

## Beyond Paradigms: Archaeoastronomy as a New Interpretation Key to Understand the Function and Meaning of Ancient Roman Buildings

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**Abstract:** Archaeoastronomy can give an important contribution to Archaeology for a better understanding of the function and meaning of some ancient Roman buildings. I have a first-hand direct experience, and I will present two case studies, Hadrian's Villa in Tivoli (near Rome) and the Pantheon in Rome, both of the 2<sup>nd</sup> century AD. They prove how Archaeoastronomy allowed us to go "beyond the paradigms", with a new and innovative approach in looking at ancient Roman monuments which have been studied for centuries, but somehow are still unknown as far as their function and meaning are concerned.

**Keywords:** Archaeoastronomy, Roman religion, Archaeology, Hadrian's Villa in Tivoli, Pantheon, "Kiss of the Sun", hierophanies.

### 5.1 Foreword

Archaeoastronomy is a multidisciplinary science summing up 'scientific' and 'humanistic' aspects. The 'scientific' part is up to (archaeo)astronomers or astrophysicists, who use algorithms and software (such as *StarryNight.pro*) to reconstruct the position of the Sun, the Moon and other celestial bodies in a given historical period. They check whether the luminous phenomena (hierophanies) that we see today also occurred in ancient times, and *in which date*.

On the other hand, the 'humanistic' part is up to archaeologists and historians, who study the ancient buildings, their construction techniques and their chronology, to see if the structures that (still) produce the hierophanies *are the original ones*. They also study the ancient sources and cults to understand their function together with the symbolic and religious meaning of the dates set by the astronomers.

The 2019 SEAC Conference in Bern gave us the opportunity to discuss the sometimes controversial relationship between 'scientific' and 'humanistic' disciplines: the latter too often are underestimated or looked at with raised eyebrows, as if archaeologists could not have the 'scientific' approach that indeed they have. And the other way around, since sometimes astronomers know very little about ancient building techniques and cults.

We must overcome this separation and mistrust, because mathematical calculations *alone* or archaeological studies *alone* are not enough. To make new and original discoveries, archaeo-astronomers and archaeologists *must work together* with equal dignity and mutual trust. As I did since 2009 with archaeoastronomer Giuseppe

Veneziano: in Italy, we are one of the few who are currently investigating archaeo-astronomical orientations in ancient Roman buildings<sup>1</sup>.

Given the limited number of pages, we will briefly talk about Hadrian's Villa (we published our discoveries in the book *Villa Adriana. Architettura Celeste. I Segreti dei Solstizi* and in other articles; De Franceschini and Veneziano 2016; De Franceschini 2017. See also Frischer and Fillwalk 2012; Frischer and Zotti 2016), then we will discuss in detail the archaeo-astronomical studies and discoveries that we made in the Pantheon of Rome.

### 5.2 Hadrian's Villa in Tivoli (Rome)

I first approached Archaeoastronomy in emperor Hadrian's Villa – the largest and most important Roman imperial villa, built in the 2<sup>nd</sup> century AD<sup>2</sup>. In 2006, during the surveys for my Accademia Project, standing in the Temple of Apollo of the Accademia (De Franceschini and Veneziano 2011, XIII) I noticed a wall panel perfectly illuminated by the sun: a rectangular spot of light which was too perfect to be a coincidence. Thanks to the help of archaeoastronomer Giuseppe Veneziano, we discovered that the building was oriented along the solstitial axis linking the sunset of the summer solstice to the sunrise of the winter solstice. Our discovery was confirmed by a similar one made in 1988 by the american architects Robert Mangurian and Mary-Ann Ray at Roccafranca (also in Hadrian's Villa. Built at one end of the Accademia esplanade, the artificial terrace where the Accademia stands. Mangurian and Ray 2011), which was astronomically oriented along the same solstitial axis.

<sup>1</sup> See the author's website [www.villa-adriana.net](http://www.villa-adriana.net) and articles published on Academia.edu: <https://independent.academia.edu/MDeFranceschini>.

<sup>2</sup> See the author's website: [www.villa-adriana.net](http://www.villa-adriana.net).