

The Design of the Pantheon's Portico Columns

and the Justification of Research Results

based on Digital Tools and Methods

www.digitalpantheon.ch

Christian Berndt (berndt@kulturtechniker.de)

Digital Classicist Seminar Berlin

4. December 2012



Outline

Project History

The Question of the Entasis Design

The Epistemic Relevance of Open Access and Open Data

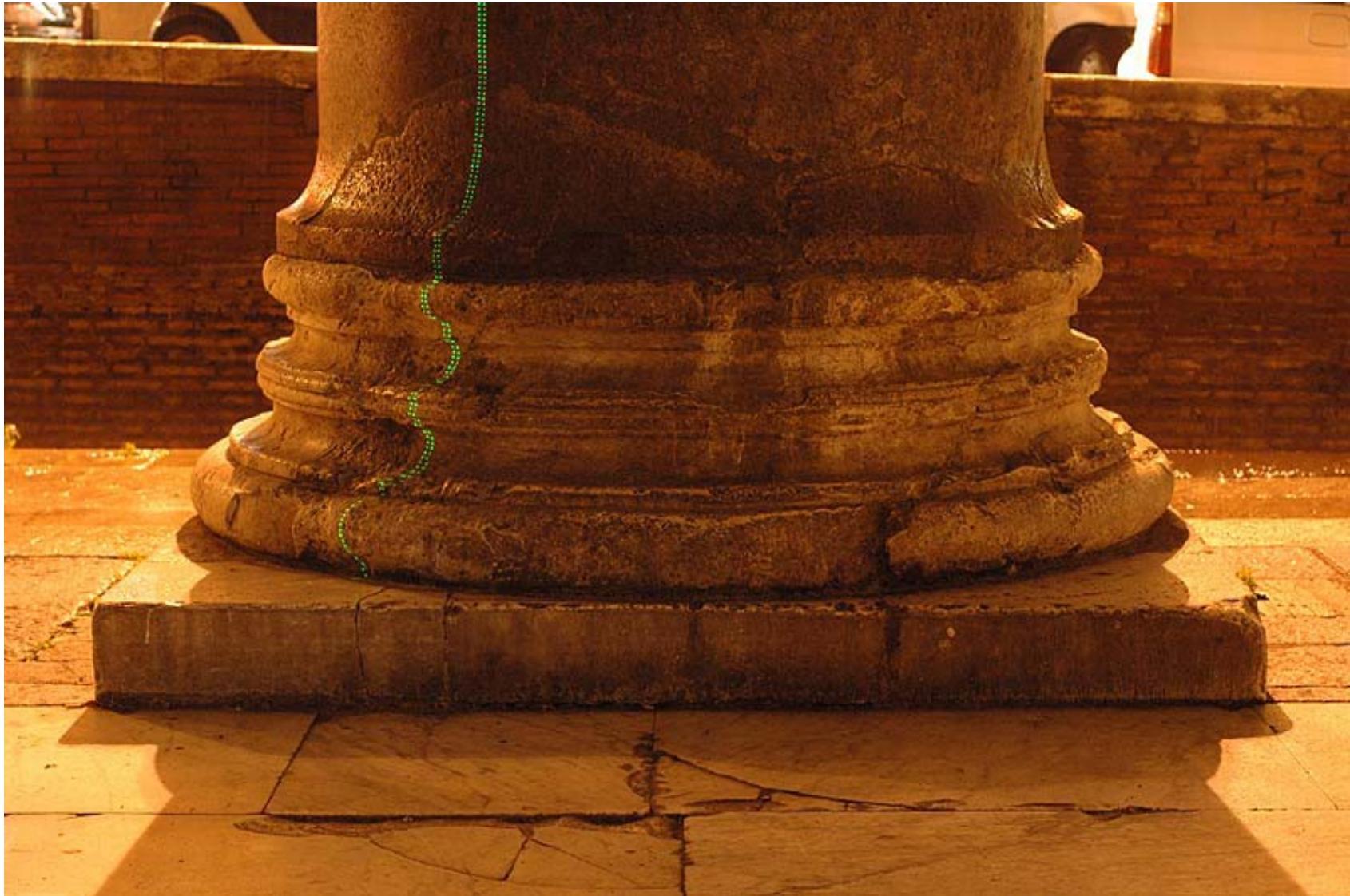
Requirements Catalogue for Digital Research Tools and Methods

Lessons learned

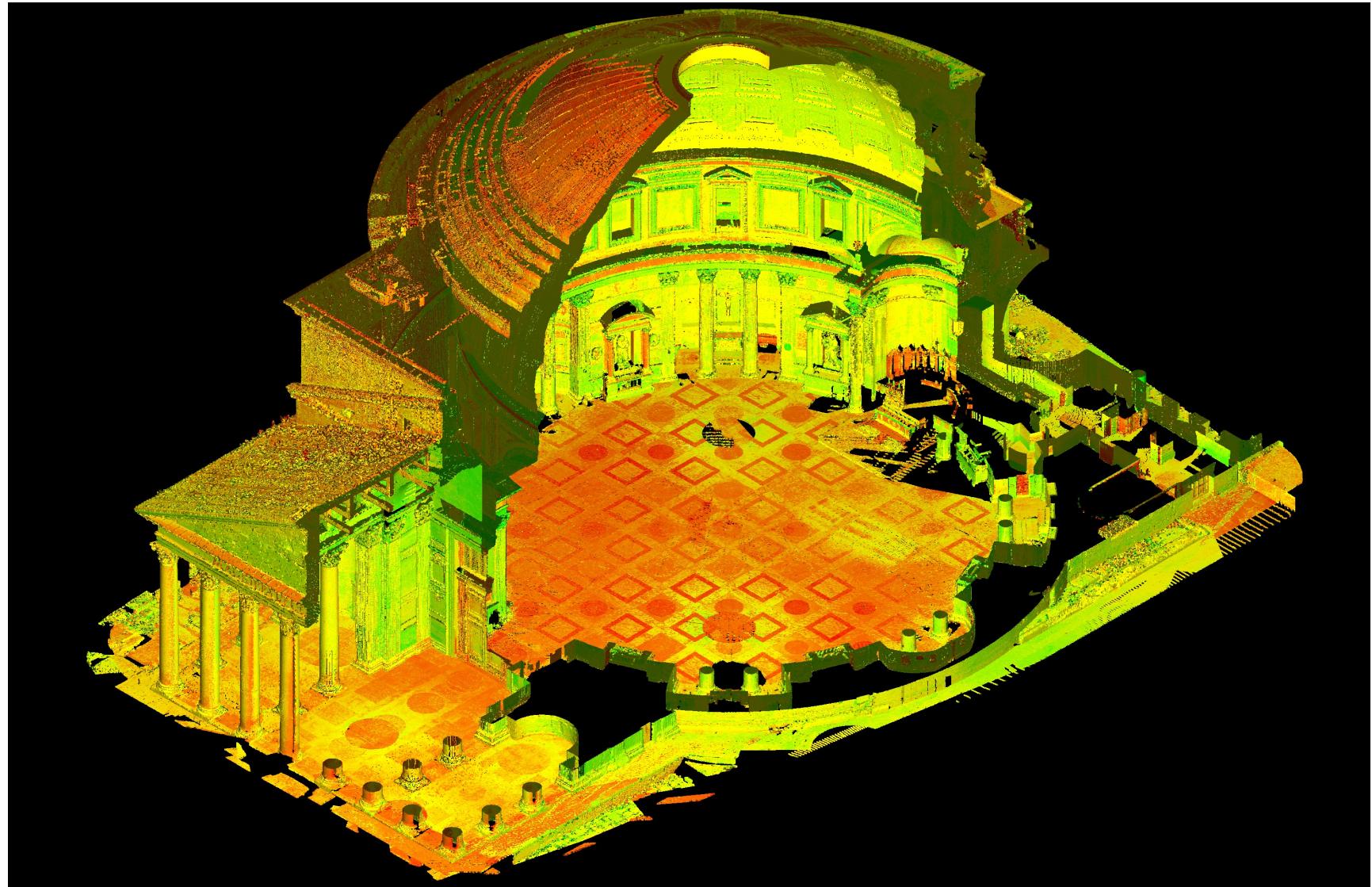
Scanning Process, Terrace north of the Pantheon (BDPP0605)



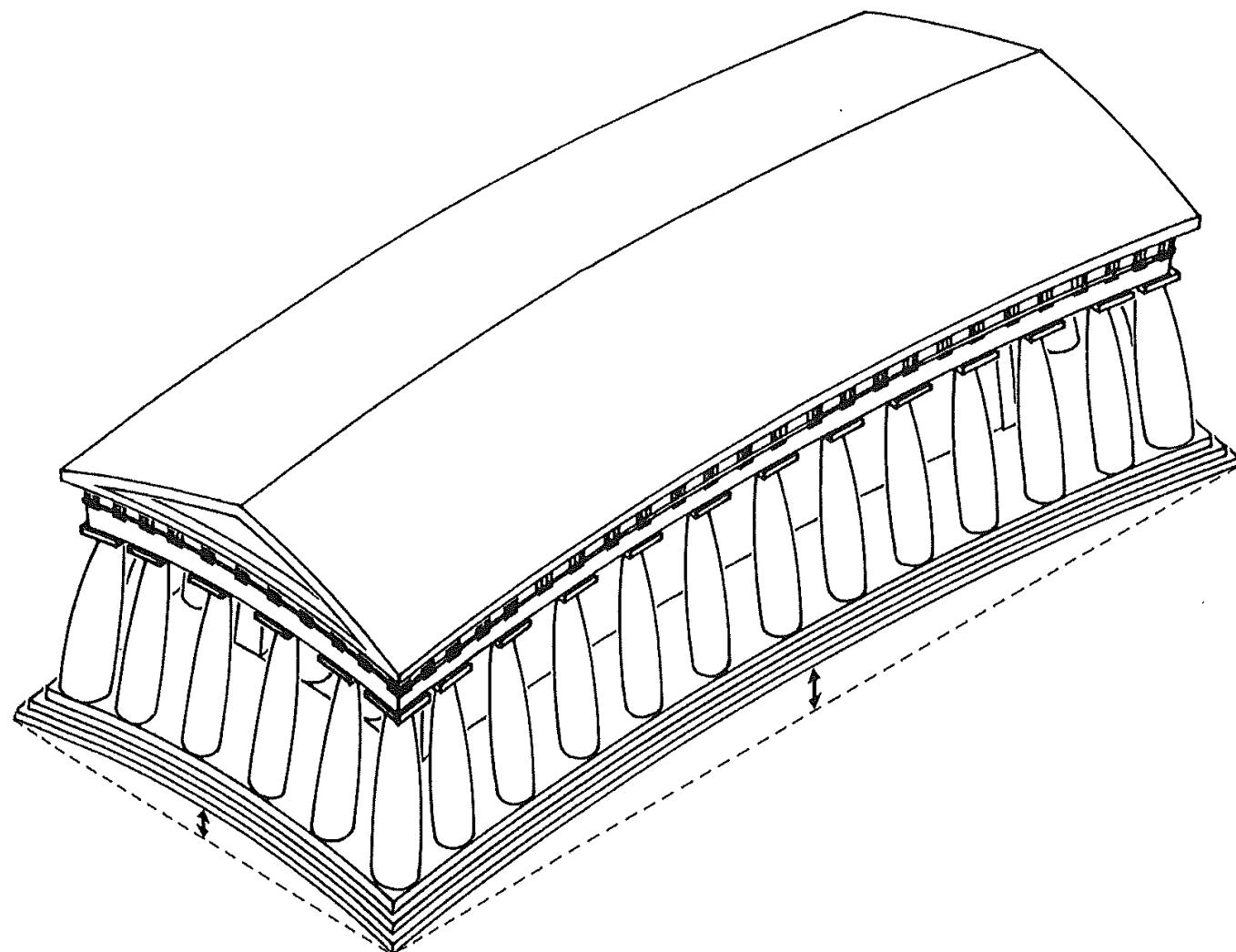
Scanning Process at a Portico Column (BDPP0602)



Visualization of the Unified Point Cloud (BDPP0009)

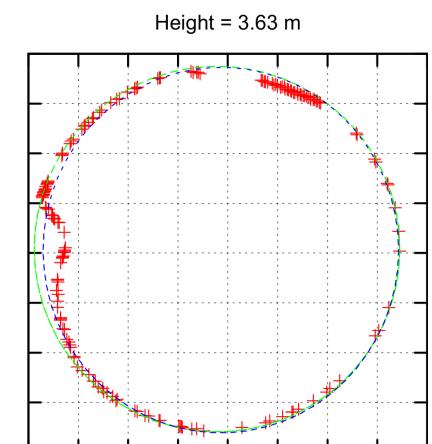
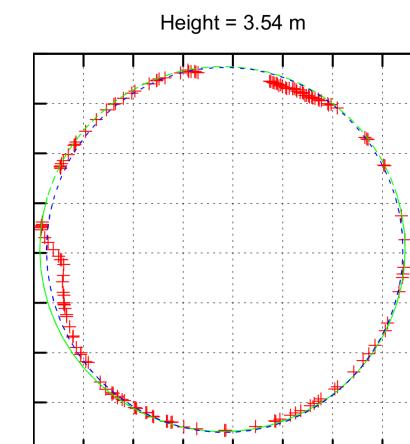
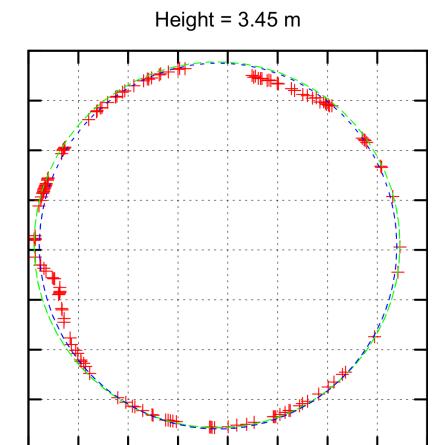
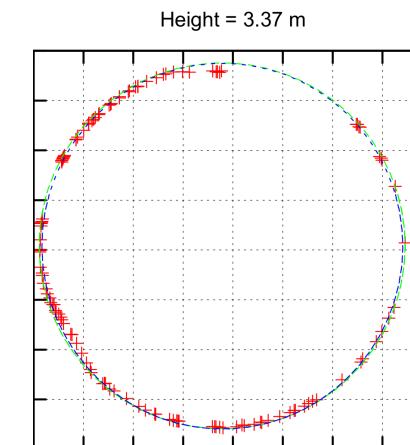


Overview of „Greek Refinements“ (Coulton 1977, Fig. 44)

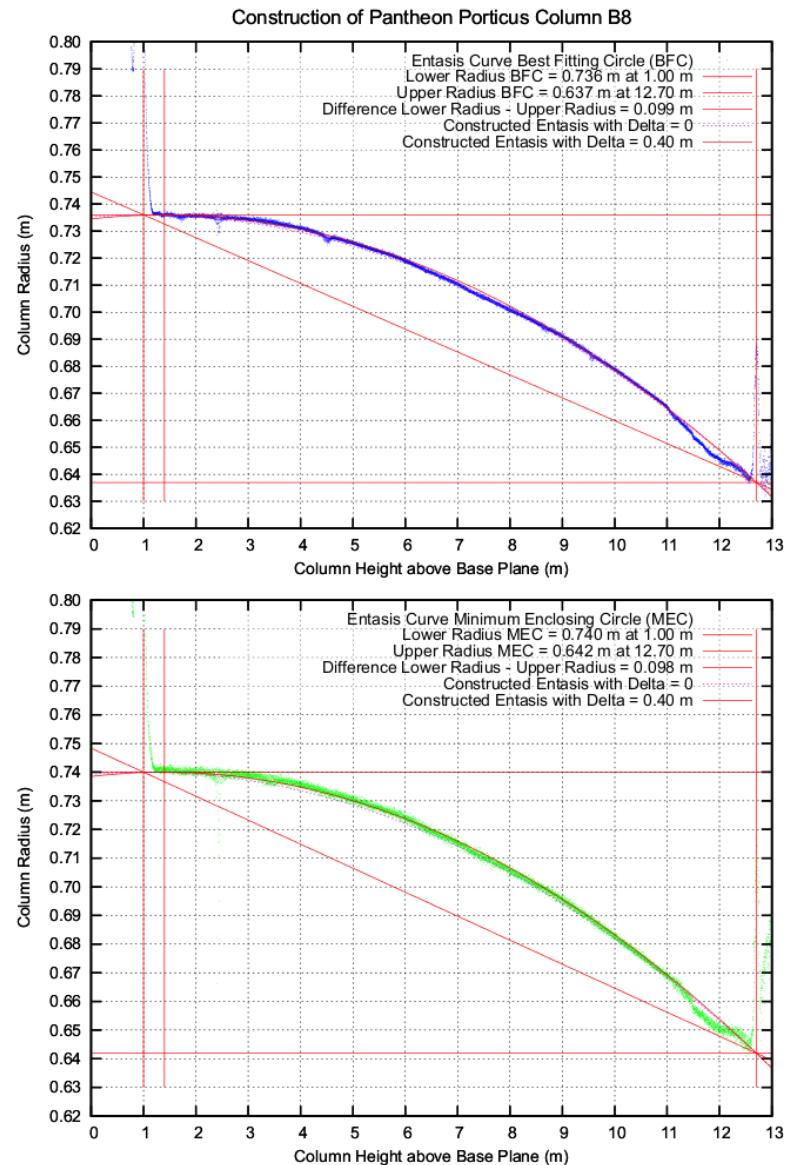
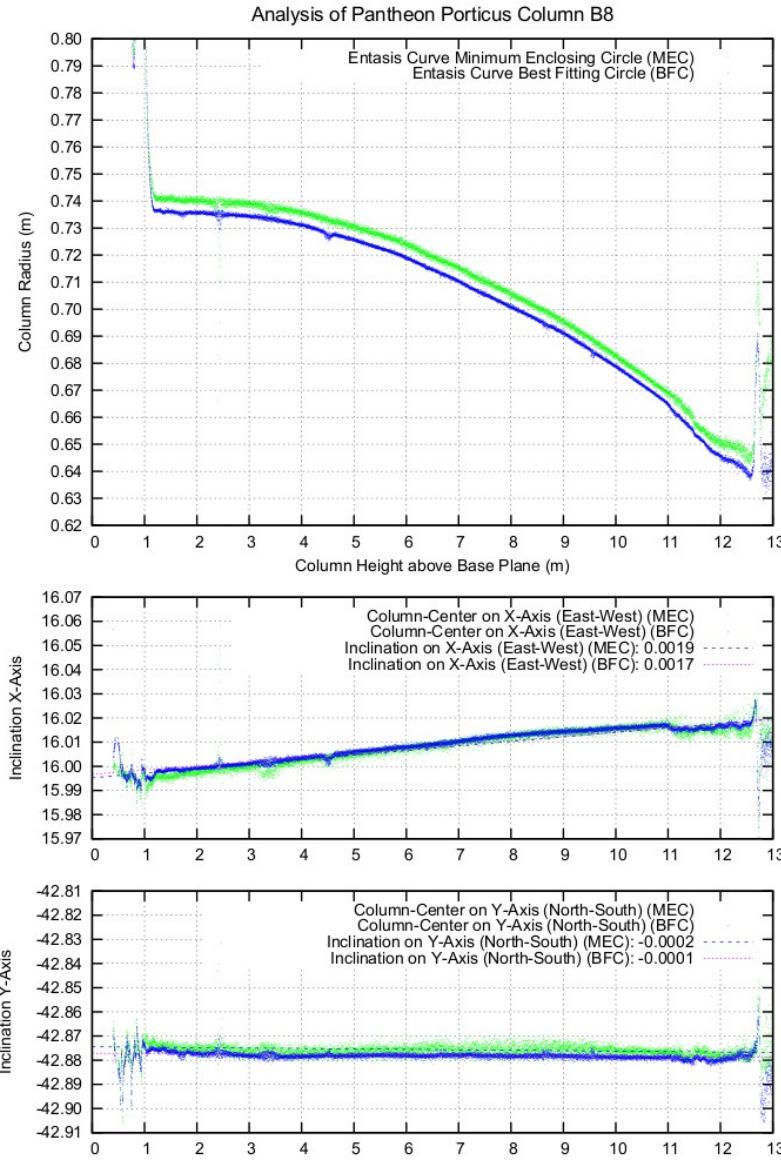


Coordinates and Slices of Column A1 (BDPP0716)

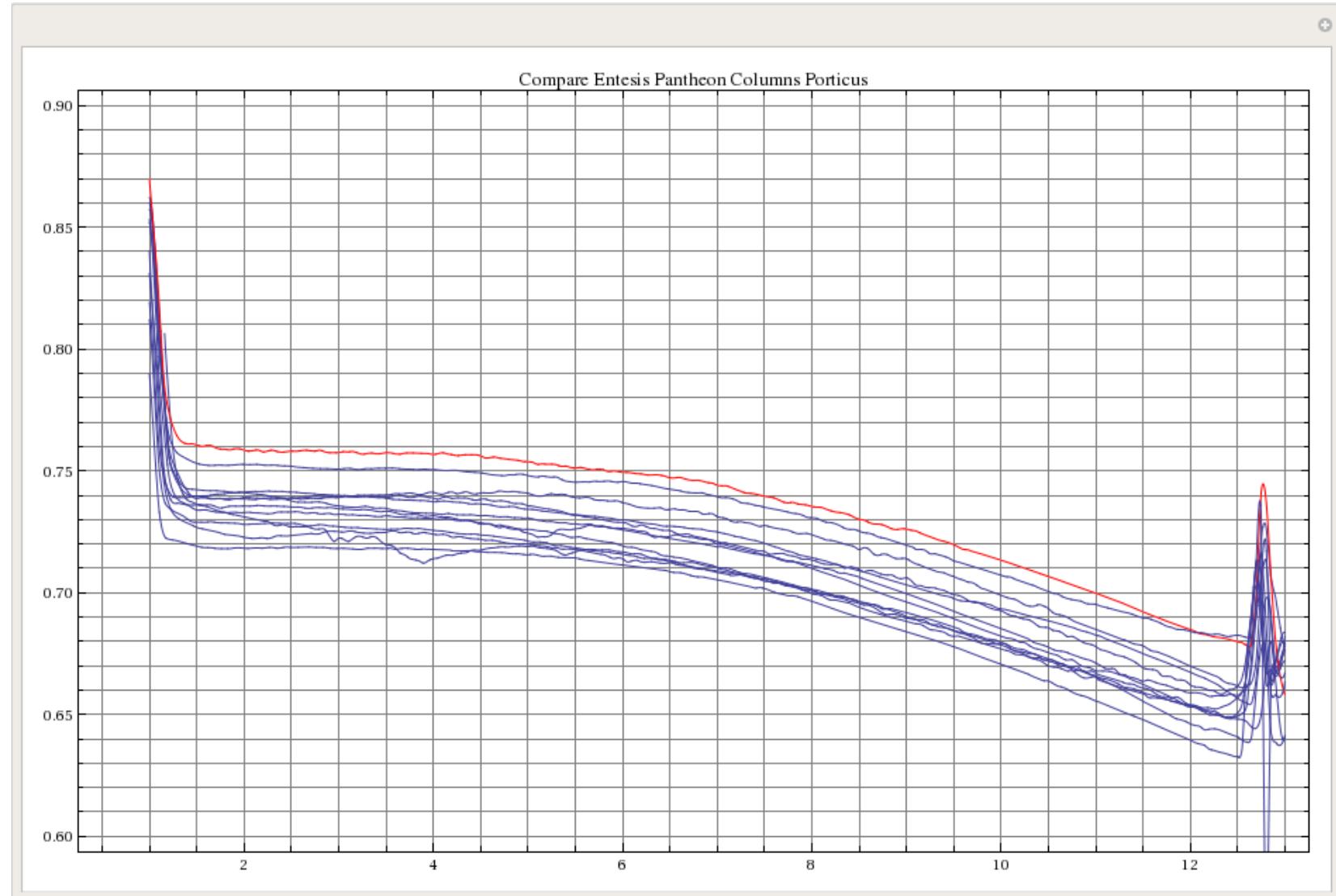
```
berndt@x121e: ~/Downloads
File Edit View Search Terminal Help
berndt@x121e:~/Downloads$ head -n 35 BDPP0716_A1.xyz
-15.013036 -47.710688 0.329806
-17.067336 -48.384887 0.330370
-17.047193 -48.393622 0.302234
-17.047596 -48.396588 0.297323
-17.056192 -48.387915 0.299486
-17.056878 -48.393000 0.295858
-17.050724 -48.390367 0.300646
-17.046245 -48.386750 0.316970
-17.058847 -48.388854 0.308703
-17.046267 -48.386572 0.310042
-17.050573 -48.389518 0.305986
-17.046491 -48.388136 0.304855
-17.056159 -48.388180 0.311693
-17.050088 -48.386171 0.316940
-17.032335 -48.395199 0.302476
-17.041450 -48.393619 0.301714
-17.041821 -48.396335 0.296650
-17.037172 -48.392613 0.301255
-17.017504 -48.393003 0.299297
-17.022383 -48.393584 0.300214
-17.027849 -48.397951 0.296251
-17.027001 -48.391312 0.299085
-17.031586 -48.389823 0.317640
-17.040554 -48.387125 0.309827
-17.040908 -48.389716 0.305221
-17.036931 -48.391201 0.306808
-17.031782 -48.391111 0.306318
-17.036592 -48.389007 0.317549
-17.036883 -48.391070 0.311752
-17.031747 -48.390858 0.311293
-17.017262 -48.391587 0.310527
-17.022192 -48.392270 0.305371
-17.027042 -48.392019 0.305494
-17.017688 -48.394892 0.307447
-17.026725 -48.389647 0.310101
berndt@x121e:~/Downloads$
```



Geometry and Construction of the Portico Columns



Comparison of the Shaft Profiles (BDPP0748)

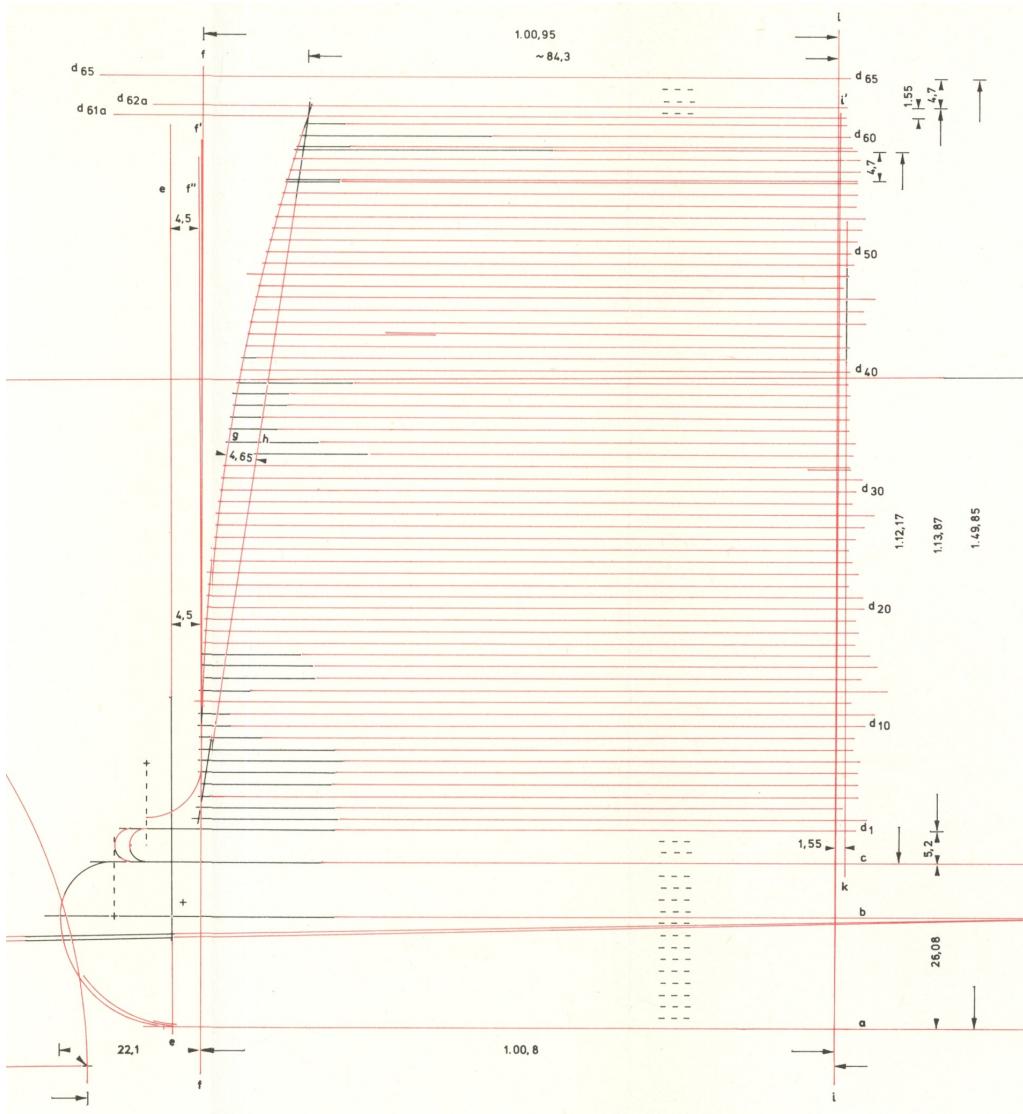


Vitruv, De Architectura Libri Decem, III.3.13

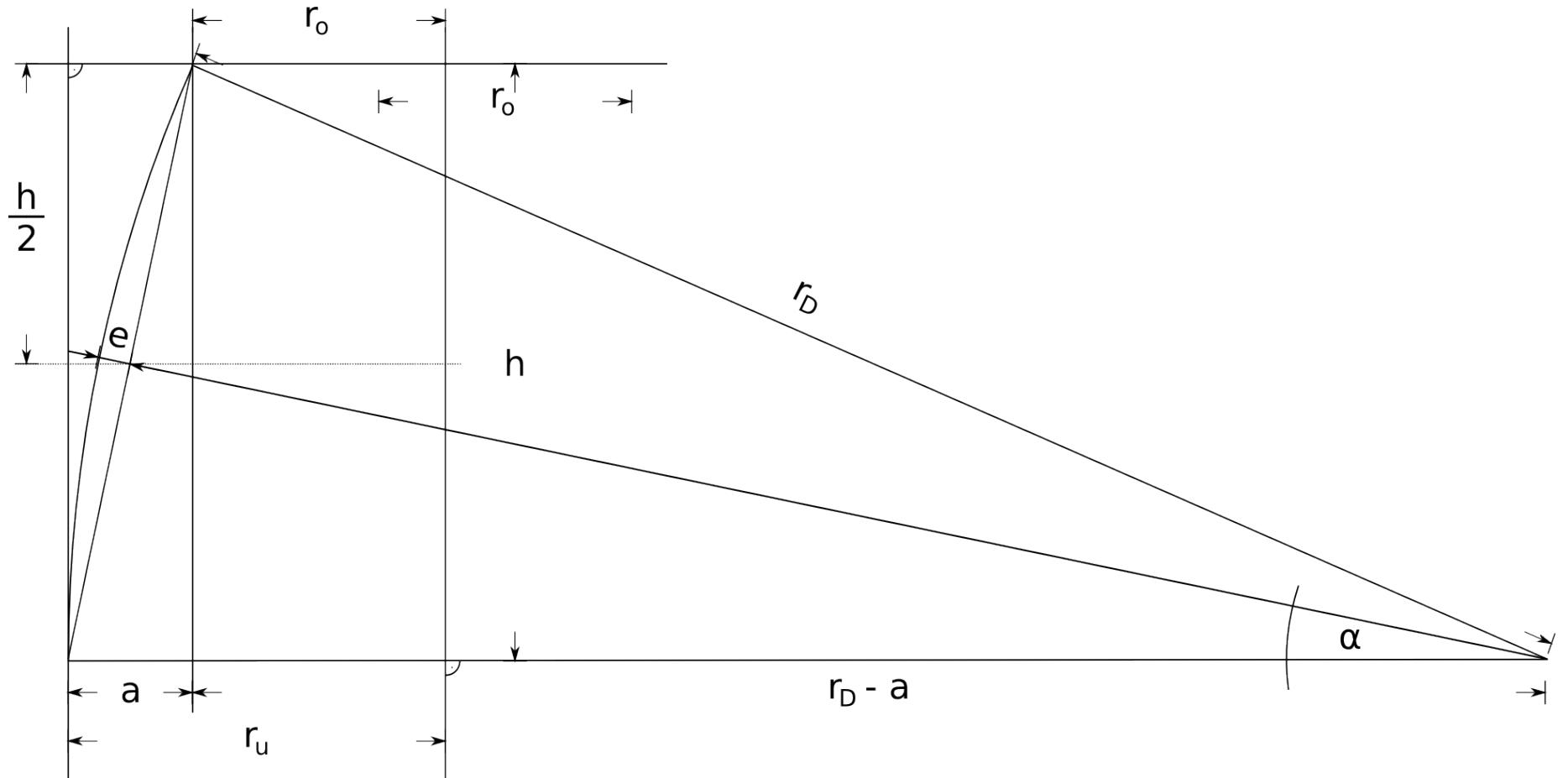
De adiectione, quae adicitur in mediis columnis,
quae apud Graecos [*entasis*] appellatur, in
extremo libro erit forma et ratio eius,
quemadmodum mollis et conveniens efficiatur,
subscripta.

At the end of the book I shall record the illustration and method for the addition made to the middles of columns, which is called *entasis* (bowing) by the Greeks and how to execute this refinement in a subtle and pleasing way.

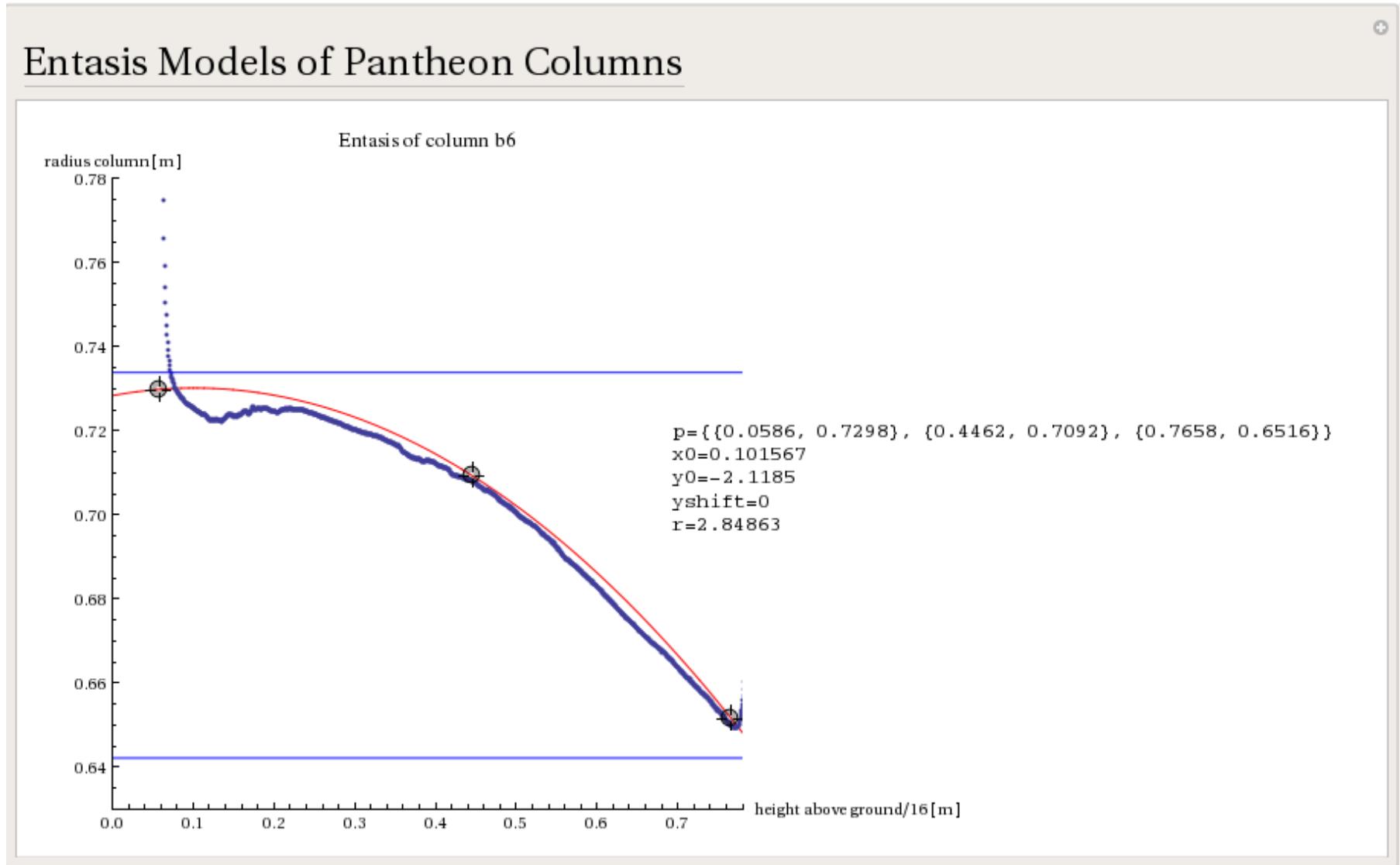
Entasis Construction at Didyma (Haselberger 1980, Beilage 1)



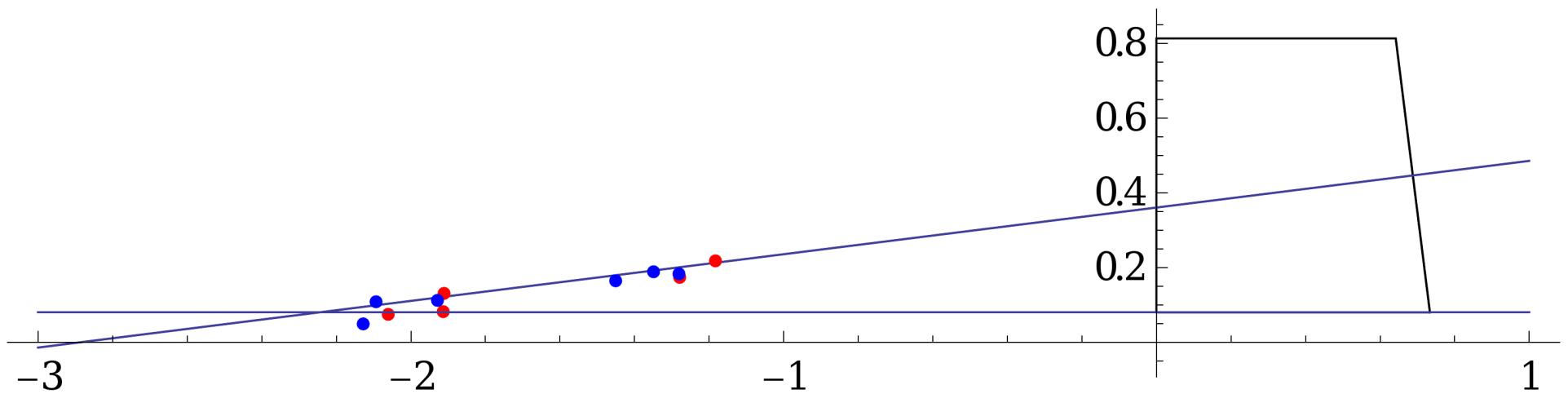
Geometrical Description of the Didyma Method



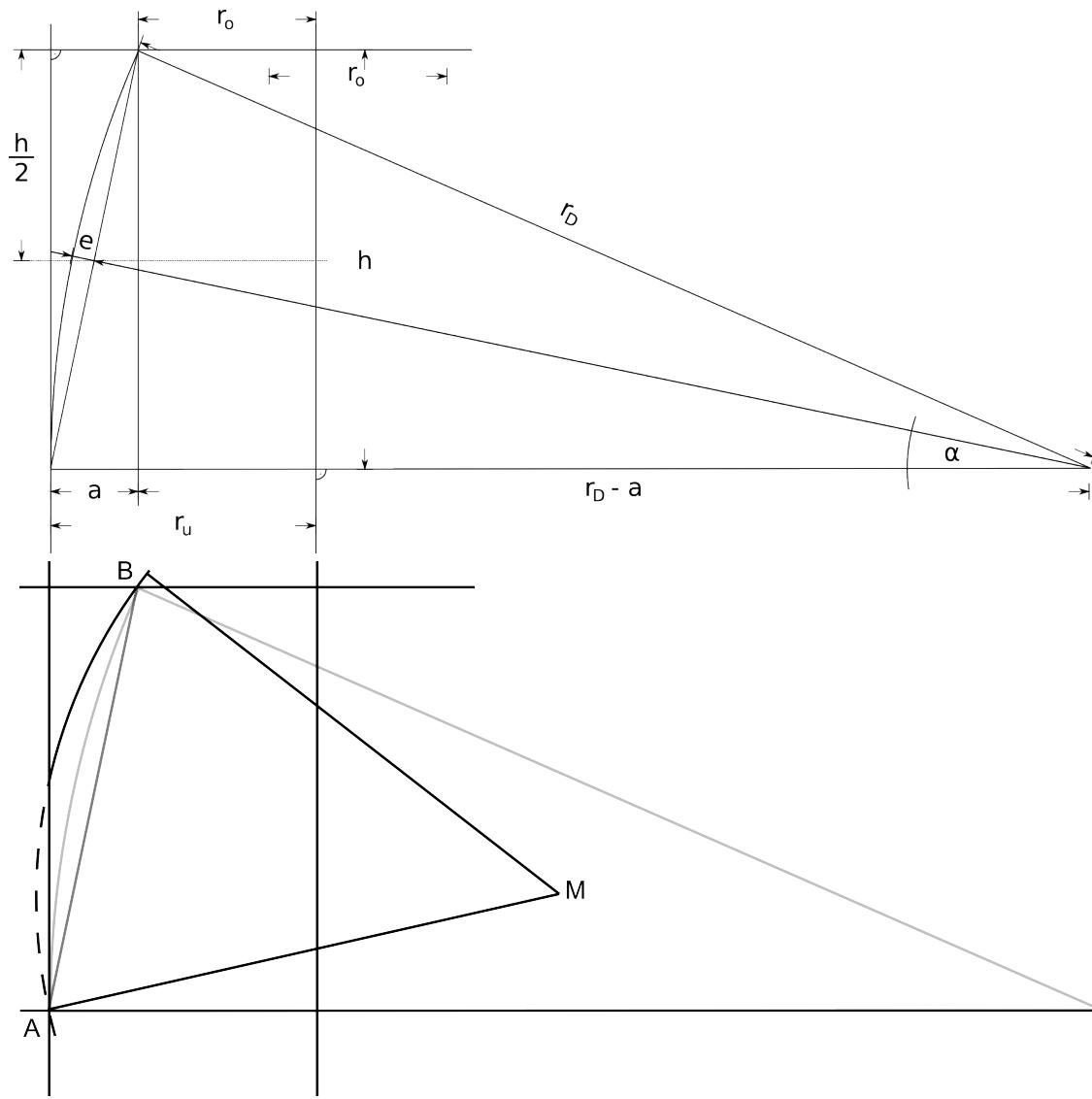
Interactive Construction Model (BDPP0752)



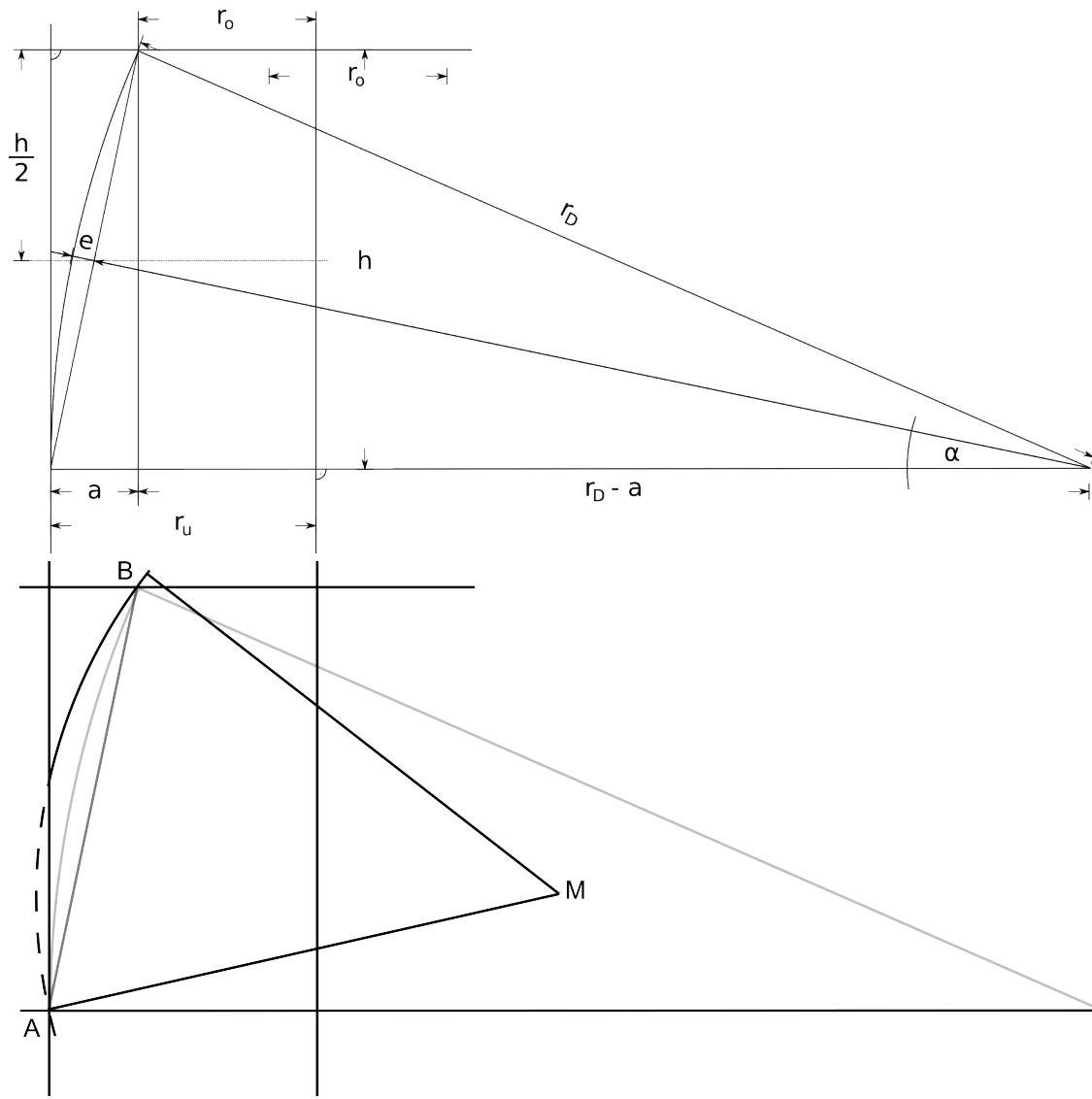
Distribution of the Construction Circle Centers



Two Types of Circle Segment Constructions



Two Types of Circle Segment Constructions



Measurement of the Portico Columns by Stevens, early 1920s



10 Requirements for Digital Tools and Methods

- 1) Explication of the Hypothesis
- 2) Reasonable Modularization
- 3) Explication of the Assumptions
- 4) Declaration of the Means of Proof
- 5) Open and Complete Communication
- 6) Documentation of Operational Interrelationships
- 7) Reliable Adressability
- 8) Precise Dating and Versioning
- 9) Open Access
- 10) Mid- and Longterm Accessibility