

Digital Epigraphy: The Case of Arrian's *praenomen*

This study involves the application of two advanced imaging technologies to an old epigraphical chestnut. The author and statesman, Arrian of Nicomedia, is well known from numerous literary and epigraphical sources as Flavius Arrianus, but his *praenomen* appears in only one surviving inscription (SEG 30:159) and there it is both abbreviated and damaged in a way that leaves it ambiguous: it is either an alpha (Αὔλος) or a lambda (Λούκιος) with an unfortunately placed horizontal crack strongly resembling the crossbar of an alpha (Peppas-Delmouzou 1970; Borza 1972). Prominent provincial families like Arrian's regularly used *praenomina* to indicate the source of their Roman citizenship (Salway 1994), and since there are many Lucii Flavii but no other Aulus Flavius in this period, reading an alpha on this stone could complicate our understanding of the Bithynian aristocracy and its origins. In the years immediately following its first publication, many scholars viewed the inscription under raking light in the hopes of resolving the ambiguity. The result was a general consensus that the damaged letter is a lambda, but this conclusion was tentative and built largely on circumstantial evidence (see especially Kapetanopoulos 1973). The present study was carried out with the goal of resolving this old controversy through the use of new technology and it was successful.

Advanced imaging technologies have recently emerged as powerful analytical tools and promising conservation techniques (Earl et al., 2010), but currently they remain underexploited in Mediterranean contexts. The present study was therefore also designed in part to test their utility as field methods for mainstream Classical epigraphy. The Arrian inscription is ideal for this purpose since it involves a subject of acknowledged importance and shows that even well-known objects may still have more information to offer. In this case, an ambiguity was resolved after more than forty years of uncertainty.

The project blended traditional epigraphical methods with 3D scanning and reflectance transformation imaging (RTI). 3D scanning is sometimes used to digitize squeezes but has rarely been employed as an epigraphic field method. With a high-resolution 3D laser scanner, we mapped the inscription's surface topography in order to examine the inscription's intentionally-carved lines as they contrast with naturally-formed breaks. The scans also allowed precise measurements of incised lines and breaks in the stone to determine whether the alleged alpha crossbar could be evaluated on its relative depth. The stone is Pentelic marble, a surface that absorbs light and is not ideal for laser scans. Nevertheless, the scan was sufficiently detailed to confirm readings taken from images produced by RTI.

RTI allows easy manipulation of lighting scenarios in a dynamic digital image, which can be enhanced as needed to view otherwise hidden details. In Classical Studies, RTI has recently been used in textual analysis, augmenting the study and recording of Linear B tablets, traditional stone epigraphy, and curse tablets. Although RTI is typically used to enhance difficult texts (Payne 2013), the otherwise clear Arrian inscription benefited immensely from the application of this technology. It enabled a far better understanding of the contours of the stone than was feasible even through direct autopsy. Hypotheses developed via RTI were easily checked against the 3D scans. While no single technique yielded definitive results, in combination it was possible to identify the crucial letter as a lambda, and therefore Arrian's *praenomen* as Λούκιος. Thus, autopsy, 3D scanning, and RTI in combination produced greater certainty of the text than previously achievable.

Advanced imaging techniques such as RTI and 3D scanning enhance what is visible to the naked eye, thus allowing for the resolution of textual problems, and they produce high quality digital representations that carry more information than a photograph or squeeze. These

digital files are easily shared with colleagues and students so that collaboration and instruction can take place. The case of Arrian's *praenomen*, now securely Λούκιος, demonstrates the value of such methods and the importance of recording visual data with as much detail as possible for the sake of future investigation. By removing Αὔλος as an option, we both clarify a notable person's identity, and strengthen the case that his family was connected to the Roman empire through the same (still unknown) Lucius Flavius as numerous other prominent families from the eastern provinces.

Bibliography

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