Anderson, Richard C. "Photogrammetry: the pros and cons for archaeology." *World Archaeology* 14, no. 2, (1982):200-5. Accessed December 6, 2018. <http://www.jstor.org/stable/124275>.
- Ambrose. *On the Mysteries and the treatise, On the sacraments*. Translated by T. Thomson and J.H. Srawley. London: The Macmillan Company, 1919. Accessed December 6, 2018. <https://archive.org/details/stambroseonmyste00ambr>.
- Barnes, Timothy D. "Aspects of the Severan Empire, Part I: Severus as a New Augustus." *New England Classical journal* 34.5 (2008): 251-267. Accessed June 22, 2018. http://caneweb.org/archive/*misc/Barnes.pdf.
- . "Constantine after Seventeen Hundred Years: The Cambridge Companion, the York

²⁶¹ See section 6.0 for a discussion of prior reconstructions.

- Exhibition and a Recent Biography." *International Journal of the Classical Tradition* 14, no. ½ (2007): 185-220.
- , *The New Empire of Diocletian and Constantine*. Cambridge, Ma: Cambridge University Press, 1982.
- . 'Was There an "Edict of Milan"?' In *Constantine: Dynasty, Religion and Power in the Later Roman Empire vol. 16*, 93-96. Chichester-Malden, Ma: John Wiley and Sons, 2011.
- Baynes, Norman. *Constantine and the Great Christian Church*. Vol 2. London: Oxford University Press, 1972.
- Bendicho, Víctor Manuel López-Menchero, Mariano Flores Gutiérrez, Matthew L. Vincent, and Alfredo Grande León. "Digital Heritage and Virtual Archaeology: An Approach Through the Framework of International Recommendations." In *Mixed Reality and Gamification for Cultural Heritage*, 3-26. Cham: Springer, 2017.
- Blazevska, Silvana and Radenhanski, Jovan. "The Temple of Isis at Stobi." In *Romanizing Oriental Gods?: Religious transformations in the Balkan provinces in the Roman period*. ed. Aleksandra Nikoloska & Sander Muskens, *Proceedings of the International Symposium Skopje*, 217-257, Skopje: Macedonian Academy of Sciences and Arts, 2015.
- Blockley, Roger.C. "Malchus, Byzantine History, Fragments 18-20." In *The Fragmentary Classicising Historians of the Later Roman Empire: Eunapius, Olympiodorus, Priscus and Malchus, Vol. 2: Text, Translation and Historical Notes.*, Liverpool: Cairns, 1983.
- Boniface, Ramsey O.P. *Ambrose*. London: Routledge, 1997.
- Busine, Aude. *Religious Practices and Christianization of the Late Antique City (4th–7th cent.)*. Leiden: Brill, 2015.
- Brandt, Olaf. "The Archaeological Record: Problems in Interpretation." In *A Companion to Late Antiquity*, Edited by Philip Rousseau and Jutta Raithel, 156-169. West Sussex: Blackwell Publishing Ltd., 2009.
- , "The Lateran Baptistery and the Diffusion of Octagonal Baptisteries from Rome to Constantinople." *Acta Congressus Internationalis Archaeologiae Christianae* 14, (2006): 221-7.
- Cameron, Averil. "The Reign of Constantine, A.D. 306-337." In *The Cambridge Ancient History vol 12: Crisis of Empire, AD 193-337, 2nd edition*. Edited by Alan Bowman, Averil Cameron and Peter Garnsey, 90-109. Cambridge: Cambridge University Press, 2005. Accessed May 10, 2018. doi:10.1017/CHOL9780521301992.
- Christesen, Paul and Sarah C. Murray. "Macedonian Religion." In *Companion to Ancient Macedonia*, edited by Joseph Roisman and Ian Worthington, 428-445. Malden, Ma:

Blackwell Publishing Ltd, 2010.

- Cohon, Robert. "The typology, history, and authenticity of Roman marble craters." *Monumenta Artis Romanae* 18, (1993): 312-220. Accessed November 2, 2017. doi:10.1017/S104775940001165X.
- Curta, Florin. *The Making of the Slavs: History and Archaeology of the Lower Danube Region c.500-700*. New York: Cambridge University Press, 2001.
- Davis, E. Mott, et al. "Radiocarbon Dates from Stobi." In *Studies in the Antiquities of Stobi* 1, edited by James Wiseman and Djordje Mano-zisi, 24-34. Austin: University of Texas, 1973.
- de Angelis d'Ossat, Guglielmo. "Origine e fortuna dei battistri ambrosiani." *Arte Lombarda*, 14,1-20 (1969).
- Dinsmoor, William B. "The Baptistry: Its Roofing and Related Problems." In *Studies in the Antiquities of Stobi* 2. Edited by James Wiseman and Dorde Mano-Zisi, 15-28. Beograd: Naučino Delo, 1975.
- Downey, Glandville. "The Composition of Procopius, De aedificiis." In *Transactions and Proceedings of the American Philological Association*, 78. (1947):171-183. Accessed January 15, 2018. doi: 10.2307/283492.
- Downing, Caroline J. "Wall Paintings from the Baptistry at Stobi, Macedonia, and Early Depictions of Christ and the Evangelists." *Dumbarton Oaks Papers*, 52 (1998): 259-80. Accessed June 2, 2017. doi:10.2307/1291785.
- Ferguson, Everett. *Baptism in the Early Church: History, Theology, and Liturgy in the First Five Centuries*. Michigan: Eerdmans Publishing Co, 2009.
- Folk, Robert L. "The Geologic Framework of Stobi." In *Studies in the Antiquities of Stobi* 1. Edited by James Wiseman, 37-57. Austin: University of Texas, 1973.
- Formigé, Jules. "Remarques diverses sur les baptistères de Provence." In *les Mélanges en hommage à la mémoire de Fr. Martroye*, 167-190. Paris: C. Klincksieck, 1941.
- Gebhard, Elizabeth R. "Evidence for an Earthquake in the Theater at Stobi, c. AD 300." *Archaeoseismology, Occasional Papers of the British School at Athens*. Edited by S. Stiros and R. Jones, (1996): 55-61.
- . "The Theater at Stobi: A Summary." In *The Studies of the Antiquities of Stobi* 3. Edited by Blaga Aleksova and James Wiseman, 215-227. Skopje : Goce Delčev, 1981.
- Giovenale, Giovanni Battista. "Il battistero Lateranense: nelle recenti indagini della Pont."

- Commissione di Archeologia Sacra*. Vol. 1. Rome: Pontificio Istituto di Archeologia Cristiana, 1929.
- Hales, Shelley. *The Roman House and Social Identity*. Cambridge: Cambridge University Press, 2003.
- Hall, Stuart George. "The Organization of the Church." In *The Cambridge Ancient History*, edited by Averil Cameron, Bryan Ward-Perkins, and Michael Whitby, 14:731–44. The Cambridge Ancient History. Cambridge: Cambridge University Press, 2001. Accessed May 5, 2018. doi:10.1017/CHOL9780521325912.029.
- Hemans, Frederick P. "Late Antique Residences at Stobi, Yugoslavia." PhD diss., Boston University, 1986. <https://hdl.handle.net/2144/26885>.
- Hewitt, Mark. "Representational Forms and Modes of Conception: An Approach to the History of Architectural Drawing." *Journal of Architectural Education* 39, no. 2, (1985) 2-9.
- Hoddinott, Ralph F. *Early Byzantine Churches in Macedonia and Southern Serbia*. New York: St. Martin's Press, 1963.
- Hunt, David. "The Church as a Public Institution." In *The Cambridge Ancient History*. Edited by Averil Cameron and Peter Garnsey, 13:238–76. Cambridge: Cambridge University Press, 1997. Accessed May 10, 2018. doi:10.1017/CHOL9780521302005.009.
- James, Liz. "Types of Prototypes? Mosaics in the 5th Century." In *Mosaics by Century: Part II 188-215*. Cambridge: Cambridge University Press, 2017.
- Jashemski, Wilhelmina F. *The Gardens of Pompeii: Herculaneum and the Villas Destroyed by Vesuvius*. New Rochelle, NY: Caratzas Brothers Publishers, 1979.
- Jensen, Robin, M. *Baptismal Imagery in Early Christianity: Ritual, Visual, and Theological Dimension*. Michigan: Baker Academic, 2012.
- . *Living Water: Images, symbols, and settings of early Christian baptism*. Boston: Brill, 2011.
- Koco, D., B v Aleksova, K. Petrov, P. Miljkovic-Pepeck, and I. Jankovic", "Izvestaj za iskopuvanjata vo Stobivo tekot na 1955 godina" (Report on the excavations at Stobi in 1955), *Zbornik na Arheoloskiot Muzei* 3 (Skopje, 1961) 69-75.
- Kolarik, Ruth. "The Episcopal Basilica at Stobi." In *Studies in the Antiquities of Stobi* 3. Edited by Blaga Aleksova and James Wiseman, 61-80. Skopje: Goce Delčev, 1981.
- . "The Floor Mosaics of Eastern Illyricum," In *Εισηγησεις του Δεκατου Διεθνους Συνεδριου Χριστιανικης Αρχαιολογιας*, 173-203. Θεσσαλονικη, 28 Σεπτεμβριου - 4 Οκτωβριου, 1980.

- Kostof, Spiro K. *The Orthodox Baptistery of Ravenna*. New Haven: Yale University Press, 1965.
- Krautheimer, Richard. *Early Christian and Byzantine Architecture*. Baltimore: Penguin Books, 1965.
- Kulikowski, Michael. "The" Notitia Dignitatum" as a Historical Source." *Historia: Zeitschrift für Alte Geschichte* H. 3 (2000): 358-377. This has a brief discussion of the problem. Particularly pages 392-3.
- Lato, Matthew J., George Bevan, and Michael Fergusson. "Gigapixel imaging and photogrammetry: development of a new long range remote imaging technique." *Remote Sensing* 4, no. 10 (2012): 3006-3021.
- Liber pontificalis* "The Book of The Popes I To the Pontificate of Gregory I." Translated by Louise Ropes Loomis. New York: Columbia University Press, 1916.
- Little , L.K. *Plague and the End of Antiquity: The Pandemic of 541-750*. Cambridge: Cambridge University Press, 2007.
- Livy. *Ab urbe condita*. Edited by W. Weissenborn and H. J. Müller. Berlin: Weidmannsche Buchhandlung, 1883.
- Livy, *History of Rome*. vol. 6, translated by R.C Roberts, edited by Ernest Rhys, J.M Dent & Sons Ltd: London, 1905, <http://mcadams.posc.mu.edu/txt/ah/Livy/Livy39.html>.
- Loas, Nora Edith. "Provençal Baptisteries: Early Christian Origins and Medieval Afterlife." PhD diss., Princeton University, 2002.
- Lowry, Bates. "Notes on the Speculum Romanae Magnificentiae and Related Publications." *The Art Bulletin* 34, no. 1 (1952): 46-50. Accessed June 1, 2018. doi:10.2307/3047391.
- Longo, Ian. "Three-Dimensional Epigraphic Recording at Stobi (Former Yugoslav Republic of Macedonia): Creating a Virtual Lapidarium" M.A Major Research Paper, Queen's University, July 2017.
- Mano-Zissi, Djorde. "Berichte uber die Ausgrabungen in Stobi." *Bericht über den 6. Internationalen Kongress für Archaologie*. (Berlin, 1940), 591-593.
- . "Forward." In *Studies in the Antiquities of Stobi*, Vol. 1, edited by James Wiseman and Djordje Mano-Zisi, University of Texas, 1973.
- . "Stratigraphic Problems and the Urban Development of Stobi." In *Studies in the Antiquities of Stobi*, Vol. 1, edited by James Wiseman and Djordje Mano-zisi , 185-224. University of Texas, 1973.

Merker, Irwin L. "The Ancient Kingdom of Paionia (With two Plates)." In *Balkan Studies*, 6, no. 1, (1965): 35-54.

Mitchell, John. *The Butrint Baptistery and its Mosaics*. Rome: Societa Tipographica Romana, 2008.

Mikulčić, Ivan. "Some New Factors in the History of Stobi." In *Studies in the Antiquities of Stobi* 3. Edited by Blaga Aleksova and James Wiseman, 215-227. Skopje: Goce Delčev, 1981.

National Institution Stobi. "Excavations & Conservation." Accessed December 2, 2017.
<http://www.stobi.mk/Templates/Pages/Excavations.aspx?page=3315>.

---, "About Us" Accessed December 2, 2017.
<http://www.stobi.mk/Templates/Pages/StandardPage.aspx?page=266> .

---, "Virtual Tour" Accessed December 2, 2017.
<http://www.immersive360.ca/Stobi/360.html>.

Nielson, Inge. *Thermae et Balnea*. Translated by Peter Crab. Denmark: Aarhus University Press, 1993.

Petrova, Svetla. "The Baptistery of the Episcopal Basilica in Parthicopolis." *Niš and Byzantium: Fifteen International Symposium* 15. Edited by Miša Rakocija. (2017): 133-152.

Pliny the Elder. *The Natural History*. Translated by John Bostock and Henry T. Riley. London: H.G. Bohn, 1955.

Procopius. *Procopius* 1. Edited and translated by Henry Bronson Dewing. London: William Heinemann, 1914. Accessed April 5, 2018.
<https://archive.org/details/procopiuswitheng01procuoft>.

Remondino, Fabio. "Heritage Recording and 3D Modeling with Photogrammetry and 3D Scanning." *Remote Sensing* 3, no. 6 (2011):1104-1138. Accessed August 13, 2018.
doi:10.3390/rs3061104.

Remondino, Fabio and Sabry El-Hakim. "Image-based 3D Modelling: A Review." *The Photogrammetric Record* 21, no. 115 (2006): 269-291. Accessed August 13, 2018.
doi:10.1111/j.1477-9730.2006.00383.x

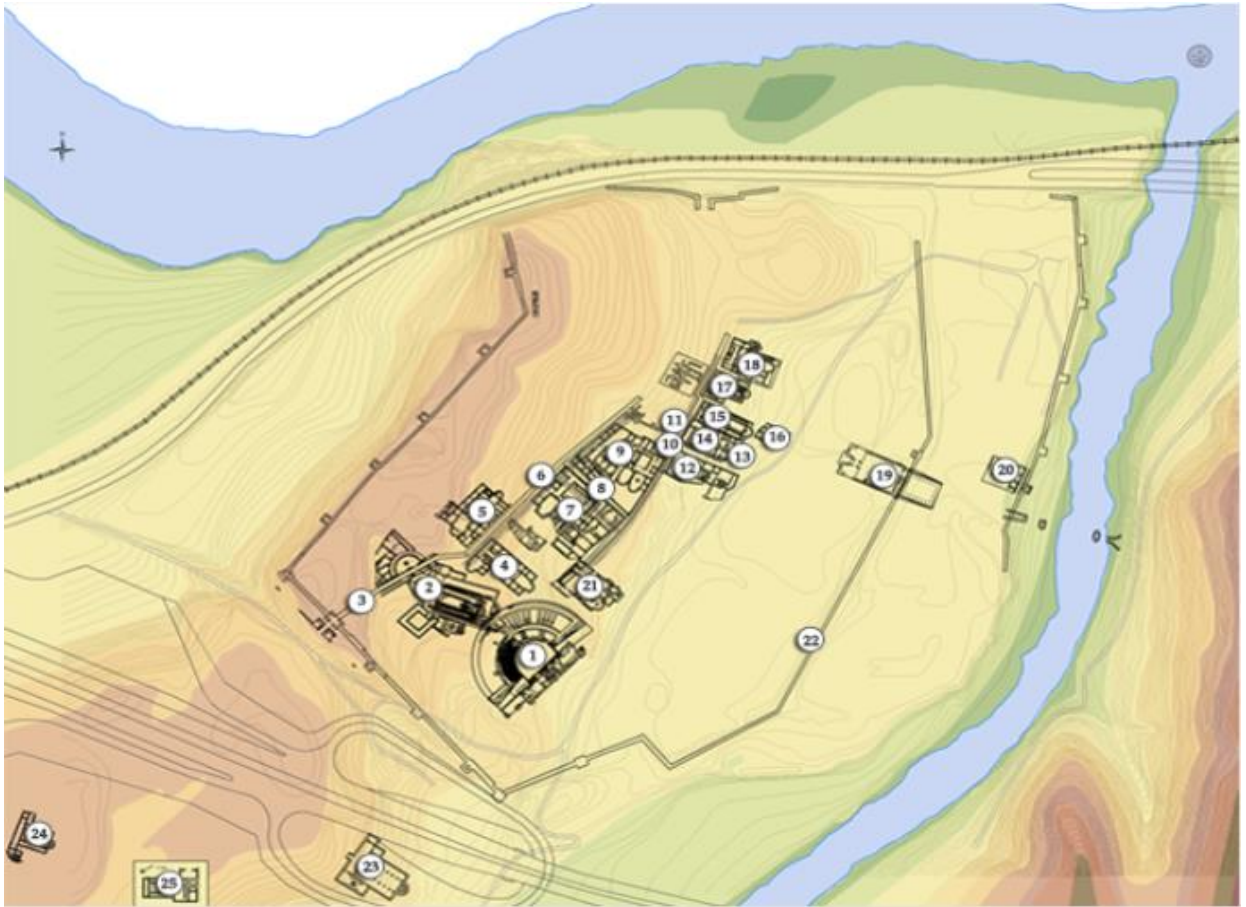
Riley, Paul. "Towards a Virtual Archaeology." In *Computer Applications in Archaeology*, 133-139. Oxford: British Archaeological Reports, 1990.

Sciarretta, Valeria. *Il battistero di Albenga*. Ravenna: A. Longo, 1966.

- Snively, Carolyn S. "Salvage Excavations at Stobi." In *Archaeological News* 18, (1993): 24-7.
- . "The Early Christian Basilicas of Stobi: A Study of Form, Function and Location." PhD diss., University of Texas at Austin, 1979.
- Kolarik, Ruth. "The Floor Mosaics of Stobi and Their Balkan Context." PhD diss., Harvard University, 1981.
- Stalley, Roger Andrew. *Early Medieval Architecture*. Oxford History of Art, 1999.
- Strabo. *The Geography of Strabo: Literally Translated, with notes in three volume*. Translated by H. C. Hamilton and W. Falconer. London: George Bell & Sons, 1903.
- Styger, Paul. "Nymphäen, Mausoleen, Baptisterien." *Architectura* 1, (1933):50-54.
- Temple, Nicholas. "Conversion and Political Expedience : Imperial Themes in the Early Christian Baptistry." In *Anales del Instituto de Investigaciones Estéticas*, 24, no. 80, 5-45. Universidad Nacional Autónoma de México, Instituto de Investigaciones Estéticas, 2002.
- Underwood, Paul A. "The Fountain of Life in Manuscripts of the Gospels." *Dumbarton Oaks Papers* 5 (1950): 43-138. Accessed February 6, 2018. <http://www.jstor.org/stable/1291075>.
- Wiseman, James. *Stobi: A Guide to the Excavations*. Beograd: [published not identified], 1973.
- . "Archaeology and History at Stobi, Macedonia." In *Rome and the Provinces: Studies in the Transformation of Art and Architecture in the Mediterranean World*. Edited by Charles B. McClendon, 37-50. New Haven, CT: New haven Society of the Archaeological Institute of America, 1986.
- . "Environmental Deterioration at Stobi: Climate Change or Human Agency?" In *Opening Addresses, Contributions and Bibliography of the New Members of the Macedonian Academy of Sciences and Arts*, 225-261. Skopje, Macedonia, 2006.
- . "Stobi." In *Enciclopedia dell'Arte Antica, Classica e orientale. Secondo Supplemento 1971-1994. V: ROMANA- ZUGLIO* 425-428. Rome: Marchesi Grafiche Editoriali, 1997.
- , "Stobi: A City of Ancient Macedonia," *Journal of Field Archaeology* 3, no. 3 (1976): 269-302. Accessed April 28, 2017. doi: 10.2307/529493.
- . "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research,

- 1987-78." *Journal of Field Archaeology* 5, no. 4 (1978): 391-429.
 Accessed April 28, 2017. doi: 10.2307/529493,
- . "The Early Churches and The Christian Community in Stobi, Macedonia."
Acta Congressus Internationalis XIV Archaeologiae Christianae, edited by R. Harreither,
 Ph. Pergola and R. Pülz, (2006): 795-803.
- . "The City in Macedonia Secunda." In *Villes et Peuplement dans l'Illyricum
 protobyzantin*. 289-314. École française de Rome, 1984.
- Undet Point Cloud Software. "Undet for SketchUp V2." Accessed March 18, 2018.
<http://www.undet.com/software/for-sketchup-v1/>.
- Wiseman, James and Djordje Mano-Zissi. "Excavations at Stobi, 1970." *American Journal of
 Archaeology*, 75, no. 4 (Oct., 1971): 395-401. Accessed April 28, 2017. doi:
 10.2307/502971.
- . "Excavations at Stobi, 1971." *American Journal of Archaeology*, 76, no. 4 (Oct., 1972):407-
 424. <http://www.jstor.org/stable/502874>.
- . "Excavations at Stobi, 1972," *American Journal of Archaeology*, 77, no. 4 (Oct., 1973) 391-
 403. <http://www.jstor.org/stable/503308>.
- . "Excavations at Stobi, 1973-1974." *Journal of Field
 Archaeology* 1, no. 1/2 (1974): 117-48. doi:10.2307/529709.
- . "Stobi: A City of Ancient Macedonia." *Journal of Field Archaeology* 3, no. 3 (1976):269-
 302. <http://www.jstor.org/stable529437>.

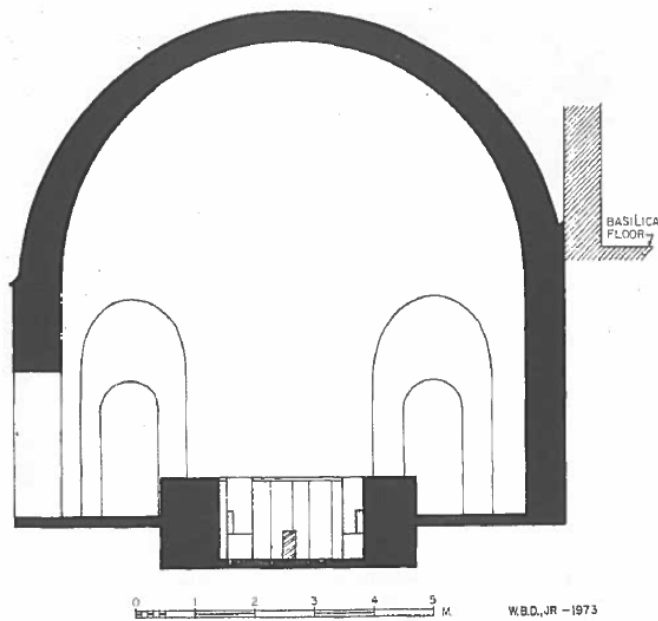
Figures



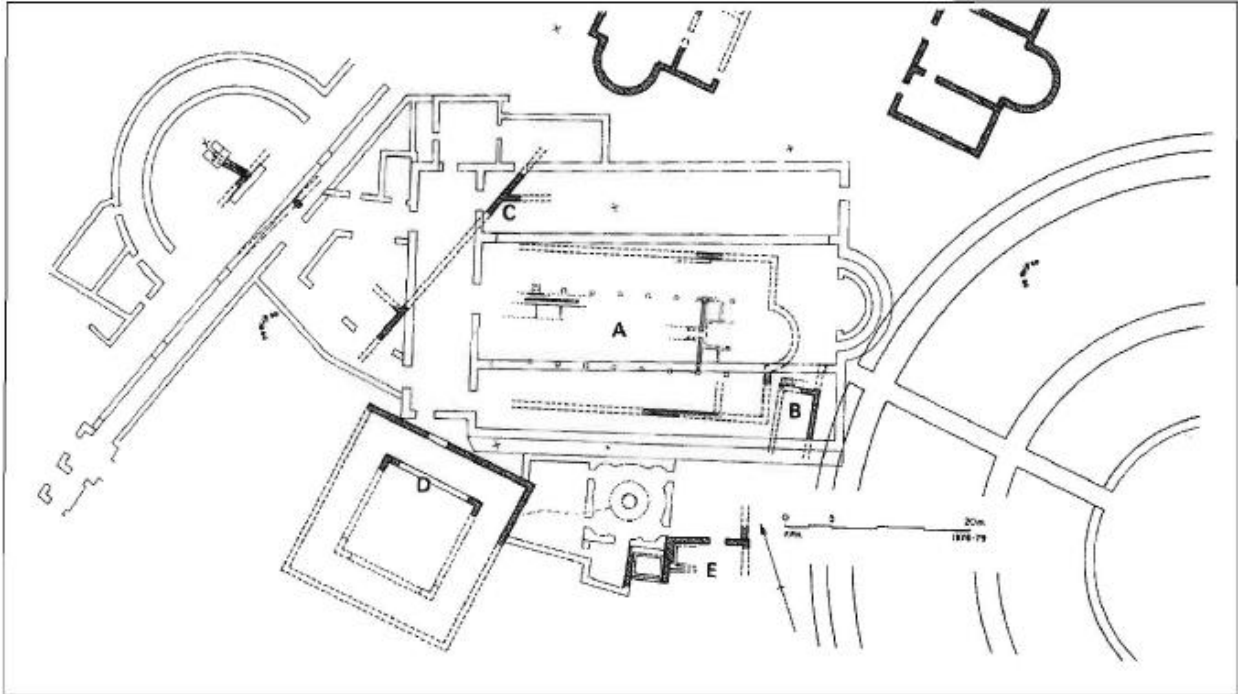
[Figure 1] Map of excavated buildings at Stobi: 1. The Theater; 2. The Episcopal Basilica; 3. Via Sacra; 4. The Episcopal Residence; 5. Domus Fulonica; 6. Via Principalis Superior; 7. The Theodosian Palace; 8. Via Theodosia; 9. The House of Periseria; 10. Public Fountain; 11. Via Principalis Inferior; 12. The Large Bath; 13. Via Axia; 14. The House of Polycharmos; 15. The Synagogue Basilica; 16. The Small Bath; 17. The Civil Basilica; 18. The North Basilica; 19. The Building with Arches; 20. Casa Romana; 21. The Casino; 22. The Fortifications of Stobi; 23. The Extra Muros Basilica; 24. The Cemetery Basilica; 25. The Palikura Basilica. Map from "At The Site," National Institution Stobi, Accessed May 20 ,2018,<http://www.stobi.mk/Templates/Pages/TheSite.aspx?page=158>.



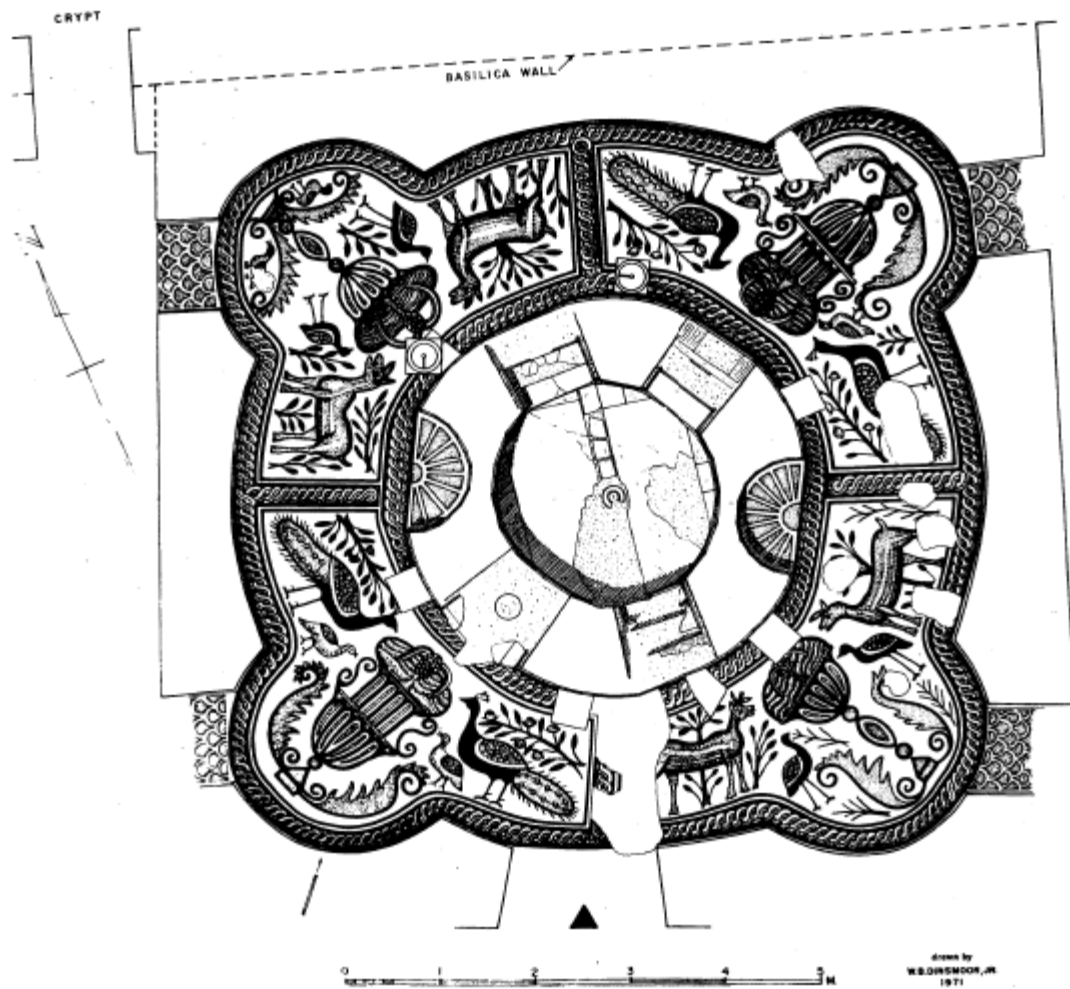
[Figure 2] Macedonia in Late Antiquity. Map from *Companion to Ancient Macedonia*, Map 9 XXIV



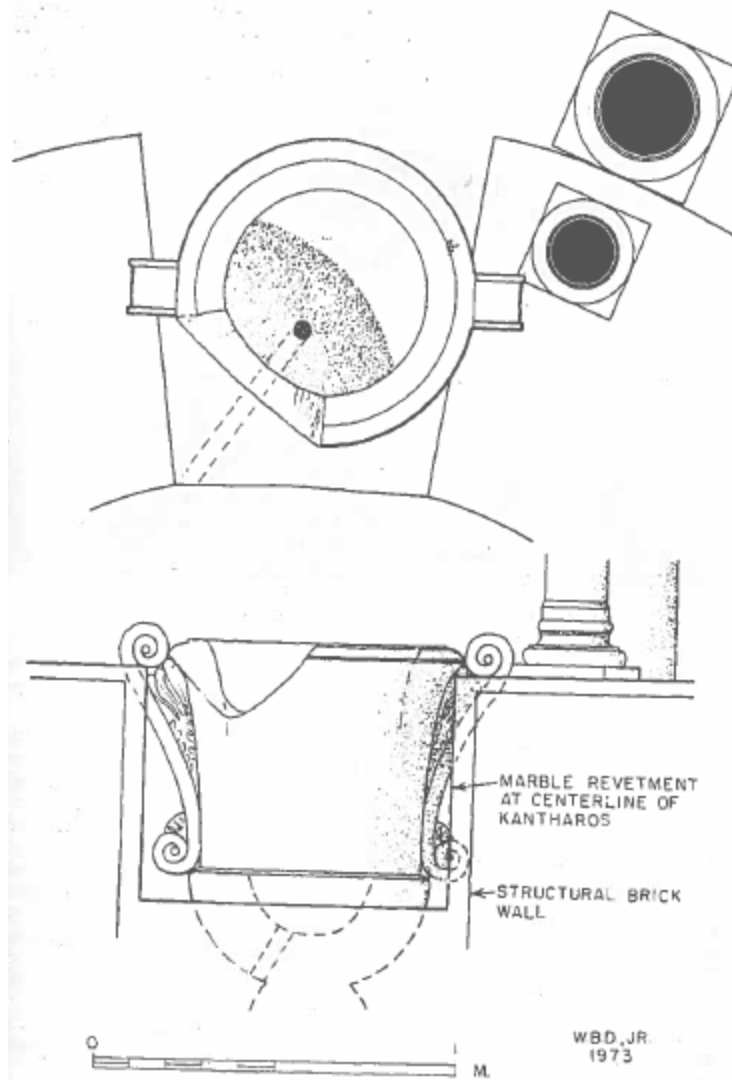
[Figure 3] Reconstruction of the phase 1 roof over the baptistery, masonry dome. Cross-section by Dinsmoor, "The Baptistery: Its Roofing and Related Problems," p. 19, fig.5.



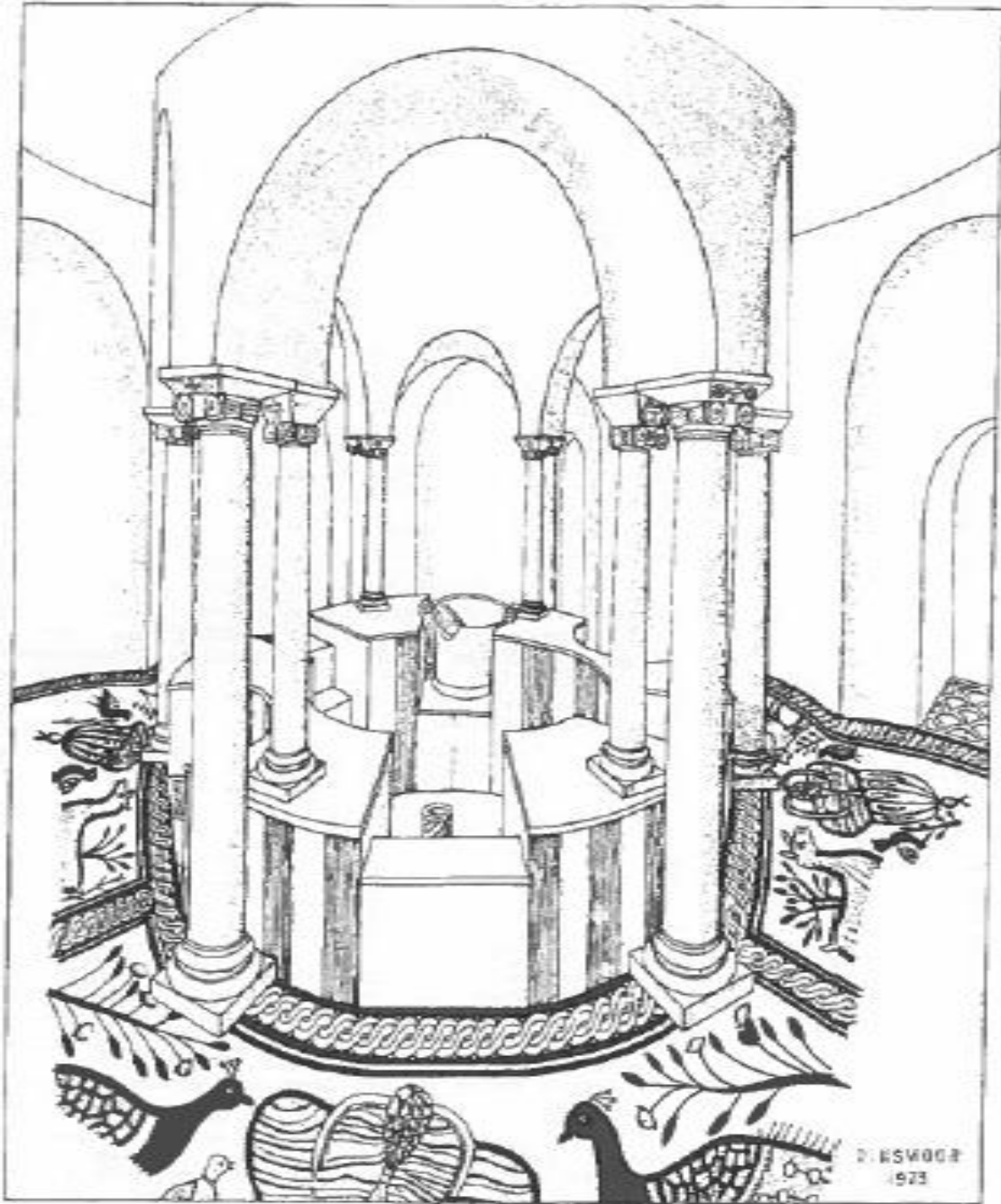
[Figure 4] Floor Plan of the Phases of the Episcopal Basilica and surrounding buildings. Building A: early church Building B: 4th century building. Building C: 4th century structure. Building D: 4th century building with courtyard (Plan by F.P. Hemans, 1978-1979). Floorplan in “The Early Churches and the Christian Community in Stobi, Macedonia,” Wiseman, 283.



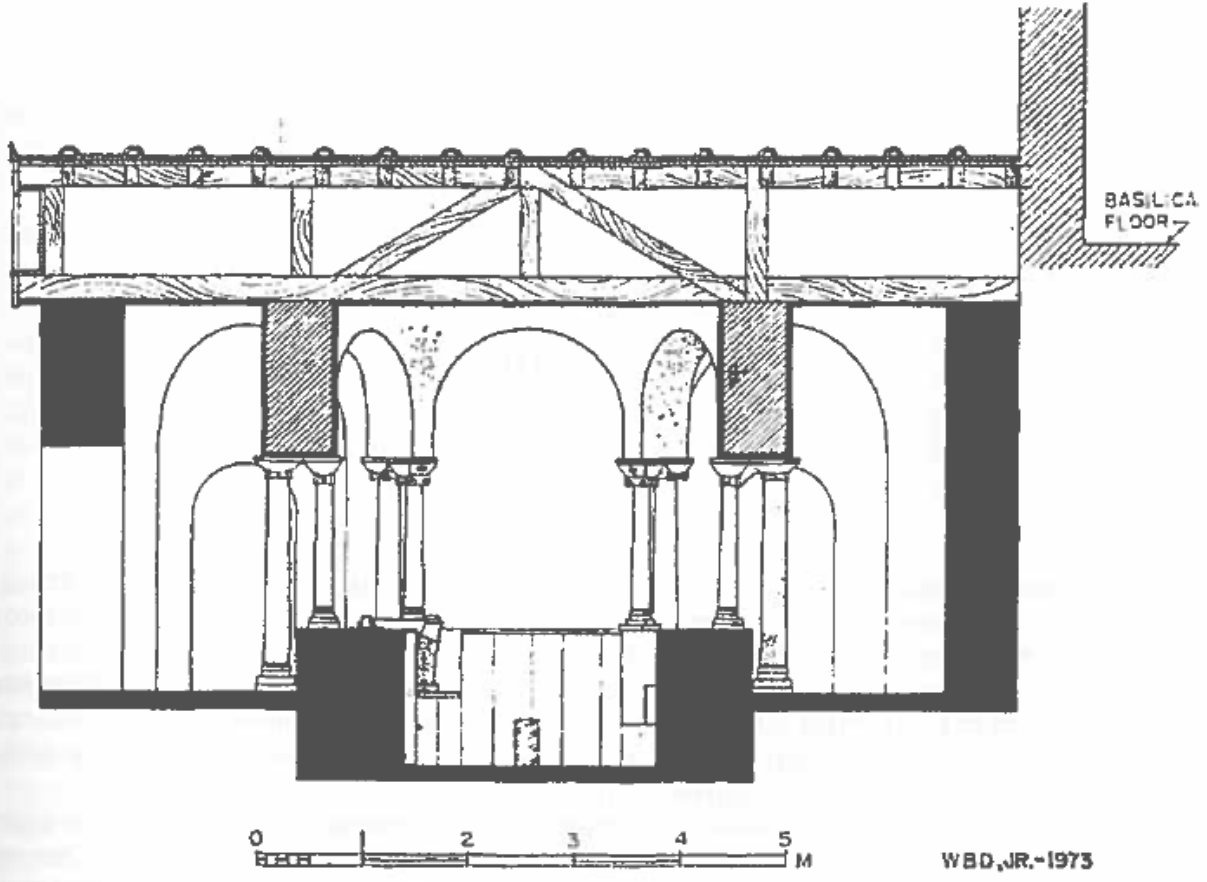
[Figure 5] Plan of the Episcopal Baptistery. Drawn by W. B. Dinsmoor Jr. Published in Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," Pl. 90, fig. 47.



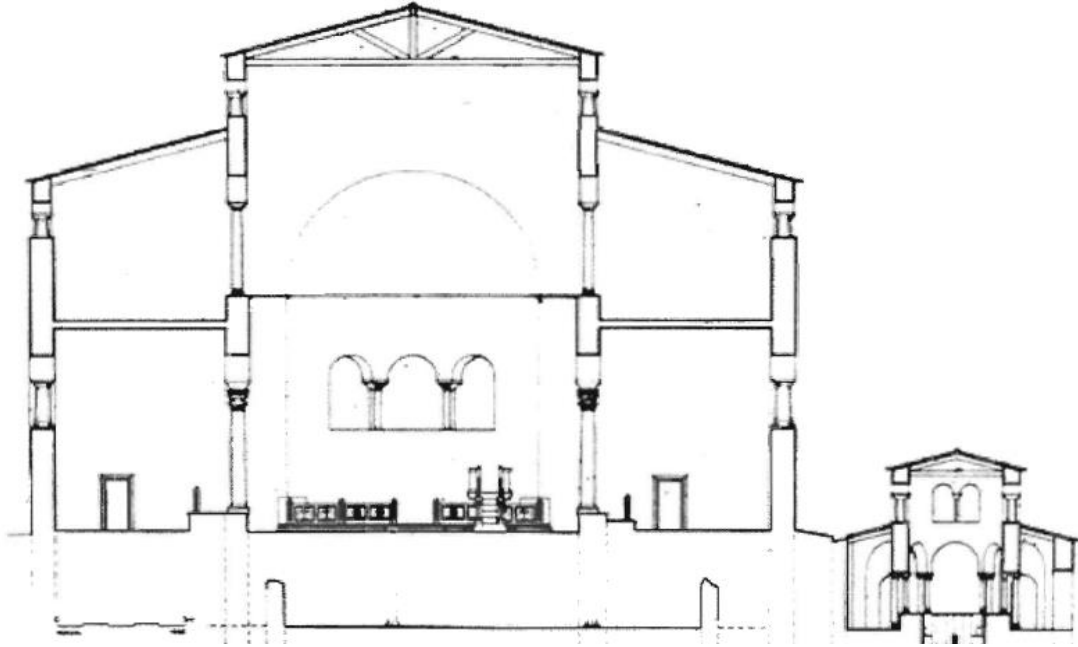
[Figure 6] Diagram of the orientation of the columns and *kantharos* in the baptistery. Reconstruction made by Dinsmoor, "The Baptistery: Its Roofing and Related Problems," p. 22, fig.6.



[Figure 7] Reconstruction of the interior in phase 3 (late 5th-6th century). Reconstruction made by Dinsmoor, "The Baptistery: Its Roofing and Related Problems," p. 24, fig.8.



[Figure 8] Cross section of the Phase 3 reconstruction (late 5th-6th century) Reconstruction made by Dinsmoor, "The Baptistery: Its Roofing and Related Problems," p. 25, fig.9.



[Figure 9] Reconstruction of the Episcopal Basilica and baptistery in its final phase made by James Wiseman. Reconstruction from James Wiseman, “Environmental Deterioration at Stobi: Climate Change or Human Agency?,” In *Opening Addresses, Contributions and Bibliography of the New Members of the Macedonian Academy of Sciences and Arts*, (Skopje, Macedonia, 2006), 556, fig. 15.



[Figure 10] The Baptistery from the SW, in James Wiseman, “The City in Macedonia Secunda,” in *Villes et Peuplement dans l’Illyricum protobyzantin*. (École française de Rome, 1984), 312.



[Figure 11] 1971 Excavation of the Baptistery, destruction debris after cleaning. Photograph published in Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," Pl. 89, fig. 40.



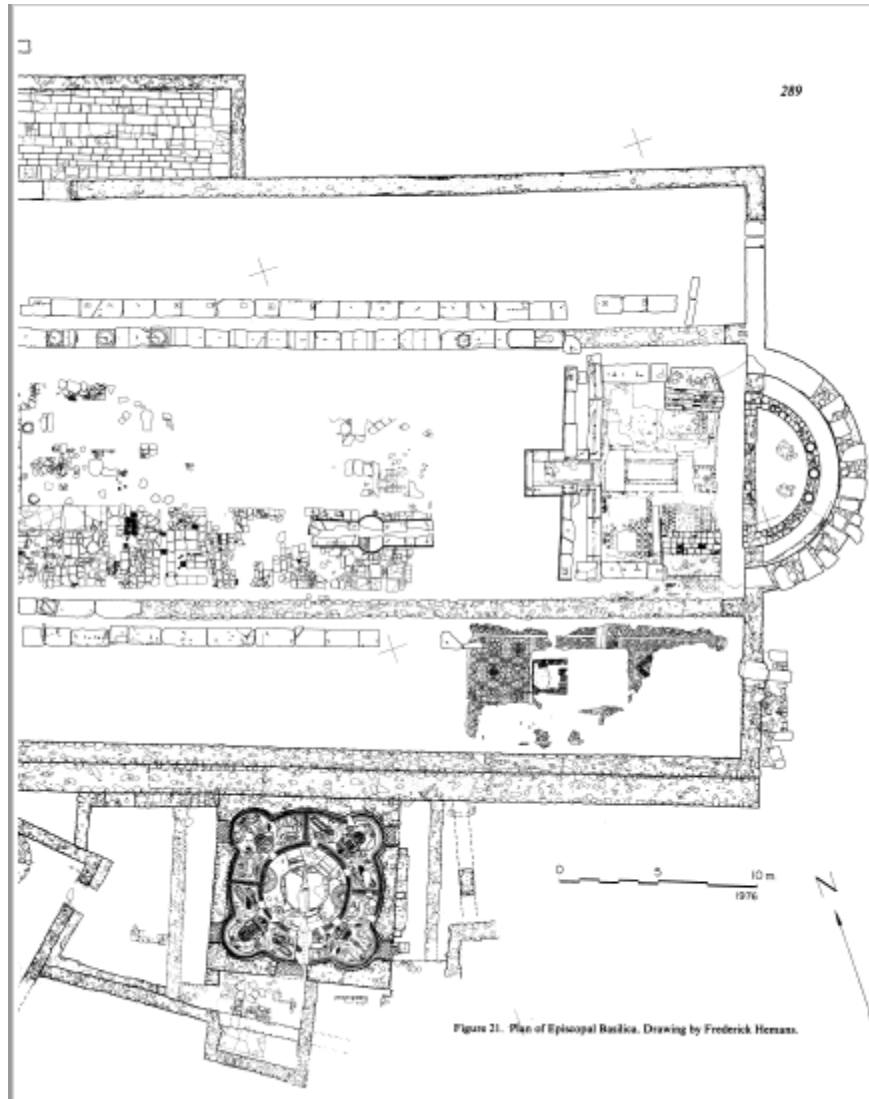
[Figure 12] Episcopal Baptistery fully excavated. Photograph published in Wiseman and Mano-Zissi, "Excavations at Stobi, 1971," Pl. 90, fig. 41.



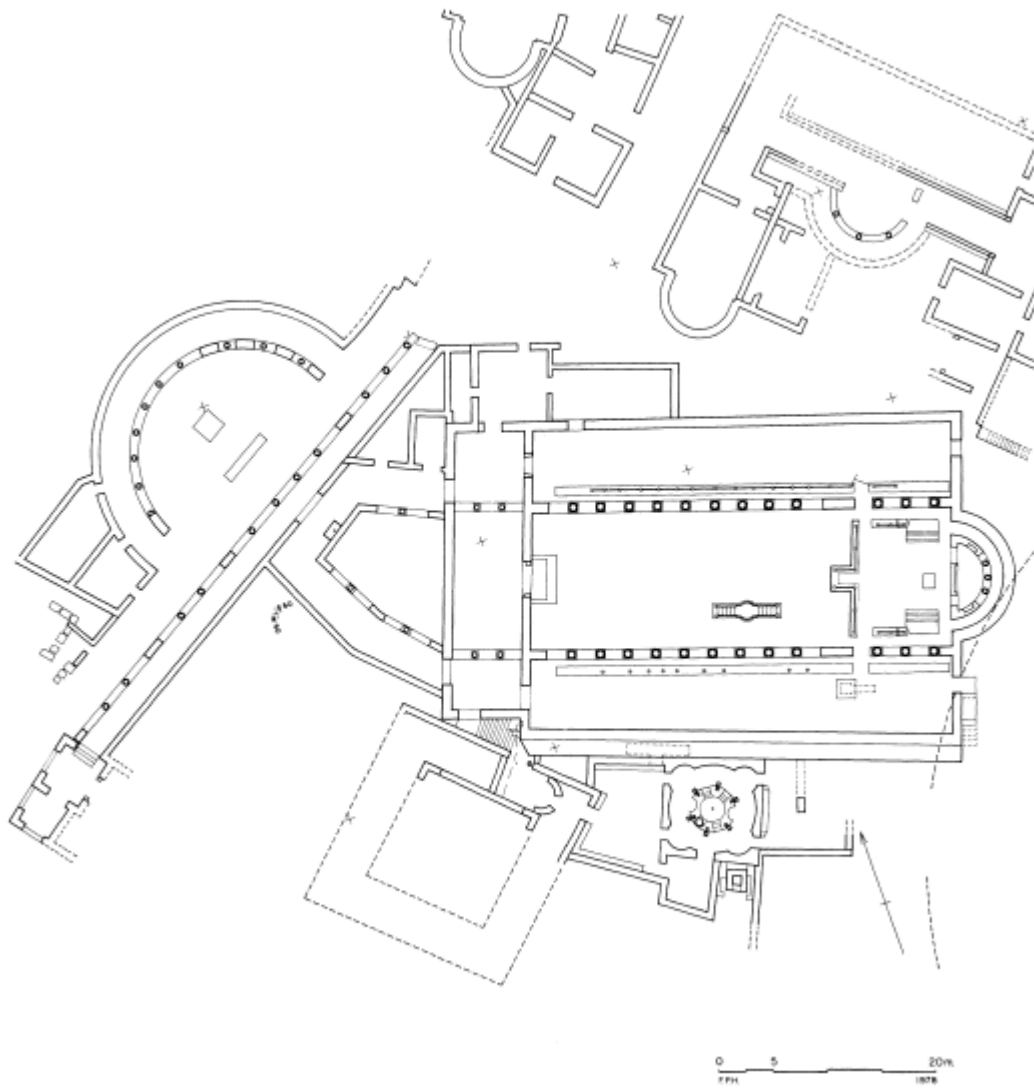
[Figure 13] The Baptistery, view from the southeast. Photograph taken after cleaning and conservation in 1972. Wiseman, "Archaeology and History at Stobi, Macedonia," 82 fig. 54.



[Figure 14] 6th century destruction of the mosaic. Robbers trench removal of lead pipe used for the plumbing of the Baptistery's *piscina*. Published in Wiseman, "Environmental Deterioration at Stobi: Climate Change or Human Agency?," 251, fig.10.



[Figure 15] Plan of the baptistery at Stobi, 1st phase. Plan from Wiseman, “Archaeology and History of Stobi,” 32, fig. 9.



[Figure 16] Restored plan of the Episcopal Complex, ca. 525 CE. Drawing by F. P. Hemans. Published in Wiseman, "Stobi in Yugoslavian Macedonia: Excavations and Research, 1977-1978," 396, fig. 4.



[Figure 17] “collecting basin and conduit” in the northwest corner of the anteroom of the episcopal baptistery. Photograph published in Wiseman and Mano-Zissi, “Excavations at Stobi, 1972,” Pl. 68. Fig. 13.



[Figure 18] Baptistery Exterior, View From the West. Photograph taken by George Bevan, 2015.



[Figure 19] Baptistery Interior, view of SW niche. Photograph taken by George Bevan, 2015.



[Figure 20] Baptistery Interior, Mosaic Floor and Piscina From the North. Photograph taken by George Bevan, 2015.



[Figure 21] Large and Small Sets of Ionic Capitals, Shafts and Bases, Episcopal Baptistry, Stobi. Photographs taken by staff at NI Stobi.



[Figure 22] The Extra Muros Basilica. Photograph from National Institution Stobi, “The Extra Muros Basilica.”



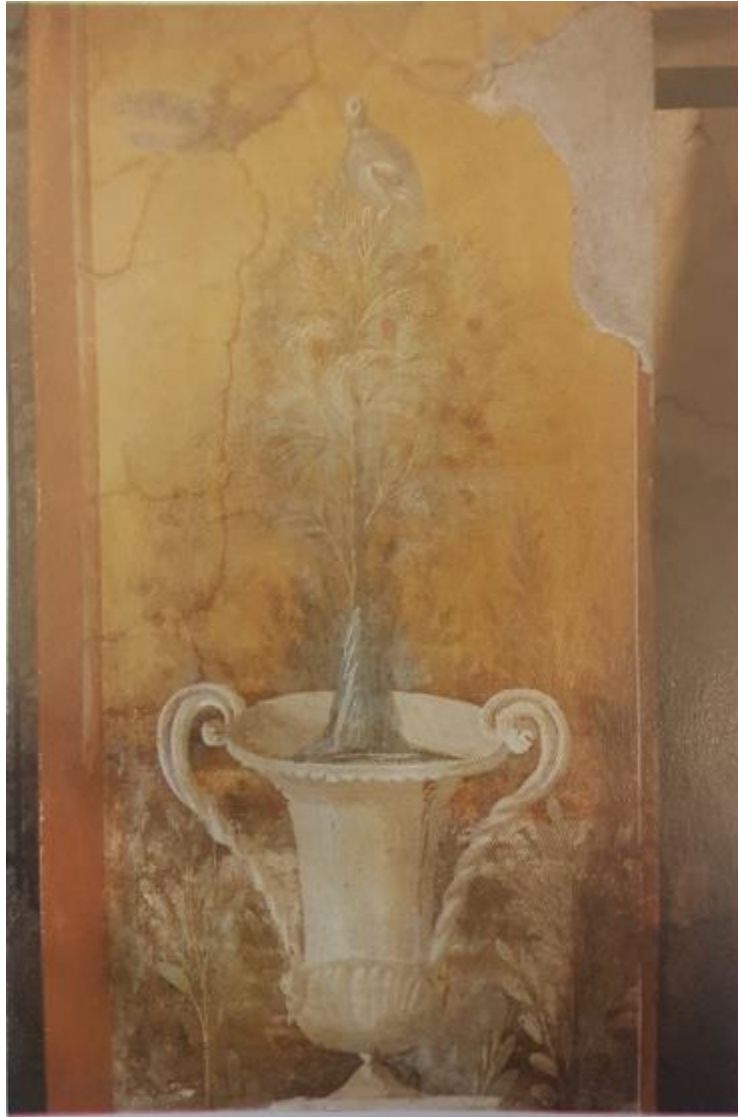
[Figure 23] Cruciform Baptistery of the North Basilica. Photograph from National Institution Stobi, "The North Basilica."



[Figure 24] The fountain *Krater* from Oplontis, marble. Photograph published in W.F. Jashemski, *Discovering the Gardens of Pompeii: Memoirs of a Garden Archaeologist*, (Maryland: The University of Maryland, 2014), 263.



[Figure 25] The Townley Vase, Villa at Lavinus, marble, Second century CE, British Museum, Museum number 1805, 0703.218.



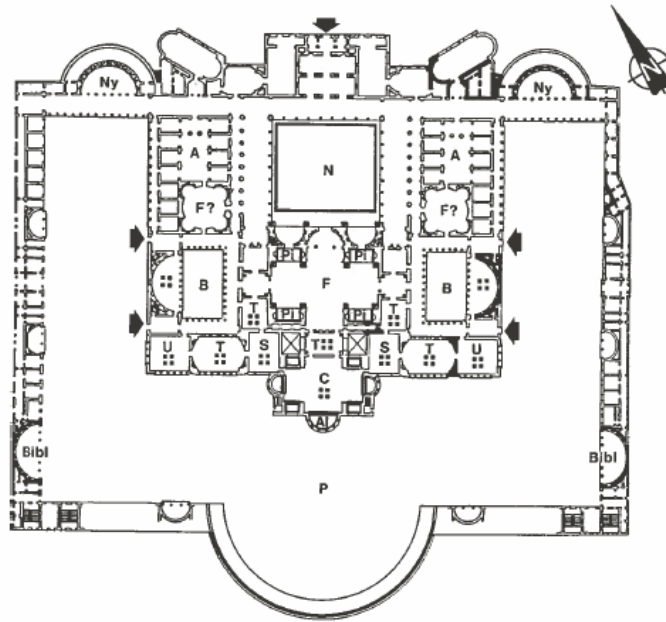
[Figure 26] House of the Marine Venus, First Century CE, Pompeii. Photograph published in Jashemski, "The Gardens of Pompeii," 64, fig. 104.



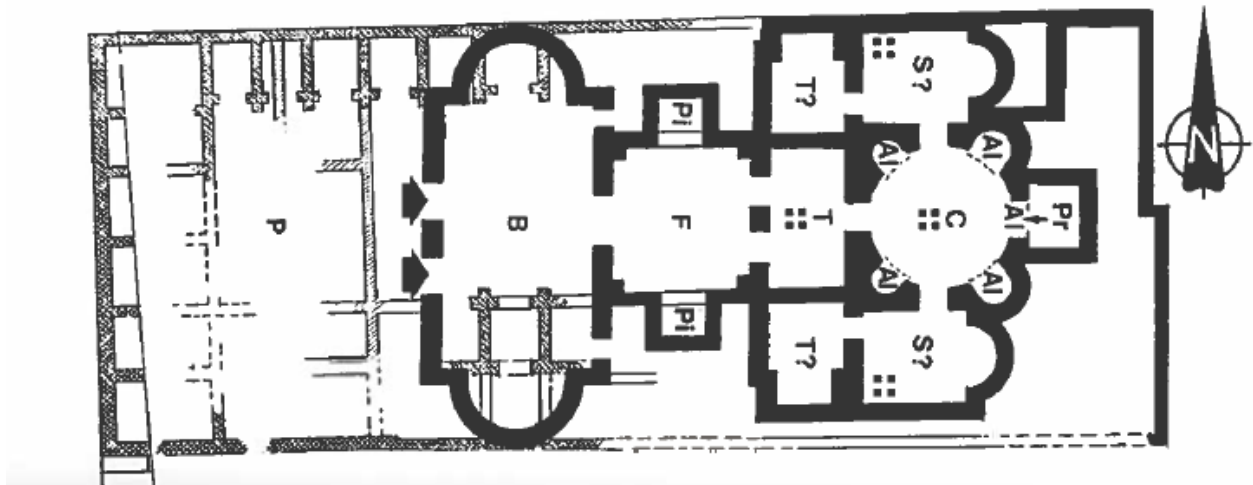
[Figure 27] Krater Fountain Fresco from the North Wall of the Villa at Torre Annuziata. Photograph published in Jashemski, "The Gardens of Pompeii," 307, fig. 470.



[Figure 28] Early *piscina*. Photograph published in Wiseman, "Stobi in Yugoslavian Macedonia: Archeological Excavations and Research, 1977-78," 411, fig. 19.



[Figure 29] Rome. The Baths of Trajan. Rotunda (Room F?). Plan from Neilson, *Thermae et Balnea*, 85, fig. 53.



[Figure 30] Serdica (Sofia). City Baths Caldarium (Room C). Plan from Neilson, *Thermae et Balnea*, 156, fig. 176.



[Figure 33] Interior of the Albenga Baptistery. Photograph published in Liz James, “Types of Prototypes? Mosaics in the 5th Century,” in *Mosaics By Century: Part II* (Cambridge : Cambridge University Press, 2017), 117, fig. 3.



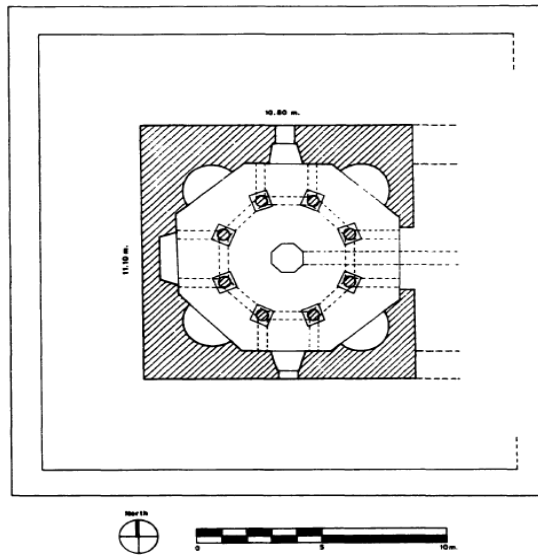
[Figure 34] Interior roof of the Albenga Baptistery. Photograph published in Liz James, “Types of Prototypes? Mosaics in the 5th Century,” in *Mosaics By Century: Part II* (Cambridge : Cambridge University Press, 2017), fig. 9.



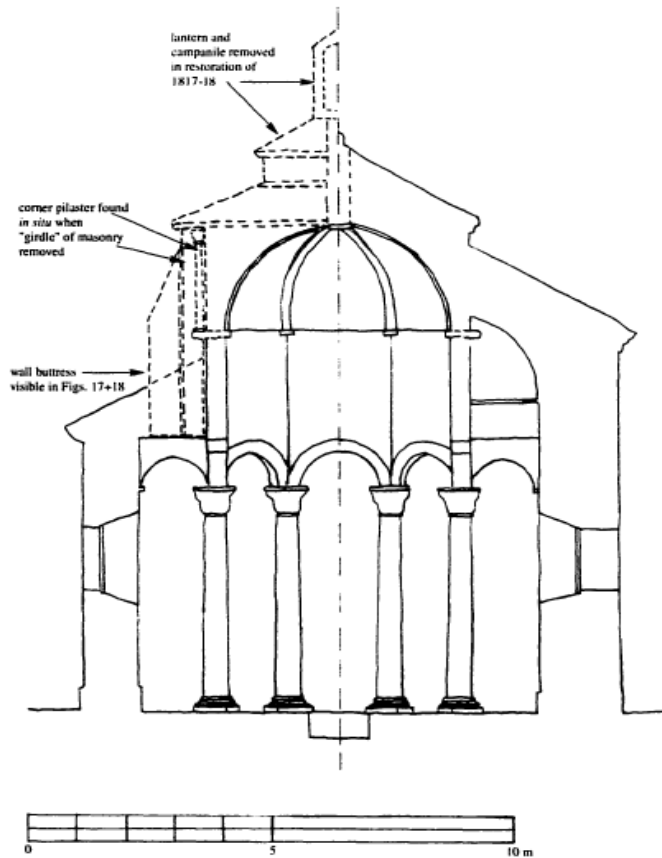
[Figure 35] Interior of the Baptistry at Novara. Photograph published in Liz James, “Types of Prototypes? Mosaics in the 5th Century,” in *Mosaics By Century: Part II* (Cambridge : Cambridge University Press, 2017), fig. 10.



[Figure 36] The Riez Baptistry, façade. Published in Loas, “Provençal Baptisteries,” 51, fig 5b.



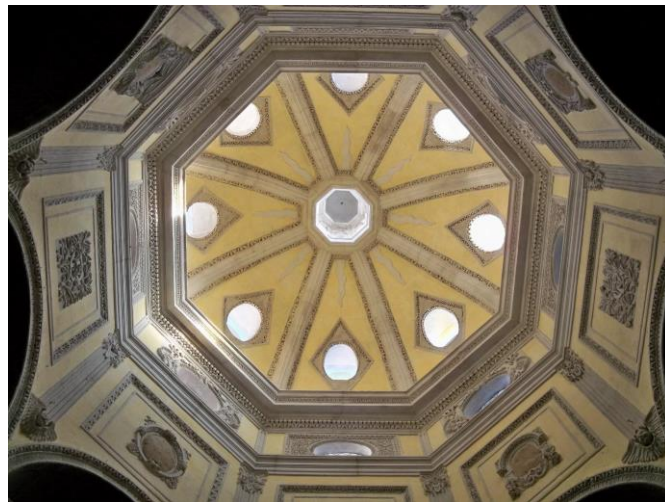
[Figure 37] Floor Plan, The Riez Baptistry. Plan from Loas, "Provençal Baptisteries," 47, fig 2.



[Figure 38] Riez Baptistery. section; left side: components removed in restoration of 1817-18. Right side: condition after restoration. Published in from Loas, "Provençal Baptisteries," 67, fig 19.



[Figure 39] The Baptistery of Saint-Sauveur in Aix-En-Provence, late 5th century. Buttressing added in the 11th century, dome partially remodeled in 13th century. Loas, “Provincial Baptisteries,” 244, fig. 52.



[Figure 40] The Baptistery of Saint-Sauveur in Aix-En-Provence, late 5th century. Buttressing added in the 11th century, dome partially remodeled in 13th century. Loas, “Provincial Baptisteries,” 244, fig. 52.



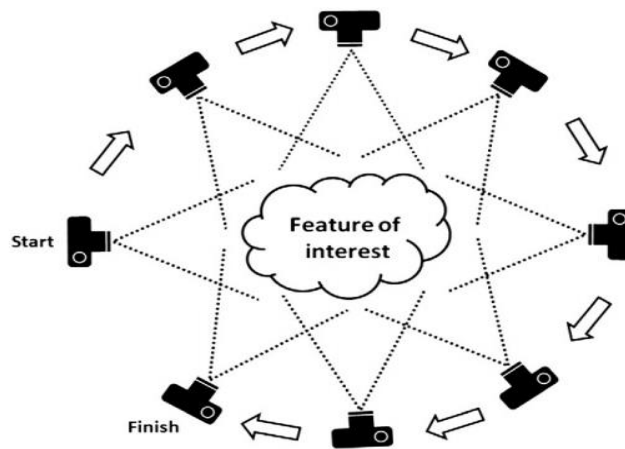
[Figure 41] The Frejus Baptistery (mid-fifth century). Loas, "Provincial Baptisteries," 246, fig. 54.



[Figure 42] The Frejus Baptistery (mid-fifth century), interior dome. Loas, "Provincial Baptisteries," 246, fig. 55.



[Figure 43] The Frejus Baptistery (mid-fifth century), interior. Loas, "Provincial Baptisteries," 247, fig. 56.



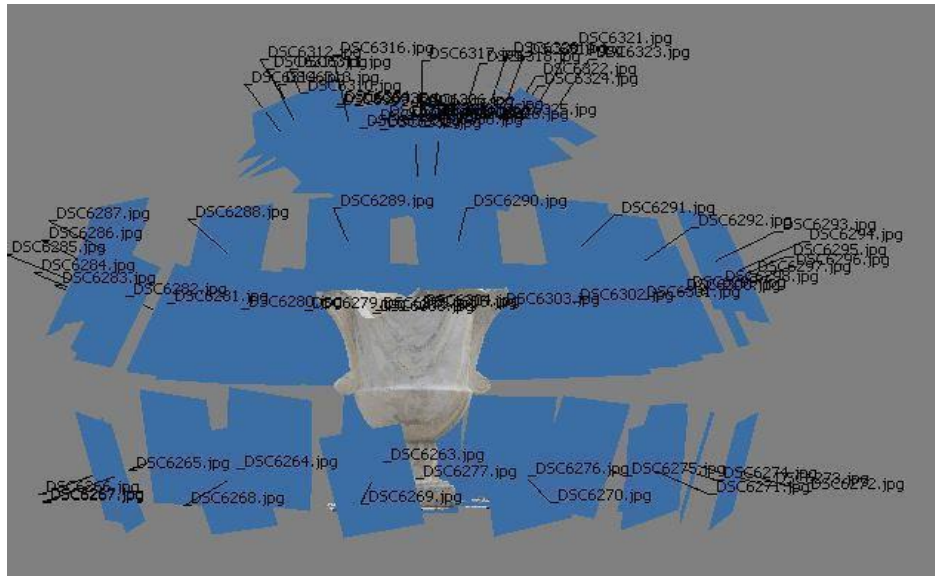
[Figure 44] Diagram of Structure-from-Motion (SfM) photography. Figure from Westoby et al., "'Structure-from-Motion' Photogrammetry," 2.



[Figure 45] Photogrammetric Point Cloud of the Episcopal Baptistery, 2015.



[Figure 46] Marble *Kantharos*, Episcopal baptistery, Stobi. Photograph taken by Dr. George Bevan.



[Figure 47] Orientation of Camera Stations Around Kantharos in Agisoft *Photoscan*

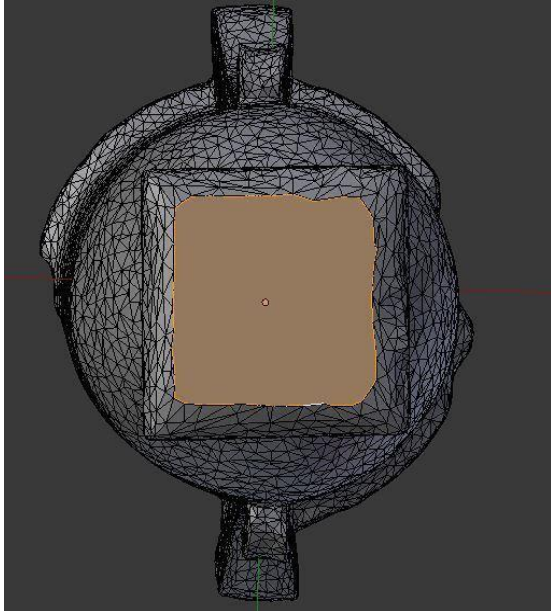


[Figure 48] Photogrammetric Model of the *Kantharos*

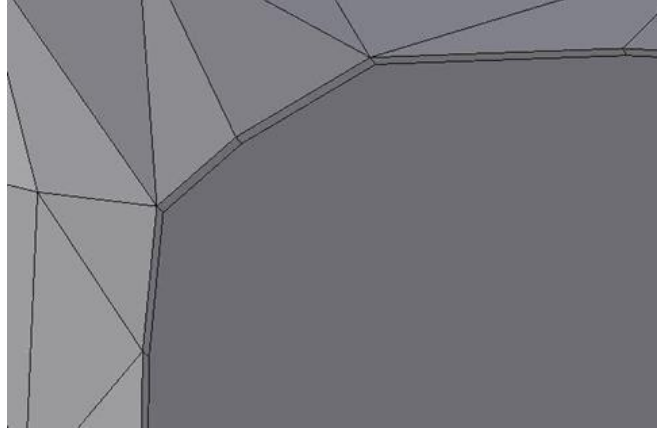


[Figure 49] Photogrammetric Model of the Kantharos,

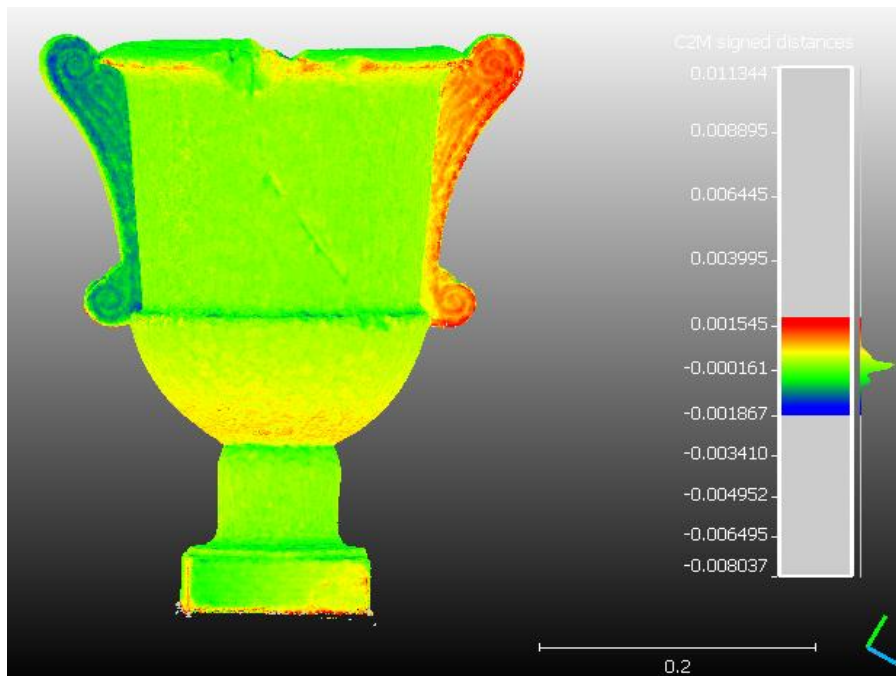
Detail of hole



[Figure 50] Bottom of *Kantharos*, Detail of hole filled in *Blender*



[Figure 51] Bottom of *Kantharos*, Detail of Edge Loop in *Blender*



[Figure 52] Results of Mesh2Mesh Distance Measurement Tool in *CloudCompare*



[Figure 53] Virtual Anastylis, Orientation of the Kantharos



[Figure 54] Full Virtual Anastylis of the Baptistry from the West.



[Figure 55] Virtual Anastylis, Exterior and Interior.



[Figure 56] Placement of the drainage hole in the *kantharos*. Photograph taken by Dr. George Bevan.