

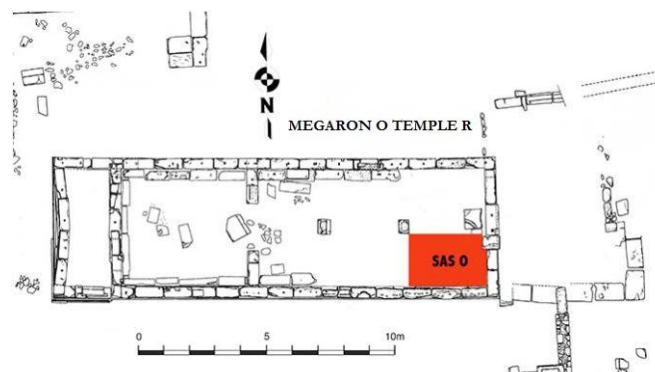
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 FP7-PEOPLE-2013-IOF - 622974  
 Marie Curie Action  
 International Outgoing Fellowships for Career Development

Marie Curie Researcher: Angela Bellia

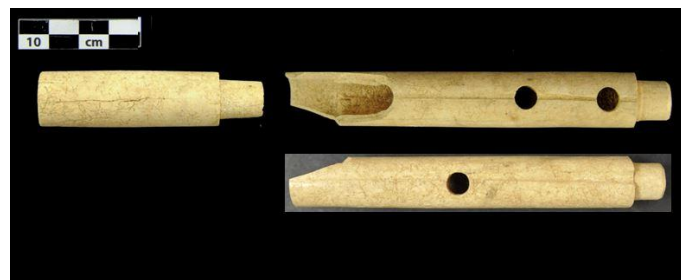
Scientists in charge:  
**Prof. Clemente Marconi**  
 (Institute of Fine Arts – New York University)  
**Prof. Donatella Restani**  
 (Department of Cultural Heritage – University of Bologna)



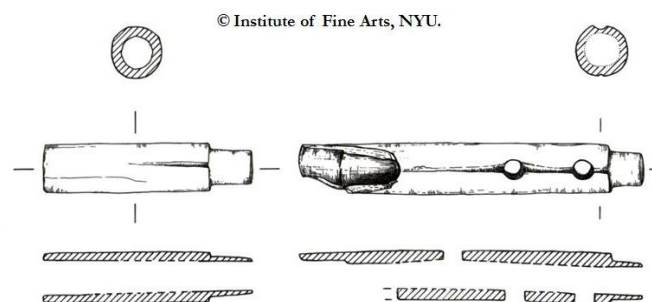
## TOWARDS THE VIRTUAL RECONSTRUCTION OF THE AULOS FROM SELINUNTE



**Fig. 1.** Selinunte, State plan of Temple R with indication of Trench O. © Institute of Fine Arts, NYU.



**Fig. 2.** Selinunte, Temple R: Aulos fragments. Photograph by Raffaele Franco. © Institute of Fine Arts, NYU.



**Fig. 3.** Selinunte, Temple R: Aulos fragments. Drawing by Filippo Pisciotta. © Institute of Fine Arts, NYU.

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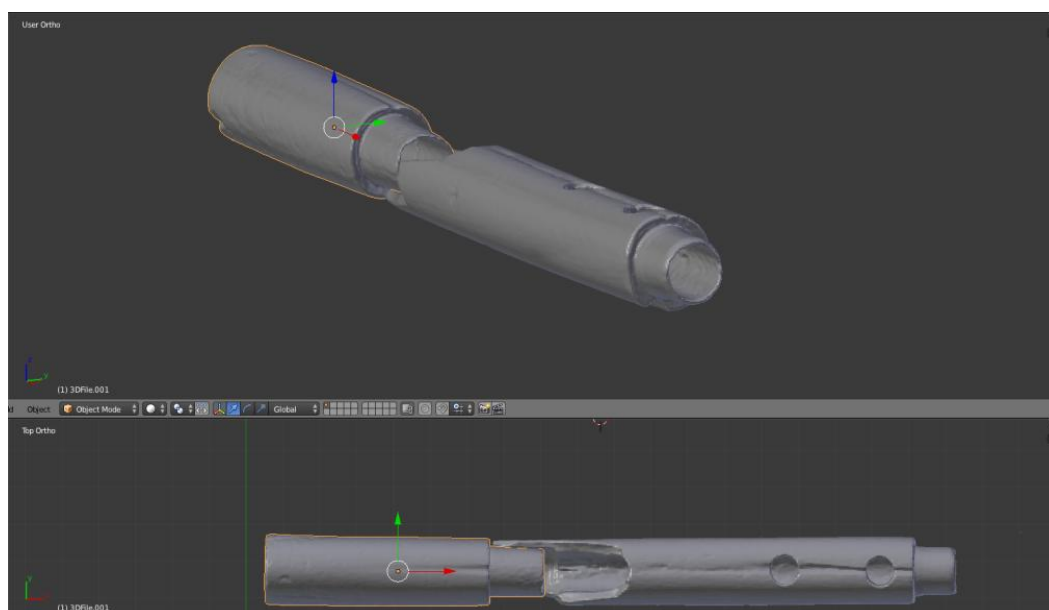
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**Fig. 4.** Computed Axial Tomography. Photograph by Angela Bellia.



**Fig. 5.** Computed Axial Tomography of the aulos.

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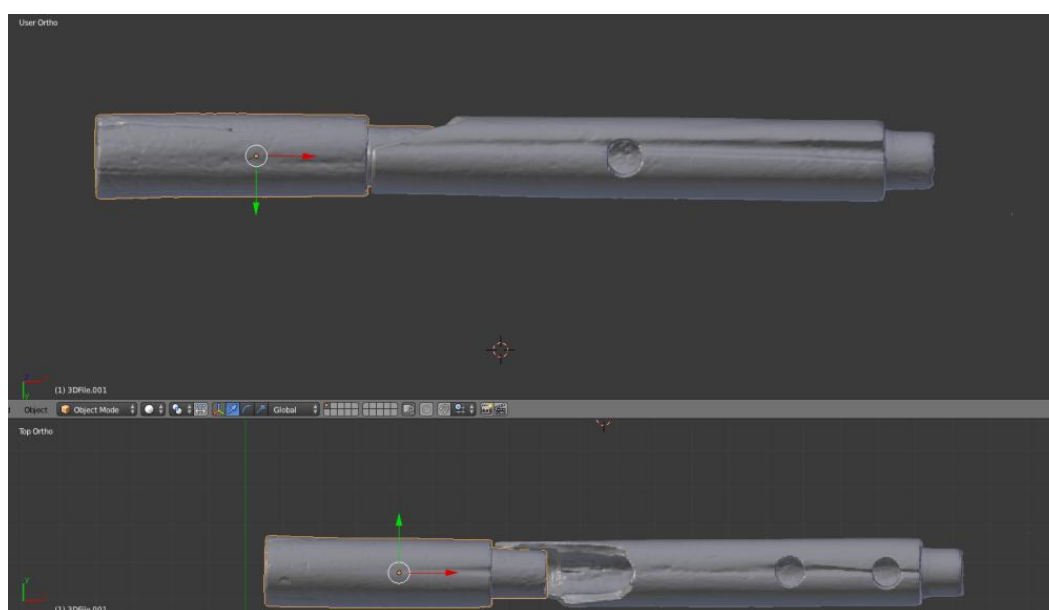
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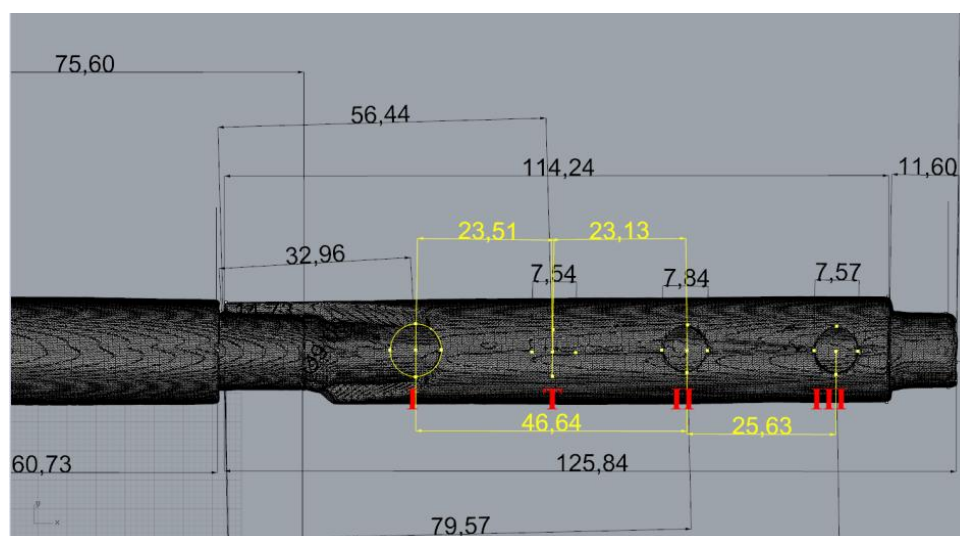
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**Fig. 6.** The two sections of the aulos fit together.



**Fig. 7.** Distances between holes from upstream end of the section and their diameters.

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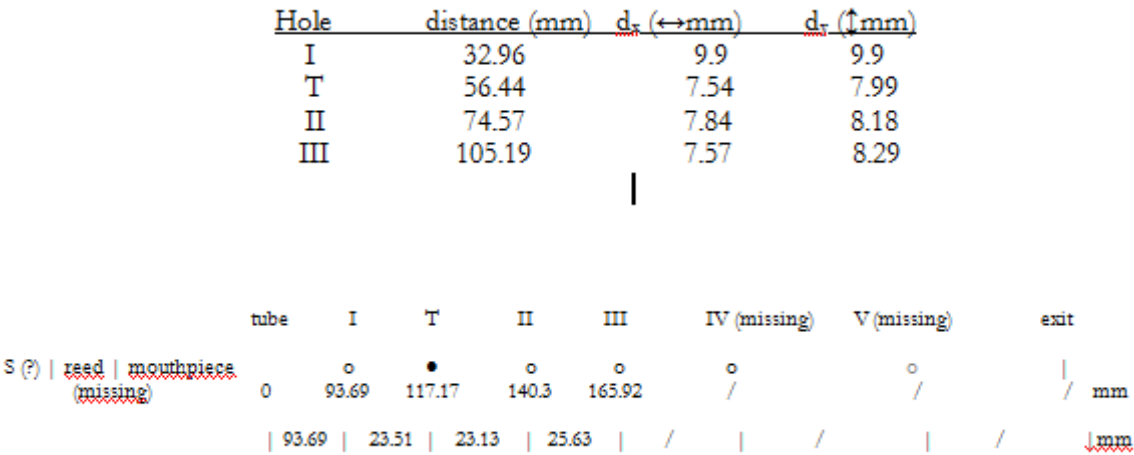


Fig. 8. Measures of the pipe.



Fig. 9. The aulos from Selinunte and its three-dimensional artificial copy. Photograph by Angela Bellia.

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*Fig. 10.* Polymer copy of the aulos from Selinunte.



*Fig. 11.* Video of the aulos.

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**Fig. 12.** American Archaeological Mission at Selinunte, in Sicily. Pitano Perra, an Italian wind instrument maker, is playing the reconstructed ancient instrument in the same place of its discovery. The instrument has been reconstructed on the bases of the digital model translated into a three-dimensional copy using polymer as a material. Video: <https://www.youtube.com/watch?v=T2UpC-12Tsk>

### Acknowledgment

I would like to thank the Prof. Clemente Marconi, James R. McCredie Professor in the History of Greek Art and Archaeology at the Institute of Fine Arts of the New York University, for granting me permission to study the aulos. I also thank the anthropologist Dr. Roberto Micciché for his suggestions.

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Home • Innovazione e ricerca • Un antico aulos della Magna Grecia rivive grazie alla stampa 3D

16 Settembre 2015

## Un antico aulos della Magna Grecia rivive grazie alla stampa 3D

Come suonavano gli strumenti musicali del VI secolo a.C.? Oggi è possibile saperlo grazie alla ricostruzione 3D di un antico strumento a fiato rinvenuto a Selinunte

**La tecnologia digitale e la stampa 3D fanno rivivere i suoni ormai perduti della musica antica.** Saranno presentati all'International Congress Digital Heritage 2015, in programma a Granada, in Spagna, dal 28 settembre al 2 ottobre, i primi risultati della ricostruzione virtuale di un aulos - antico strumento a fiato - ritrovato nell'estate del 2012 sotto il Tempio R di Selinunte. Il reperto - scoperto da Clemente Marconi, direttore della Missione Americana dell'Institute of Fine Arts della New York University - è composto da due frammenti di un aulos "early type", risalente al VI secolo a.C., simile ad altri strumenti a fiato rinvenuti in Grecia e nell'Occidente greco.

Grazie a una ricerca condotta da Angela Bellia, Marie Curie Researcher alla New York University e all'Università di Bologna, è stato possibile creare un modello in 3D dell'aulos che è stato poi trasferito in una copia artificiale tridimensionale in polimero realizzata presso l'Officina 3D Lab.

Per suonare questa tipologia di aulos, caratterizzati dall'assenza di meccanismi di azione sui fori e per la produzione sonora, il musicista usava esclusivamente le dita che coprivano, alternandosi o contemporaneamente, i fori posti nella parte superiore delle due canne e, quando presente, il foro per i pollici posto nel lato posteriore dei tubi. Le canne degli aulos "early type" erano di solito di osso e di diversa lunghezza.

Grazie alla ricostruzione virtuale dello strumento è possibile non solo analizzare nel dettaglio le sue caratteristiche acustiche e morfologiche e, se possibile, scoprire l'intonazione, ma anche migliorare la ricerca scientifica, superando le limitazioni causate dalla fragilità dello strumento.

Lo studio si inserisce nell'ambito di *Telestes*, progetto finanziato dalla Comunità Europea dal programma di ricerca di alta qualificazione Marie Curie Actions, dedicato alla cultura musicale di Selinunte, una delle più importanti polis dell'Occidente greco.

**In primo piano**

- Visite guidate gratuite alla BUB per la mostra "Nel segno di Aldo"
- Ecco il DigiLab, il nuovo spazio a Forlì per interpretazione e traduzione
- Narcolessia: a Bologna un seminario dell'Istituto di Scienze Neurologiche

Un antico aulos della Magna Grecia rivive grazie alla stampa 3D, in "UniboMagazine" (16 Settembre 2015): <http://www.magazine.unibo.it/archivio/2015/09/16/un-antico-aulos-della-magna-grecia-torna-in-vita-grazie-alla-stampa-3d>

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## The virtual reconstruction of an ancient musical instrument



In the summer of 2012, the IFA-NYU Selinunte Mission began to explore the interior of the cella of Temple R. This excavation showed that the Classical and Archaic layers had been sealed by a deep fill of the Hellenistic period and left untouched by earlier archaeological research at the site. Among the discoveries was a series of votive depositions against the walls, dating back to the sixth century BCE. One of the most striking finds among the votive depositions was the discovery of two parts of a bone aulos, which can be dated to 570 BCE. The virtual reconstruction of the aulos found in Temple R at Selinus aims to study the acoustic and morphological attributes of the ancient musical instrument, but also to increase and improve the scientific investigation by overcoming the limitations caused by the instrument's fragility. Digital technology allowed us to produce a 3D model of the aulos. This digital model has been translated into a three-dimensional artificial copy, using polymer as a material. Our goal is to reconstruct the aulos after analysing its organological characteristic and, if possible, discover its scale. We hope that this new study of the aulos will increase our knowledge of Ancient Greek music.

### Partners

Institute of Fine Arts - New York University  
 Department of Cultural Heritage - University of Bologna  
 FP7-PEOPLE-2013-IOF: Excellence European Research: Marie Curie Actions  
 Marie Curie Researcher: Angela Bellia

### Project Team

Excavation on the Akropolis of Selinunte (under the direction of Prof. Clemente Marconi)

## PROJECTS

1914-1918-online  
 3DH - Three-Dimensional  
 Dynamic Data Visualisation  
 and Exploration for Digital  
 Humanities Research  
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 AC/E Digital Culture Annual  
 Report  
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 ALCIDE  
 ARIADNE  
 Art and Architecture in  
 German Travel Accounts to  
 Paris and Versailles in the  
 Baroque Era  
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 Burckhardtsource  
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 Catalogue of Digital Editions  
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 Ciberia Project  
 CINEMAPS  
 CLARIN  
 CLIGS  
 CODECS  
 Controversia et Confessio  
 Corpus Coranicum  
 Corpus Vitrearum Medii Aevi  
 Deutschland  
 correspSearch  
 COURAGE  
 Creative Amsterdam: An  
 E-Humanities Perspective  
 CRETA  
 Culture & Technology  
 European Summer University  
 in Digital Humanities  
 Cultures of Knowledge  
 DanteSources

*The study on virtual reconstruction of the aulos from Temple R at Selinunte has been accepted as a project of the European Association for Digital Humanities <http://eadh.org/projects/virtual-reconstruction-ancient-musical-instrument>*



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*La ricostruzione virtuale di un antico strumento musicale: l'aulos di Selinunte, in "Archeomatica.it" (11 Settembre 2015): <http://www.archeomatica.it/restauro-e-conservazione/ricostruzione-virtuale-antico-strumento-musicale-aulos-di-selinunte>*

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*L'Alma Mater festeggia "in casa" l'antico aulos di Selinunte*, in "UniboMagazine" (15 Giugno 2016): <http://www.magazine.unibo.it/archivio/2016/06/15/12019alma-mater-festeggia-201cin-casa201d-12019antico-aulos-di-selinunte>

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#### Other Links:

- *Scoperti nel tempio R di Selinunte i frammenti di un aulos. Ora la musica della Magna Grecia di 2500 anni fa può rivivere grazie a una stampa 3D: la presentazione a Granada a fine mese,* in “Archeologiavocidalpassato” (23 Settembre 2015): <https://archeologiavocidalpassato.wordpress.com/2015/09/23/scoperti-nel-tempio-r-di-selinunte-i-frammenti-di-un-aulos-ora-la-musica-della-magna-grecia-di-2500-anni-fa-puo-rivivere-grazie-a-una-stampa-3d-la-presentazione-a-granada-a-fine-mese/>
- *Antico “aulos” di Selinunte, tornerà a rivivere con la stampa 3D,* in “CastelvetranoSelinunte” (25 Settembre 2015)
- <http://www.castelvetranoselinunte.it/antico-aulos-di-selinunte-tornera-a-rivivere-con-la-stampa-3d/73242/>
- *Ricerca: ricostruito attraverso stampa 3D, un antico aulos rinvenuto a Selinunte,* in “UniNews24. Quotidiano Universitario Nazionale” (17 Settembre 2015): <http://www.uninews24.it/emilia-romagna/9779-ricerca-ricostruito-attraverso-stampa-3d,-un-antico-aulos-rinvenuto-a-selinunte.html>