Integrating Archaeological Materials and Methods to the Study of Art and Architectural History: an Evaluative Review of Sabbatical Year (2019–2020)

A Report Presented to
The Salary and Leaves Committee
Mt. San Antonio College

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ABSTRACT

The aim of this sabbatical project was to integrate archaeology into the art-historical curriculum. Six case studies focus on a different artwork (or group of works) and explore the interrelationship of art-historical methods and archaeology materials, topics, and processes. By integrating the scientific material, this project not only enhances the pedagogical rigor of the art history classroom by clarifying to students "how we know what we know" in the study of ancient and traditional global visual cultures, but gives students the opportunity to observe, practice, and improve critical thinking skills. Further, this project builds connections between the sciences, social sciences, and humanities, and specifically between the Anthropology (Archaeology) program and the Art History Department students and faculty.

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1. Sabbatical Project Proposal

Here follows text of the original sabbatical project proposal presented to the Salary and Leaves Committee in Fall 2018.

Preface and Project Aims

After the 1970s, a major shift began to take place in the discipline of art and architectural history, when scholars sought to examine the role of art/architecture within cultural context. Thus was born the discipline of "visual culture." Simultaneously, the disciplines of art history and visual culture were shaped by the impact of theoretical, methodological, and interpretive approaches, demonstrating that there is no "one right way" to view and analyze a work of art or architecture. In some branches of art history/visual culture, some approaches are more useful than others. Such is the case with ancient (including Mesopotamian and Egypt) and Classical (Graeco-Roman) visual culture, where an archaeological approach is indispensable and appropriate. (Indeed, the discipline of art history grew directly out of the disciplines of Classical history and archaeology.)

However, even though the discipline has expanded to include various approaches and methodologies, art history textbooks and instruction tend to be locked into traditional art-historical methodologies that are ahistorical and acontextual. Art history textbooks *still* present a chronological story of stylistic development, focusing on canonical works of art (i.e., "monuments and masterpieces"). Moreover, when authors (and instructors) analyze and interpret works of art, they rarely provide the textual (historical) or material (archaeological) evidence, nor the theoretical and methodological approaches upon which their analysis and interpretations are based.

<u>The aim of this sabbatical project is to integrate archaeology into the art-historical curriculum (specifically, AHIS 1, 4, 10, 12/12H, 14, and 15) in order to strengthen the academic pedagogy in the classroom and to engage and improve students' critical thinking skills.</u>

Project Description

To meet this aim, this project will focus on six (6) case studies in which canonical works of art or architecture will be analyzed and interpreted alongside some branch of archaeological theory, practice, or method. Each case study can be used as a teaching module and integrated into the classroom or assigned as supplemental material to students. For this sabbatical, I propose to develop case studies that demonstrate the use of epigraphy, excavation, historical archaeology, numismatics, geology, dating techniques, artifact analysis, and formation processes in the interpretation of art and architecture.

Each case study will be composed of the following material:

a. introduction to the case-study artwork or group of related artworks (with illustrations);
b. brief stylistic and art-historical discussion;
c. introduction to the branch of archaeology that is used to understand the case-study;
d. in-depth discussion of the branch of archaeology, its essential methods or processes;
e. application of the archaeological method / process / evidence to the case-study artwork(s);
f. teaching module aims and review questions
g. chapter correspondences; and
f. select bibliography

After completion of the sabbatical project, the case-studies will be made available via a Canvas website to instructors in the Art History and Anthropology Departments for use in their classes. Other interested faculty members will be welcomed to use the case-studies.

2. Statement of Purpose

The primary purpose of this independent study was to integrate archaeological methods and materials into the art history curriculum in order to enhance student learning opportunities for critical and interdisciplinary thinking and, thereby, increase the rigor of art history courses.

The following aims and goals were outlined in the original sabbatical leave application submitted to the Salary and Leaves Committee in Fall 2018:

a. To integrate archaeology into the art-historical curriculum (specifically, AHIS 1, 4, 10, 12/12H, 14, and 15) in order to strengthen the academic pedagogy of the classroom and to engage and improve students' critical thinking skills.

b. To research six (6) case studies in which canonical works of art or architecture will be analyzed and interpreted alongside some branch of archaeological theory, practice, or method. Each case study shall be compact and focused—generally around eight–ten (8–10) pages—so that instructors or students may integrate this material into their existing courses.

c. To develop the applicant's competency as both an art historian and archaeologist.

d. To make the applicant a better teacher and contribute to the revitalization of her classroom.

e. To introduce students to the analytical and interpretive processes that are used by art and architectural historians, thereby increasing rigor in the art history curriculum.

f. To meet the standards of Area D ("Social Sciences—Archaeology") requirements by integrating archeological material, methods, and approaches into the existing curriculum in a way that is explicit and transparent, while not diluting the art-historical content and methodologies required by the course outline. (cf. the following AHIS courses meet Area

D requirements: AHIS 3; 9; 11/11H; 12/12H; 13; 14; and 15. AHIS 14 and 15 specifically meet the requirements for Archaeology; AHIS 12/12H meet the requirements for Ethnic Studies, but contain archaeological materials, throughout.)

g. To meet the needs and expectations who choose any of the above-mentioned courses to fulfill Area D requirements.

h. To build bridges across campus, reinforce the learning experience of students enrolled in Art History, Archaeology and Anthropology, and enhance the AA-Ts and Pathways in both programs by integrating humanities (art history) and social sciences (archaeology) methods.

3. Sabbatical Leave Report

Introduction

In the early 18th century (1709), the ancient Roman town of Herculaneum was discovered when workers drilled into the cement-like earth during the construction of a well. As they broke through into a cavernous void, they unwittingly uncovered the remains of the town's theater and a treasure trove of Roman sculptures. Nearby, but some 40 years later, the city of Pompeii was first explored in 1748; the first discoveries made at this site consisted of the remains of a "dead man" (Fiorelli 1860: 1–2) but later revealed brilliantly preserved paintings, houses, household objects, sculptures, and graffiti. The discovery of Pompeii and Herculaneum resulted in the rampant exploitation of the sites by the ruling elite of the Kingdom of Naples, who dug indiscriminately for rare and wonderful objects to decorate their palaces and villas.

Little could contemporaries — let alone future students and academics — know the impact of the discovery of these two ancient Roman sites. From the discovery of Pompeii and Herculaneum emerged the disciplines of Classical Archaeology and Art History; and, the founding of these integrally-tied disciplines can be traced to one man, Johann Joachim Winckelmann, a German school-teacher who made his first trips to Southern Italy in the mid-1700s to see the works of art emerging from the ground — and emerging from the past — with his own eyes (Moretti 1989: 82–83). Because so many Roman paintings were being removed from walls, because statues were sequestered into elite homes and private collections, and because explorers failed to document and publish what had been discovered, Winckelmann took it upon himself to author reports on the discoveries at Herculaneum and a first-ever history of Classical (Greek and Roman) art (*History of Ancient Art*).

It is ironic, then, that the disciplines of archaeology and art history — especially those branches concerned with ancient and Classical cultures — became divorced from each other in the 20th century, as the discipline of art history grew directly from Classical archaeology and Classical studies, in general. This sabbatical project was designed to explore some of the myriad instances

where archaeological materials, methods, and processes inform what is written in traditional art history textbooks and customarily taught in art history classrooms.

The Problem

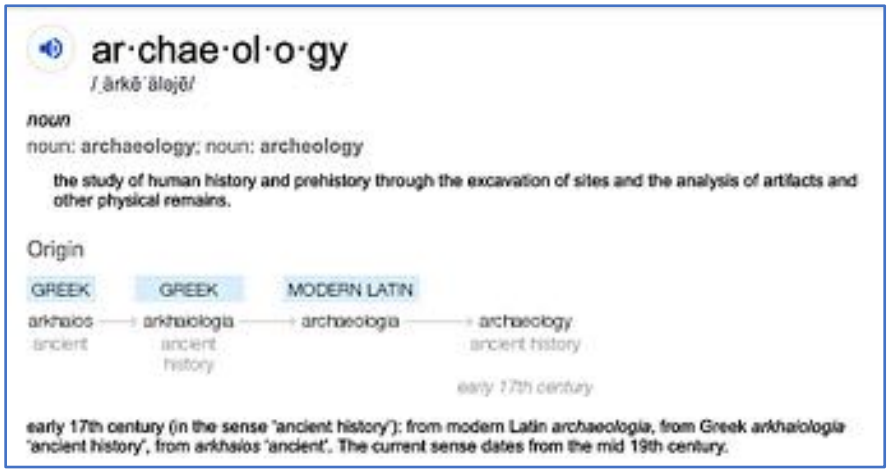
Traditional textbooks of art history, as produced for a high-school and college market, are surprisingly lacking in rigor and substance. Content and interpretations — even if, purportedly, "contextualized" — are frequently ahistorical, unscientific, unsubstantiated, and opaque in their reasoning, methodologies, and evidence. Put simply, art and architectural history textbooks are rarely explicit in telling students "how we know what we know"; how we analyze and interpret objects of study; and, consequently, how we evaluate findings, conclusions, and interpretations. It is the responsibility of art historians to restore (social-)scientific rigor to the course methodologies and content — an often-insurmountable task for those who teach the visual cultures of numerous global civilizations, spanning thousands of years of history.

The Art History Program at Mt. San Antonio College — which studies art, architecture, and visual culture — has always been committed to academic rigor and the cultivation of critical thinking among our students. We achieve this goal by offering a varied curriculum and by embracing a wide variety of approaches to the study of both canonical works of art and diverse visual cultures over an equally broad scope of time, from Antiquity to the present day. The study of Ancient, Classical, and some non-European cultures (e.g., Precolumbian) not only lend themselves well to the integration of archaeological methods to the art-history curriculum, their visual cultures *are* known, first and foremost, through their archaeology. Ancient artworks *are* archaeological artifacts; Classical temples *are* archaeological buildings; Precolumbian urban sites *are* today's archaeological parks. Therefore, by integrating archaeological materials, methods, topics, and processes into the art history curriculum, my intent was to "reunite" aspects of the disciplines that should never have been separated (cf. Henig 2004 for an argument for the reintegration of art historical and archaeological methods).

What is Archaeology?

Before reporting summaries of each case study, it is worth posing and answering one very basic question: What is archaeology and what exactly is the archaeological material that I set out to

(re-)integrate into the study of art history? Although the word "archaeology" conjures images of Indiana Jones, booby-trapped temples, and dinosaur bones in most people's minds, the discipline of Archaeology encompasses the study of so much more, as seen in this dictionary definition of the term:


ar·chae·ol·o·gy
/ˌärkēˈäləjē/

noun

noun: archaeology; noun: archeology

the study of human history and prehistory through the excavation of sites and the analysis of artifacts and other physical remains.

Origin

GREEK arkhaios ancient → GREEK arkhaiologia ancient history → MODERN LATIN archaeologia → archaeology ancient history early 17th century

early 17th century (in the sense 'ancient history'): from modern Latin archaeologia, from Greek arkhaiologia 'ancient history', from arkhaios 'ancient'. The current sense dates from the mid 19th century.

As is evident, the term first emerged in the early 17th century and simply describes the study of "ancient history" or the study of the ancient world and its cultures. As such, "archaeology" encompasses many modern areas of study that are today divided into distinct academic departments: ancient history, ancient art history, ancient architectural history, and even ancient languages (e.g., Latin and Greek philology). Today, we limit the field of archaeology to the study of the ancient past *through its material remains*, of which are included its "artistic" remains (e.g., sculpture, painting), its architectural remains (e.g., houses, temples, monuments, aqueducts), and urban spaces (e.g., towns, cities, villages, ceremonial centers). By definition, archaeology and art history are closely integrated disciplines, though archaeology encompasses the study of all "non-artistic" material remains, as well (e.g., human remains, faunal remains, floral remains, tools, weapons, and mundane objects, such as plates, storage containers, and cooking implements).

Consequently, the study of archaeology includes a wide variety of methods, analytical and interpretive processes — archaeological excavation ("digging") is only one method used by archaeologists to understand the past; many types of non-invasive fieldwork methods are sometimes employed, including the analysis of inscriptions, historical records, visual analysis, the taking measurements, recording building orientations, visual survey, or photographic

documentation. Moreover, archaeology, history, and art history are all are informed by critical, theoretical perspectives, such as social-Marxism, feminist theory, gender and body theory. The case studies researched and summarized below cover only a small sampling of archaeological methods (in bold), some of which are familiar and well-known, others that are new and "cutting-edge." It was not my aim to evaluate the relative worth of one method over another. In fact, I tend to utilize multiple methodologies in the study of archaeology and ancient art/architectural history in order to better understand past cultures.

Case Studies

August, September 2019

As I embarked on the Sabbatical Year project, I immediately opted *not* pursue the topics in the order specified in the original sabbatical leave application. My original timeline proposed the following case studies in the following order:

1. Mesopotamian art, early writing systems, and epigraphy
2. Greek Archaic sculpture and in situ finds
3. Roman Imperial monuments, numismatics, and historical texts
4. Roman architecture, geology, building techniques, and dating
5. Roman domestic architecture, excavation, and material artifact analysis
6. Pompeii and Herculaneum (urban sites), archaeological formation processes, and human remains

… and two "backup" cases studies were proposed, in case any of the above topics proved unfeasible:

a. Phenomenology, sensory archaeology, Paleolithic cave painting and/or Mesoamerican urban site planning
b. Osteoarchaeology, human remains, and Mesoamerican architecture

However, because I had already supplied an outline for **Topic 2**, I opted to start with this case study: ***Greek Archaic* kouroi *and* korai *statues in archaeological context***. As I began researching writing the case-study on Greek *kouroi* and *korai* statues, it became apparent to me that I would have to give a little more background to the art-historical discussion, terminology,

and methods; the elements I wished to see in each case-study report became evident. For example, I thought it might be wise to have break-out text boxes that summarized and discussed the archaeological methods that were relevant to the case-study. I also discovered that, despite the impressive size and thoroughness of Renfrew and Bahn's 600+ page tome, *Archaeology: Theories, Methods, and Practice*, certain topics were not included in their text (e.g., epigraphy).

A discussion of the *Phrasikleia Kore* — a sculpture *never* seen in art history textbooks —served as the core example in this case study, which was then contrasted and contextualized against canonical *kouroi* and *korai* statues. Whether sculptures were discovered *in situ*, or not, became an important topic in the case study, while attendant subjects of **epigraphy**, **experimental archaeology**, and **ephemeral evidence** followed. I had not initially intended to embark on a study of these aspects of archaeology when I proposed this case study; however, the study of Greek Archaic statues lent themselves to these topics. I was also able to explore some aspects of **interpretive archaeology** (i.e., through postprocessual critical theory) by briefly exploring the meaning of the *kouroi* and *korai* statues, including questions of gender and social roles.

In sum, I was able to demonstrate that *kouroi* and *korai* statues are typologically classified; it is through their sometimes *very unclear* archaeological contexts that their function as funerary and votive figures is perpetuated; and epigraphic artifacts — never discussed or illustrated in art history texts — help to clarify these statues' functions and meanings. Students have the opportunity to learn about and relate to gender roles in Ancient Greek society, where male beauty and power was manifested in their nude, athletic bodies and their role as soldiers. Similarly, concepts of female beauty, gender, and social roles are explored via *korai* stautes.

This case study alone impresses upon the reader the importance of making one's analytical methods, interpretive modes, and evidence clear to students, as they are thus given the opportunity to evaluate the reliability and applicability of evidence and the relevance of an ancient culture's gender and social roles to contemporary life. If art history is simply reduced to a narration of style and stylistic change, students are deprived of the complexity and utility of the discipline.

On a pragmatic level, I also realized during this first case-study that, because I was integrating relevant images *into the text itself,* it was often unclear to me when I was nearing or exceeding my proposed page limit for each case-study (i.e., 8–10 pages, as cited in the sabbatical proposal). Therefore, I decided to calculate my page-limit "goal" by word count, rather than by page number. On average I write about 420 words per page, using a 12-point font, 1-inch margins, and 1.5-spacing. This word count results in approximately 3500–4000 words for an eight- to ten-page case study (i.e., 3360 per 8 pages — 4200 per 10 pages). Word counts (of text only) can be found in Section 4 of this report package.

This case study is especially relevant to AHIS 3, 4, 4H, and 10.

October 2019

I had a bit of a false-start during this month, choosing initially to swap out the topic on Mesopotamian Writing Systems and Epigraphy for a topic on **osteoarchaeology** in the context of Precolumbian art and architecture. However, after researching and writing about 1500 words, I felt that the topic was not integrating well into the usual art history textbooks and curriculum, so this case-study was abandoned. (This discarded material is available upon request.)

Precolumbian art history (AHIS 12/12H) is a course that is often taught in archaeology and anthropology programs, so it is by nature more interdisciplinary than the standard curriculum in art history programs. Consequently, Precolumbian art history courses already integrate more topics that are not "traditionally" art historical. I wanted to keep at least one topic with material relevant to AHIS 12/12H and so I began to work on backup **Topic "a"** which deals with Phenomenology and Sensory Archaeology. This case study was finalized in December 2019 (see below).

November 2019

After some reorientation in October, I shifted to **Topic 3** and left the October topics unfinished. Topic 3 deals with Roman coins, Imperial monuments, **numismatics**, **historical archaeology**, and **absolute dating methods**. Familiarity with Roman primary sources was an absolute requirement; consequently, the bibliography of this case study includes more **ancient texts** than

the other sources. By definition, historical archaeology relies on text and coin evidence, both of which provide "absolute" dates (though not to be used uncritically) for the study of art and architecture.

The major findings discussed in this case study — ***Numismatics, Historical Archaeology, and Art History*** — revolve around a number of critical questions, some (many?) of which would be of interest to students and useful for incorporation into courses. The overarching topic focuses on how coins (as artifacts) are used to date an archaeological deposit or complement our understanding of ruined archaeological remains through the analysis of their imagery and epigraphic inscriptions. Examination of coin images also enhances our understanding of power, politics, and representations of the nude body and gender. For example, the allegorical figure of *Judaea Capta* ("Captured/conquered Judaea") is represented as a seated, despondent woman and the image of Trajan — one of the best loved Roman emperors — is shown as a heroic nude.

This case study on **numismatics** and **historical archaeology** is relevant to AHIS 4, 4H, 10, 14, and 15, but should also be of interest to those in world history, archaeology, and anthropology in demonstrating how archaeological, historical texts, art and architecture can be integrated for a fuller understanding of research topics at hand.

During this research period, I petitioned the Salary and Leaves Committee to receive permission to pursue a topic not listed in the original list of proposed topics. On 12/03/19, in an email from Jennifer Leader, I was notified that the change of topics was approved. Therefore, Topic 5 (on Roman Domestic Architecture and Artifact Analysis) was substituted for a **new topic** on Archaeoastronomy, Climate-Responsive Building, and Roman Architecture (see below) This case study was not pursued until February 2020.

December 2019

Because of the lost time in October, I did not begin writing this Sabbatical Report during December, as originally planned. Instead, I returned to **Topic "a"** on Phenomenology: ***Phenomenology and sensory archaeology: Paleolithic caves, Mesoamerican urban sites, and Roman Homes***. This case study was enjoyable for my ability to pursue a topic of personal

interest and its application to Paleolithic cave painting, Roman architecture, Late Antique/Early Christian mosaic decoration, and Precolumbian urban spaces and architecture. The incorporation of archaeological interpretive theory (**phenomenology**) and a **sensory archaeology** approach to art historical objects, places, and spaces is extremely fruitful and constitutes an exciting new avenue of archaeological research.

The primary aim of this case study was to demonstrate how the study of artworks, architecture, and urban sites *via* photographs (as pursued in all art history textbooks and as practiced in art history classrooms) is inadequate since it divorces students from the three-dimensional and corporeal experience of paintings, mosaics, sculpture, buildings, and cities. By integrating **phenomenology** and **sensory archaeology**, students are better able to understand and appreciate some of the possible meanings and "lived experiences" of art, architecture, and the built environment in the ancient past

This case study is particularly relevant to AHIS 4, 4H, 12, 12H, 10, 14, and 15; however, it provides a new way of looking at art, architecture, urban spaces, museums, houses, businesses, and interior design schemes, so students may find this material applicable to a variety of areas of their lives and education.

February/March 2020

As I began the Spring term of sabbatical leave, I was able to pursue another topic of great interest — the application of archaeoastronomical methods to architectural spaces. This less-known area of archaeology has always been of interest but revealed aspects of Roman architectural culture that were unexpected. Because the standard archaeology textbooks I was consulting do not discuss **archaeoastronomy** in any detail, I signed up for a 6-week MOOC through Coursera in January 2020. This free resource was a fantastic introduction to the field of archaeoastronomy, taught by a noted archaeoastronomer, Giuglio Magli (Professor in the Mathematics Department of the Politecnico di Milano; Polytechnic University of Milan, Italy):

https://www.coursera.org/learn/archaeoastronomy?authMode=login

As Mt. SAC professors and students have discovered, access to online courses saved the day, since the State shut-down, quarantine, and mandatory social distancing cut off access to print sources and libraries used for researching the present case studies. From early March, only digital databases and already-digitized eBooks remained available. Thankfully, JSTOR also made it possible for everyone to access up to 100 articles in their database of academic sources for free. This access was critical since the Mt. SAC subscriptions (to JSTOR, for example) are limited and not generally sufficient for faculty course preparation, research, and professional development.

Despite numerous communications and pleas for help coming from campus, I was able to complete the fourth case study: ***The Roman Atrium House: Architecture, Archaeoastronomy, Sustainable Design, and Climate-Responsive Building***.

Archaeoastronomy is not a branch of the discipline which is discussed at any length in Renfrew and Bahn's *Archaeology* and archaeoastronomical methods are typically only applied to archaeological sites to understand the social, political, or religious functions of buildings. In this case study, I adopt a method from archaeoastronomy (i.e., the analysis of building alignments to the position and path of the sun) to better understand how the Roman atrium house was used and experienced. Culturally, the Roman home was designed to manifest and communicate the owner's social status; the cultivation of a comfortable interior microenvironment was part of this message of status and wealth.

This case study is especially relevant to AHIS 4, 4H, 5, 5H, 6, 6H, 10, and 15. Faculty members in Architecture, Anthropology, and Archaeology may want to integrate or build-upon this case study. This study should also be of interest to students studying environmental design, "green" or sustainable architecture, and environmental studies.

April 2020

Although I originally thought to abandon Topic 4 on geology — ***The Archaeology of Roman Buildings: Geology, Materials, Techniques, and Dating*** — I decided to keep it, given the importance of this knowledge in understanding Roman architecture from an archaeological and

scientific point of view (i.e., the **ruined buildings are, by definition, archaeological artifacts**). Because art history textbooks tend to de-emphasize the technical, archaeological, and scientific aspects of architecture and urban design, this was a worthy case-study to keep in the project.

To summarize the case study, Roman architecture (in Italy) is the result of its geological environment, which is volcanic in nature. If students understand this fact, they are better able to understand the original appearance of buildings, why they look the way they do now, and how they were once decorated. Moreover, the invention and use of *opus caementicum* (Roman hydraulic cement) is the direct consequence of using a specific type of geologic/volcanic material (pozzolana), which then revolutionized Roman architectural construction. Its use was pervasive throughout the Empire and can be seen in one of Rome's most famous monuments, *The Pantheon* (in the city of Rome).

In addition to requiring knowledge of geology and engineering to better understand the archaeological remains, the study of Roman architecture always involves **historical archaeology** methods in the referencing of the important architectural treatise, *De Architectura*, by Vitruvius (1st century BCE). This work is referenced in this and other case studies produced for this sabbatical project.

This case study is especially relevant to AHIS 4, 4H, 10, 14, and 15, and should be of interest to students of engineering, physics, architectural design and construction.

May 2020

Linked to the topic of geology is the case study on **natural and human formation processes** — ***Formation Processes: Pompeii and Herculaneum Urban Sites, Art and Artifacts***. This final case study was extremely fascinating and, for me, presented a perfect example of how the study of archaeology broadly applies to various areas of academic inquiry. By examining natural and human formation processes, I was able to gain a fuller understanding of how the natural environment shaped the urban layout of Pompeii, its defensive walls, its water supply and drainage system, and the design of its streets and sidewalks. An integrated look at human

behavior in light of a natural disaster, also altered the Pompeian landscape, as people fled the city before the eruption of Vesuvius in 79 CE or in a panic on the day of the eruption.

Also, this case study gives students a chance to think about how the discovery of Pompeii and Herculaneum, its early explorers and archaeologists, political events (i.e., the bombing of the site in 1943), environmental conditions (e.g., rain, sun, rodents, birds), and tourism continue to impact and modify this UNESCO World Heritage Site. The breadth of natural and human formation processes that have impacted and continue to impact Pompeii, Herculaneum, and nearby archaeological sites make this an interesting case study for students of museology and cultural heritage (preservation), in addition to archaeology and art history.

This topic related to an 8-week MOOC that I enrolled in in September 2019: *Discovering Greek and Roman Cities*, sponsored in part by AARHUS University (Denmark) and the Erasmus+ Programme of the European Union:

https://ou.edia.nl/courses/course-v1:AncientCities_project+DGRC+DGRC_2019/about

This case study is relevant to AHIS 4, 4H, 10, 14, and 15; however, it will be of interest to students of architecture, urban planning, anthropology, archaeology, cultural heritage, tourism, history, and museums.

June 2020

As I came to the end of the sabbatical year, I combed through each case-study to edit each document. As I was finalizing the case studies, I determined that I would re-order them to move some "traditional" topics to the beginning of the portfolio and some of the more theoretical archaeological topics toward the end. Topically, some case-studies were better presented earlier than later. Thus, case studies have been re-ordered (see below) from the topics originally indicated in the sabbatical proposal. Each case study word count is also indicated here (target: 3360— 4200):

1. Greek Archaic Statues, in situ finds, epigraphy, ephemeral data, and interpretive archaeology (**3965**)

2. Roman Coins and imperial monuments, numismatics, and historical archaeology (**4565**)
3. Roman building materials, techniques, and geological sources (**4090**)
4. Pompeii and its natural and human formation processes (**3904**)
5. The Roman atrium house, archaeoastronomy, and climate-responsive design (**4687**)
6. Phenomenology and sensory archaeology in Paleolithic art, Roman houses, Late Antique Christian mosaics, and Precolumbian urban centers (**4512**)

Approximate total word count: 25,723 words (ca. 61 pages, without illustrations).

This final report was finalized during the month of June 2020.

4. Summary List of Sabbatical Year Activities

August/September 2019

Greek Archaic Statues, in situ finds, epigraphy, ephemeral data, and interpretive archaeology

October 2019

Mesoamerican Pyramids at Teotihuacan and Osteoarchaeology (case study discarded for reasons identified in report, above);

Phenomenology and sensory archaeology in Paleolithic art, Roman houses, Late Antique Christian mosaics, and Precolumbian urban centers

November 2019

Roman Coins and imperial monuments, numismatics, and historical archaeology

December 2019

Original intention to write first part of Sabbatical Leave Report was postponed so as to make up for lost time and conclude Phenomenology case study.

February/March 2020

The Roman atrium house, archaeoastronomy, and climate-responsive design

April 2020

Roman building materials, techniques, and geological sources

May 2020

Pompeii and its natural and human formation processes

June 2020

This final report was completed during the month of June.

5. Conclusion

The overarching aim of this sabbatical-year project was to explore various aspects of the discipline of archaeology and to integrate archaeological topics, methods, and materials into the study of visual culture and art and architectural history. By researching and writing six (6) case studies, this project goal was fulfilled; and, the following archaeological topics were investigated:

a. *in situ* discoveries and archaeological context
b. relative dating methods
c. epigraphy
d. gender and social approaches to interpretive archaeology
e. numismatics
f. absolute dating methods
g. historical archaeology and use of text sources
h. geologic analysis of archaeological and architectural remains
i. identification and analysis of building techniques
j. natural and human formation processes
k. archaeoastronomy
l. social/cultural archaeology
m. phenomenology and sensory archaeology

Unfortunately, this project was limited to particular canonical artworks presented in art history textbooks and to a set of six case studies; there remain a number of archaeological methods that I was unable to explore. Nonetheless, the spread of topics was varied and touched on both the old and new, on analytical and interpretive methods, and demonstrated the utility of integrating archaeological material into the art history classroom.

As mentioned repeatedly, art history textbooks tend to omit discussion of the analytical, methodological, and interpretive modes that give us the interpretations we have today. In presenting "information" and interpretation without supplying evidence and without being transparent about one's analytical and interpretive processes, textbook authors are robbing

students of the opportunity to truly engage in the critical thinking process. Moreover, by "dumbing-down" art history textbooks, students and the general public are left with an impression of art history as "fluff" — a light-weight GE course that fulfills an equally irrelevant humanities or arts requirement.

Each case study was chosen to relate to core art history curriculum and written in an easy, conversational, and accessible style so that they could be incorporated entirely or in part into the following art history courses: AHIS 1, 3/3H, **4/4H**, 8, **10**, **12/12H**, 13, **14**, and **15**, with pointed applicability to those noted in bold. Likewise, portions of these courses might be utilized in Anthropology program courses (e.g., ANTH 3, 4, 5 and 5H). Finally, because the study of architecture, urban centers, and built environment are integral parts of the art history discipline, these case-studies should be of some use to an architectural technology program, geology, physics, and engineering. Students who are enrolling in AHIS 3/3H, 12/12H, 14, and 15 for their applicability to Area D/4 "Social Sciences — Women and Gender Studies, Ethnic Studies, or Archaeology" can register for these classes with confidence that they will be learning and practicing social science modes of analysis in these courses.

One important goal of this sabbatical project was to expand and develop my own knowledge and skill base as an archaeologist, areas that were little cultivated while studying art history. As an act of professional development, sabbatical leave is designed to provide faculty members with the time and space to explore, learn, research, and regenerate to become better professors, teachers, and colleagues. I am looking forward to incorporating these case studies into five courses that are unexpectedly "going online" in the coming academic year; each module will also be placed online (in Canvas) with attendant PowerPoints of images for colleagues' access and benefit.

6. Report Bibliography

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APPENDIX

CASE-STUDY #1

Greek Archaic kouroi *and* korai *statues in archaeological context*

Fig. 1

a. *New York (or "Metropolitan") Kouros* (Stokstad fig. 5–18)
b. *Phrasikleia Kore*
c. *Anavysos Kouros* (Stokstad fig. 5–20)
d. *Peplos Kore* (Stokstad fig. 5–21)
* all date to the Archaic Period, Greece (600–480 BCE)

About 200 (mostly fragmentary) *kouroi* (sg. *kouros*)[1] statues are known from Ancient Greece, making them one of the canonical works of the Archaic period, typically featured in art history survey and specialist textbooks. The name *kouros* signifies "young man" and its counterpart is the female *kore* (pl. *korai*)[2] figure ("maiden" or "young woman"). Although art history textbooks have, in more recent years, begun to discuss the function and purpose of these statues, the discussion is still primarily limited to formal analysis, description of stylistic prototypes and change, with only brief and superficial mention of their purpose. By incorporating **epigraphic studies**, data gathered from **archaeological excavation**, and

[1] *Kouroi* is pronounced "koo-roy" and *kouros*, "koo-rohs".
[2] *Kore* is pronounced "ko-ray" and *korai*, "ko-rye"

archaeological theory, one can better understand the function and meaning of the *kouroi* and *korai* statues.

Art-historical description

The **form** and **style** of *kouroi* and *korai* are strikingly similar to Egyptian statues (Fig. 1) in a number of ways. This stylistic influence is not surprising when one considered the increased trade and contact between Greece and Egypt during the Orientalizing and Archaic Periods (700–480 BCE; see timeline below). Like Egyptian sculptures, the stance of the male figures is rigid and compact, with the left foot forward and arms positioned tightly to the sides. By contrast, Greek statues are typically completely **freestanding**, whereas matrices of stone (along the back, between the arms and torsos, or behind the legs) are often left intact in Egyptian statues — presumably to render them more solid, stable, and less likely to break. Additionally, the *kouros* is typically made of marble (a softer and more readily-available stone to Greek artists) and depicted without clothing, whereas the Egyptian prototypes are always clothed.

Korai differ in small but significant ways: They are also freestanding and, while their skirted legs and covered torsos are very columnar in form, one arm is often extended, as if holding or offering something. (Consequently, the extended arms are often missing as they were attached separately and are easily broken or lost over the centuries.)

The *kouroi* and *korai* bodies are generally **abstracted**: the sculptor — in his fascination with mathematical aesthetics and in an attempt to **idealize** the bodies — has imposed a geometry onto the male and female figures. In the *New York Kouros*, for example, one sees the outline of a carved rhomboid (diamond-shape) on the front of the torso to indicate the lower rib cage and oblique muscles (Fig. 2). In the case of the *Anavysos Kouros* — although more **naturalistic** than the slightly older *New York Kouros* — the abdomen is suggested by a carved oval. And, in all cases, locks of hair are arranged with perfect **symmetry** (Fig. 3).

Figure 2 (upper right)
Torso of the *New York Kouros*
Figure 3 (lower right)
Rear view of hair of *New York Kouros*

Although Archaic statues still possess a high level of abstraction, they are typically discussed in art history textbooks as monumental achievements in the progression toward naturalism because, indeed, they are much more naturalistic than Greek sculpture of the preceding centuries (i.e. of the Geometric and Orientalizing Periods; Fig 4). This "increased naturalism" is enhanced by the addition of paint, of which traces can be seen in the so-called *Peplos Kore* (Case-study image '*d'*).

By tracking increased naturalism and gradations in anatomical accuracy, art historians and archaeologists have established a method of **relative dating** (see box above). Those kouroi and korai statues that feature more abstract, geometric traits (like the *New York Kouros*) are deemed earlier (older) than those that display more anatomical accuracy (like the Anavysos Kouros). Using this method, how might an archaeologist date this *Kouros from Tenea* (Fig. 4)?

Fig. 4 — *Kouros from Tenea*

 The dating of most *kouroi* and *korai* statues—especially those that are *not* archaeologically excavated—is accomplished through **relative dating**, the analysis of style, and by establishing **typological sequences**. This is a common method used by archaeologists and art historians.

See Renfrew and Bahn. 2016. *Archaeology*: Ch. 4 "When? Dating Methods and Chronology," pp. 131–136, especially: introduction, "Relative Dating," "Typological Sequences," and "Seriation."

Purpose and Function

In her introductory textbook, *Art History*, Marilyn Stokstad mentions that *kouros* statues were made as votive figures (i.e., to be dedicated in a sanctuary) or funerary markers (i.e., to stand over a grave; Stokstad 2018: "Freestanding Sculpture: Introduction"). Similarly, *korai* statues are said to have been placed in sacred enclosures to make their offerings to a deity in

perpetuity (Stokstad 2018: “Freestanding Sculpture: Peplos Kore). Unfortunately, Stokstad fails to explain or provide evidence for these prevailing beliefs.

Likewise, the Department of Greek and Roman Art at the Metropolitan Museum of Art in New York states that the *New York Kouros* “marked the grave of a young Athenian aristocrat” (The Met 2000-2019: n.p.); though, in fact, the **provenance** of this statue is unknown (The Met 2000-2019: “additional object information” > “provenance”; citing Richter 1932: 220).

Archaeological Evidence and Critical Theory

To better understand the function and cultural meaning of the so-called *kouros* and *kore* sculptures and in order to shore up (or problematize) prevailing interpretations, it is critical to look at the **archaeological** and **epigraphic** contexts of such statues. It is also enlightening to understand how (much) information is lost when the archaeological provenance is unknown, as is the case with the *New York Kouros*, “said to be” — but not known to be—“from Attica” (The Met 2000-2019: “additional object information” > “provenance”; citing Richter 1932: 220).

Our appreciation of these sculptures is also enhanced by applying **post-modern / post-processual critical theory** to our interpretations of *kouros* and *kore* statues. By looking at these works in new ways and *via* new lenses, archaeologists and art historians are often able to reveal new depths of meaning contained in these works of art.

Archaeological Methods and Context

(Renfrew and Bahn. 2016. Archaeology: Ch. 3 “Where? Survey and Excavation of Sites and Features”)

Of the four case-study artworks — three of which are canonical art-historical works, featured in introductory, survey textbooks — only the female sculptures’ **find-spots** are known. The male figures’ places of origin are unknown, though deduced via other scholarly methods.

Excavation is the primary scientific method by which archaeologists gather data about and associated with material remains of the past (e.g. works of art, artifacts, floral, and faunal remains). Archaeologists systematically uncover these material remains by removing deposits (e.g. layers of soil) that have buried them; and by carefully noting and studying the deposits, archaeologists are able to determine the time when the objects were buried and, often, under what conditions they were buried. When an object is found ***in situ***, a wealth of questions can be

answered; for example: When was the object buried? Were there any human or animal remains nearby? Was it placed in a house, cemetery, or countryside? Can the time of year be determined from plant pollen or remains? Were foods or other artifacts placed with the sculpture? Is there any evidence of a religious or social ritual? Is there an associated inscription that tells us the identity of the sculpture, its commissioner, or artist?

 Iconology (normally referred to as **iconography**) is the study of standardized images, symbolism, and myth narratives in the visual arts.

Not all images are "iconographic"; instead, iconographic images are specific types of representations that always consist of standardized, repeated imagery. (Think of the "standardized images" of Thanksgiving.) Iconographic images often contain symbolism and refer to oral or written stories.

We are familiar with the iconography of many Greek heroes or deities. Herakles/Hercules is often shown with a club and lion skin, for example.

The Peplos Kore

Unfortunately, the find-spots of the *New York Kouros* and the *Anavysos Kouros* are unknown. The *Peplos Kore* was excavated in 1886 from a pit near the Erechtheion on the Akropolis of Athens; she was broken into three pieces and dumped (buried?) after the Persian sack of Athens and the sanctuary site in 480–479 BCE (Museum of Classical Archaeology 2019: par. 9) to prepare the site for rebuilding and redecorating. Although we don't exactly know how and where the *Peplos Kore* stood in the Akropolis, this archaeological find does tell us that *korai* were sculpted to be placed in sacred areas, near temples. Her arm, though missing, was extended out and presumably held and offering for the gods.

It should be noted, however, that we don't know the name of the person in this sculpture. We call her *kore* ("young woman") but it has been suggested that she is, instead a representation of a goddess (Zucker and Harris 2015: n.p.)—and possibly Athena, since there were many later sculptures of Athena on the Akropolis and numerous temples in that sanctuary are dedicated to Athena. Greek gods and goddesses are typically depicted with **iconographic attributes**; these are typically objects — sometimes animals — that are associated with the deity. For example,

Athena is a goddess of warfare, weaving, and wisdom. She is often depicted with a helmet and shield (warfare), an owl (wisdom), and (sometimes) with cloth. In the city of Athens, she is also associated with the olive tree, because in a local myth, she was said to have given the Athenians olives, from which they made olive oil (a prized agricultural product). Because the Archaic-period Akropolis was destroyed at the end of the Persian war, this statue was broken and used in the architectural fill during the rebuilding, any objects in her hands have been lost.

We are also able to learn something about ancient Greek behavior because the sculpture was discarded — perhaps reverently and with respect, but perhaps as "trash." Today, we are loath to throw "artworks" into the trash, but evidently for the Athenians of ca. 480 BCE, the rebuilders were willing to "get rid of the old" in order to "make way for the new."

The Phrasikleai Kore

The so-called *Phrasikleia Kore* is another example of a *kore* that was excavated scientifically and, because of this, even more informative data was gathered about her and her time period than in the previous case. Although rarely depicted in art history survey textbooks, the *Phrasikleia* Kore is one of the most beautiful and intact examples of this type of sculpture. It was also found with a *kouros* companion (Figs. 5 and 6)

Figures 5 and 6 — *Phrasikleia Kore* and companion *kouros* at time of excavation, Merenda (Attica), Greece 1972

One benefit to discovering these sculptures in situ was the ability to document the presence of paint on their surfaces. This **ephemeral material** is often found on the sculptures when they are excavated, but not always preserved once they are exposed to air and light. In some cases, we know that people of the 18th and 19th century bleached Greek and Roman sculptures because they preferred sculptures that looked clean and white (Gurewitsch 2008: par.7–8; Museum of Classical Archaeology 2019: par. 7).

Three of the case-study sculptures bear traces of paint: the *Phrasikleia Kore*, the *Peplos Kore*, and the *Anavysos Kouros*. (See Ch. 5.3, section "Color in Greek Sculpture" in Stokstad 2018). Most of the time, paint was added to the hair, eyes, and lips in order to make the sculptures appear more naturalistic — and clearly naturalism was one of the features Greek sculptors were striving for. However, paint details are also valuable because they tell us about ancient Greek clothing styles and textile patterns that are otherwise lost to us since cloth doesn't preserve well in the archaeological record (i.e. cloth decays unless it is buried in very dry conditions).

Using ultraviolet light and simple flashlights, scholars like Vinzenz and Ulrike Brinkmann, have been studying paint on ancient statues through the re-painting of plaster casts — a type of archaeology called **experimental archaeology** (see Gurewitsch 2008; also, Renfrew and Bahn 2016: 53 "Experimental Archaeology"). His analysis and experiments have revealed that sculptures like the *Peplos Kore* and *Phrasikleia Kore* not only featured painted hair, eyes, and lips but brightly colored and patterned clothing (Figs. 7 and 8).

Analysis shows that each sculpture was painted with vibrant colors made from natural mineral pigments; star-patterns on the garment of the *Phrasikleia Kore* are enhanced with gold foil. Moreover, red fabrics were often associated with high status and wealth because the dye was difficult and expensive to obtain. The fact that this statue has been painted to replicate red textiles and was detailed in gold foil tells us something about this woman's status in Ancient Greek society.

Finally, it has been suggested that the star patterns on the back of her garment are arranged in such a way as to resemble the constellation of Scorpio (Liebieghaus 2017: 5). If this is true, the significance is unclear.

Fig. 7 (near right) *Peplos Kore*
Fig. 8 (far right) *Phrasikleia Kore*
Reconstructed polychromy on plaster cast replicas

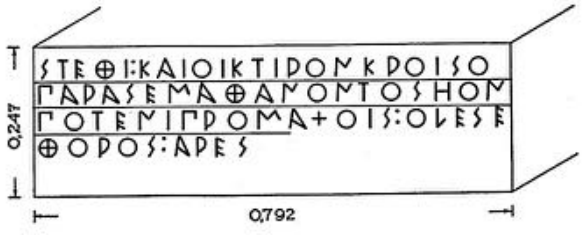
Epigraphic Evidence

 Epigraphy is the study of inscriptions, which consist of "any piece of writing or lettering engraved, etched, incised, traced, stamped, or otherwise imprinted on a durable surface" (Bodel 2001: 2). Graffiti and text in manuscripts are also considered "epigraphic." One who studies epigraphy is called an epigrapher or epigraphist.

When studying and recording ancient inscriptions, scholars are careful to replicate the letters, lines, and any missing elements in brackets (i.e. […]). If enough of the word is known and the scholar can supply the missing letters, they are also supplied in brackets (i.e. [xyz]). Epigraphy has played an important role in understanding Greek art, archaeology, and culture since the ancient Greek language and alphabet — which is different from Modern Greek — has been known for centuries and can be read by trained scholars.

We are fortunate to possess carved inscriptions for the *Phrasikleia Kore* and one believed to be associated with the *Anavysos Kouros*,[3] both of which indicate that these statues were erected as funerary monuments, over or near a grave in a **necropolis**. As such, they functioned as reminders of the deceased individuals and, in some way, might be thought of as portraits (even though they are very generalized and idealized and look very much like other *kouros* and *kore* statues of the period).

The inscription on the base associated with the *Anavysos Kouros* is replicated here in a line drawing:



[3] Note that the so-called *Anavysos Kouros* was not archaeologically excavated, but instead smuggled out of Greece by traffickers, discovered by authorities in 1937, and later returned to Greece (Philadelpheus 1935/36: 1). It had been broken into ten pieces (to facilitate its removal from the country) and these pieces did not include the feet or base (Philadelpheus 1935/36: 2).

In 1947, a base believed to belong to the *Anavysos Kouros*, appeared in the possession of art smugglers, who were trying to sell it to the American School of Classical Studies in Athens; they claimed it belonged to the *New York Kouros* (Robinson, Stevens, and Vanderpool 1949: 361–363). Renowned art historian, Gisela Richter (1942: 193) argued that it instead belongs to the *Anavysos Kouros*, based on her proposed dating of the statue and the epigraphic date of the inscription style. Robinson does not believe the base belongs to the *Anavysos Kouros* (Robinson, Stevens, and Vanderpool 1949: 364).

The inscription is transcribed here and translated into English:

στῆθι : καὶ οἴκτιρον Κροίσο παρὰ σῆμα θανόντος
ἡόν ποτ' ἐνὶ προμάχοις : ὄλεσε θῶρος : Ἄρες.

"Stay and mourn at the monument of dead Kroisos,
whom furious Ares destroyed in the front ranks."

(Richter)

Some very interesting cultural information can be gleaned from the *Anavysos Kouros* inscription, if the inscription does in fact belong to the statue. First, it is obvious that we are asked to remember the dead Kroisos through the sculpture — the sculpture is a memorial. Second, we learn something about the role and status of men in Archaic Greek society: we are told that Kroisos died on the front lines of battle, killed in war (e.g. Ares is the god of war). Third, the name Kroisos (Croesus) was an elite name, which referenced the Eastern Greek king of Lydia (6th century BCE), who possessed great wealth in the form of gold coins. The kingdom of Lydia and King Croesus were synonymous with wealth and riches; even into the 20th century, people have described someone as "as rich as Croesus" (British Museum 2014: par. 1). For an Ancient Greek man to be named Kroisos indicates that he was elite and that he and/or his family wanted to associate themselves with high status and wealth.

Finally, we have evidence that elite men made up the ranks of the Greek military. Indeed, one of the defining characteristics of a young Greek man was his ability to buy his armor, become a soldier, and defend his polis ("city-state"). This was one of his most important civic duties and, through this statue, we are able to learn something about what Ancient Greek people valued: Men went into battle when they were still relatively young (by our standards). The *Anavysos Kouros* is shown as a young man, in the prime of his life. He does not yet wear a full beard like his esteemed elders; but his is physically fit and athletically strong. Instead of setting depicting him in his military uniform or armor, he is shown in idealized nudity, to emphasize his athletic strength. These were social roles and physical qualities that were valued for ancient Greek men in the prime of their lives.

Archaeological Interpretation

(Renfrew and Bahn. 2016. Archaeology, Ch. 12: "Why did things change? Explanation in Archaeology," pp. 477 and p. 498–501 "Postprocessual or Interpretive Archaeology")

Just as the epigraphic evidence associated with the *Anavysos Kouros* provides material through which we can better understand Ancient Greek society and the role of men, so to may we learn about women, female roles during the Archaic Period. This is achieved by employing post-processual theories (also referred to as post-modern critical theories). Processual archaeology introduced a scientific method to the study of archaeological sites and material objects, emphasizing analytical processes, quantifiable data, and "objectivity." Post-processual archaeologists critiqued this approach, citing the absence of human agency in processual conclusions and suggesting that there could not be any true objectivity, due to a variety of factors (e.g., human variability, temporal distance, incomplete archaeological record). Post-processual archaeologists argued for the re-introduction of various critical theories, such as phenomenology, Marxist theory, gender and feminist theory, and multicultural and identity theories.

The term "theory" should not be frightening: the word theory comes from Ancient Greek *theoria* (θεωρία) and meant "looking at." Thus, various philosophers (or theorists) ask us to "look at" or consider something from a new or different point of view. In order to "look at" something from a different point of view, these theorists prompt us to ask new or different questions…, just as this case study is asking you to look at Archaic Greek *kouros* and *kore* statues from different perspectives.

For example, because the *Phrasikleai Kore* was discovered in its ancient archaeological context, other associated artifacts could be linked to it and this gave scholars more information to ask questions about. When the *Phrasikleai Kore* was found, the bronze ring that encircled the base of the statue had been buried with it; this object served as a sleeve that fit into the statue's base (Fig. 9). Archaeologists were able to then match the circular carving on a marble base into which the bronze ring was set. The base, unfortunately, was not found with *Phrasikleia Kore*, but had been described in the 18th century by a visitor to the church of Panagia ("All Saints") of Merenta, about 650 feet away from where Phrasikleia was found with her companion statue. (As is common, the base had been re-used in the wall of the building.) This base would provide scholars with much-needed information that, today, helps us better understand the statue, and the role of women in Ancient Greek society.

Fig. 9 *Phrasikleia Kore*
Statue base with intact bronze ring and replaced into stone base. Note paint remains.

The limestone base of the stone contained two epigraphic texts. On one side is the "signature" of the sculptor:

> Ἀριστίον Παρι[ός μ᾽
> ἐπ]ο[ίε]σε
>
> Aristion of Paros made me

On the other side of the block, we are given the name of the young girl depicted in the statue:

> σεμα Φρασικλείας·
> κόρε κεκλέσομαι
> αἰεί ἀντὶ γάμο
> παρὰ θεον τοῦτο
> λαχοσ᾽ ὄνομα
>
> Tomb of Phrasikleia.
> I must be called *kore* (maiden) evermore;
> instead of marriage, by [the will of] the gods, this name became my fate

One of the most valuable pieces of information we have is the name of the girl — Phrasikleia. The latter portion of her name — *-kleia* — is derived from the Greek word for "fame," *kleos*,

which is a common suffix in elite given names. We are told that, by the will of the gods, she shall be called *kore* — she will be a maiden, virginal — forever, instead of marrying. In other words, she died before marriage.

When we combine the information learned from the epigraphic text and combine it with the traditional art-historical methods of visual analysis and **iconography**, our understanding of the *Phrasikleia Kore* is further enhanced. First of all, notice that statues of *korai* are always clothed (while men are shown in the nude) and sculpted clothing is always painted, often in bright, vibrant colors. This obvious and fundamental difference in the way men versus women were depicted in Greek art tells viewers something about the societal expectations of men and women. Put simply, standards of female modesty required that women's bodies were to be covered; korai statues also tell us that women conveyed their beauty, wealth, and social status through their beautiful, intricately-woven, and decorative clothing — all of which were supplied by men.

Although the image of Phrasikleia is reliably identified as a representation of an actual young woman (named Phrasikleia), her iconography and the epigraphic text remind us of a particular Greek goddess, named Persephone. Persephone — sometimes referred to a *kore* — is famous for having eaten pomegranate seeds, given to her by Hades, the god of the underworld. In doing so, she was tied (married) to Hades for eternity. However, Persephone's mother, Demeter, was so distraught at the loss of her daughter that she caused winter to descend on the earth for the entire year. In order to save the earth, crops, and humankind, a compromise was struck: Hades would let Persephone return to her mother for nine months, as long as she returned to him for three. These time periods correspond to spring, summer, and autumn, while the three remaining months correspond to winter.

Notice that the statue of Phrasikleia *kore* holds an object in her fingers; it is the same shape as pendants in her necklace, earrings, and crown (Fig. 10). These are clearly flowers, as is evident by some of the partially opened blossoms in the crown. By comparing these to pomegranate blossoms (Fig. 11), one can see that these objects represent blossoms at different stages of bloom — most have been cut before they had a chance to open at all. The symbolism is evident: not only do pomegranate flowers remind the viewer of Persephone, the virgin-goddess who was snatched away by Hades, but the unopened blossoms represent fruit that had no chance to ripen, just as Phrasikleia died before any chance to mature, marry, or procreate.

By considering archaeological evidence (e.g., *in situ* finds, epigraphic evidence) and integrating experimental methods with art-historical methods and social-gender theoretical perspectives, our view of the ancient Greek *kouroi* and *korai* can be greatly enhanced. Especially valuable is the opportunity for students to learn how art historians and archaeologists know what they know and how they arrive at their interpretations. This is a key skill learned through a humanities and social-science education.

Fig. 10
Phrasikleia Kore
Detail of hand-held object, necklace, earrings, and crown

Fig. 11 — *Pomegranate blossoms at various stages of bloom*

Questions for Review and Further Study

Before leaving the topic of Ancient Greek statues, it is worth reviewing the art-historical, archaeological, and interpretive information learned. As such, this case study will close with a series of questions, study prompts, and issues to consider:

1. Compare and contrast the inscription belonging to the *Anavysos Kouros* and the inscription belonging to *Phrasikleia Kore*. How is each epigraphic inscription different? How are they similar? What do they tell us about gender (masculinity and femininity) in Ancient Greek society?

2. Compare and contrast the Anavysos Kouros sculpture with the Phrasikleia Kore sculpture. Does the depiction of their bodies complicate or corroborate what is communicated in the inscriptions? What do they tell us about gender in Ancient Greek society? What do they tell us about Ancient Greek views of the body?

3. What do *kouros* and *kore* statues tell us about social status and wealth?

4. Can you think of any possible problems with relative dating and typological sequencing?

5. Based on this case study and the supplemental readings assigned, what kinds of information are lost when an artifact or sculpture is not excavated?

6. Compare the *New York Kouros* to the *Phrasikleia Kore*. What information to we know about the *Phrasikleia Kore*? What do we know about the *New York Kouros*?

7. Can you think of any possible reasons why art history textbooks focus on some statues but not others?

8. How does archaeological excavation help us to understand why these statues were made? How does it help us understand how they were used?

9. What does a post-processual interpretive study of *kouroi* and *korai* statues tell us about Archaic Greek culture?

10. What was the importance / role / function of paint in relation to these statues? Was it only to make the statues beautiful or did the colors have a symbolic function?

11. Can you give define epigraphy and iconography?

12. Take a look at the Kouros statue owned by the Getty Museum: http://www.getty.edu/art/collection/objects/10930/unknown-maker-kouros-greek-about-530-bc-or-modern-forgery/

    Specialists cannot determine if this statue is authentic (made in ancient Greece) or a forgery (made in the 20th century). A free PDF of *The Getty Kouros Colloquium* is available online (http://www.getty.edu/publications/virtuallibrary/0892362634.html) and gives students the opportunity to consider how art-historical, archaeological, and other scientific methods have been utilized to (attempt to) answer the question of the Getty Kouros' authenticity.

    For example, if using the method of typological classification (of style), is the Getty Kouros considered to be fake or authentic?

Chapter Correspondences

The following sculptures can be found in Stokstad's *Art History* (2018):

Anavysos Kouros (Stokstad fig. 5–20)
Peplos Kore (Stokstad fig. 5–21)

The following topics/methods/materials can be found in Renfrew and Bahn's *Archaeology* (2016):

Archaeological Excavation (Ch. 3)
Relative Dating/Typological Classification (Ch. 4)
Epigraphy (not explicitly discussed; see "Inscriptions")
Ephemeral Data (not explicitly discussed)
Experimental Archaeology (p. 53)
Explanation and Interpretive Archaeology (Ch. 12)

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CASE-STUDY #2

Numismatics, Historical Archaeology, and Art History

Very occasionally, coins appear in art history textbooks and are discussed as works of art. Most typically, they appear in chapters dealing with Roman art history to provide a portrait of a ruler or to address the artform of portraiture. In Stokstad's *Art History* (digital chapter 6.2) a denarius of Julius Caesar is accompanied by a brief paragraph suggesting that the realistic, unidealized image of Caesar served as propaganda to promote the commander's "old-fashioned respectability" and "traditionalism as a senator." A translation of the words in front of Caesar's face and an identification of the objects behind his head are provided, but poorly contextualized.

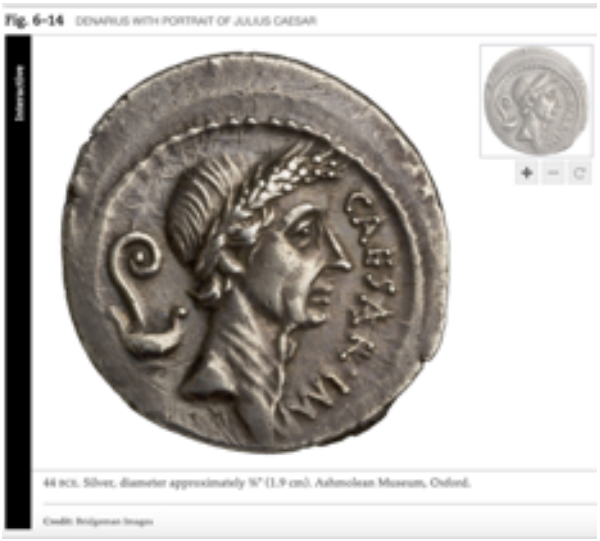


Fig. 1
Screenshot of coin illustration in Stokstad's *Art—A Brief History*, fig. 6–14:
'Denarius with Portrait of Julius Caesar'

Fred Kleiner (2010: 164, fig. 7-11) in the 13th edition of *Gardner's Art Through the Ages*, similarly presents a silver coin of Julius Caesar in the section on the Roman Republic and better contextualizes the image, his role as "dictator for life," and the image's place in the history and culture of the period. Later, in the chapter on the art and architecture the Roman Empire, Kleiner presents two coins of the Constantinian period, focusing only on the portraiture styles and the inclusion of Christian iconography.

Nonetheless, the inclusion of coins in art history textbooks is focused on the artistic style of the portrait, rather than on all of the ancillary ways coins may be used in art-historical, archaeological, and historical research. This case-study will take the time to introduce

numismatics (see info box below) and their archaeological, art-historical, and historical/political values by focusing on two examples: a) coins minted after Vespasian's defeat of Judaea in the 1st century AD, and b) coins minted under the Emperor Trajan in the beginning of the 2nd century AD. Coins have a value that moves beyond their "artistic" qualities; in addition, they bring historical information to canonical works of art and help archaeologists date deposits. First, however, it is important to explain numismatics and terminology related to coins.

Numismatics

> **Numismatics** is the study of money and especially coinage in the ancient world. The discipline also includes the culture of money—its symbolism, use, and imagery—and the process of coin minting.

Representing one of the few true "primary sources," coin inscriptions and images are preserved on the *actual material* upon which they were impressed when minted (compare, for example, the fact that we possess no ancient text sources that are not *copies* made in the Middle Ages). As such, they tell us much about the economy, political propaganda, society, culture, and historical events, in a way that is more direct that written copies of ancient texts.

In the most essential definition, coins are standardized quantities of portable, transferable wealth. In ancient Rome, coin denominations were made of different types of metal (i.e., copper-alloy [*as*], bronze [*sestertius*], silver [*denarius*], and gold [*aureus*]), each representing gradations of value. Like American pennies, the copper coin was worth less than a silver or gold coin. The minting of coins by a government-regulated authority (the coin mint) ensured that only "official" coins of standardized weights and materials were issued. Official coins typically carry some mark(s) of their authority or guarantee, including the portrait of the emperor, under whom the coin was issued.

Coins typically possess the following elements and are referred to with the following terminology:

a) the "front" of the coin — usually with a portrait of a ruler or god — is referred to as the **obverse** ("heads");
b) the "back" of the coin is referred to as the **reverse** ("tails");
c) an inscription on the coin is called the **legend**. Because of the small available surface area, legends are often abbreviated.

In addition to these elements, coins are often full of visual imagery and symbols. The standardized images and symbols are often referred to as the **iconography** of a coin, a term drawn from art history.

 Iconology (often referred to as **iconography**) is the study of standardized images, symbolism, and myth narratives in the visual arts.

Not all images are "iconographic"; instead, iconographic images are specific types of representations that always consist of standardized, repeated imagery. (Think of the "standardized images" of Thanksgiving.) Iconographic images often contain symbolism and refer to oral or written stories.

We are familiar with the iconography of many Greek heroes or deities. Herakles/Hercules is often shown with a club and lion skin, for example.

Because coins circulated so freely, changed hands, and travelled long distances over time and geographic space (Crawford 1983: 191), they might be considered to have propagandistic value. Often, important historical events, political victories, or moments of religious significance are commemorated on their **obverse** or **reverse** faces. In a time before radio, television, telephones, and the internet, the images and information on coins may have been one of the only ways someone in the Empire saw or received news of the emperor and his deeds.

In terms of archaeological value, coins are a type of evidence (along with written texts) that are used in **historical archaeology**.[4] Compared to the **relative dating** methods mentioned in

[4] There is no extended discussion of numismatics and the use of coins in archaeological research in Renfrew and Bahn's *Archaeology* textbook (2016). The terms "coins/coinage" is mentioned in the Index (p. 657) and provide references to the handful of locations where coins are mentioned in the text, identifying their value as "written

the prior case-study, coins, epigraphic, and literary evidence can serve to provide absolute dates for archaeological contexts (see Renfrew and Bahn 2016: Ch. 4 and 142 on coins, specifically), though they should not be used uncritically. For example, coins are often used to date a deposit by establishing a ***terminus ante quem*** (i.e., a "point before which") for all objects below the deposit and a ***terminus post quem*** (i.e., a "point after which") for after the deposition (Crawford 1983: 192–193).

Numerous coins have been found in the archaeological deposits of Pompeii, where it is traditionally believed that Vesuvius erupted and destroyed everything in the region on 24 August 79 CE. However, **textual evidence** is actually is actually unclear — demonstrating some of the problems with using written documents uncritically. While we may count ourselves lucky to have the younger Pliny's eyewitness account of the eruption of Vesuvius (Pliny *Letters* 6.16 and 6.20), a number of factors complicate our use of this historical document: First, we must keep in mind that Pliny wrote his accounts for the historian Tacitus nearly 30 years *after* the eruption (Jones 2001: 31). Furthermore, the actual letters of Pliny do not survive; instead we have manuscript (hand-written) copies, some of which date to the early Middle Ages (9th century CE). Among these later manuscripts different dates are provided for the eruption — August, September, October, November, and December!

In 2006, archaeologist Grete Stefani was studying a hoard of coins that had been discovered *in situ* during the excavations of a house in Pompeii (Stefani 2006: 13). The coins had been in a bag (long decomposed) that was carried by a person fleeing the eruption of Vesuvius. As she analyzed the coins, she came across the following silver *denarius* (**Fig. 2a** and **b**):

Fig. 2 a and b
Silver Denarius
depicting the Emperor
Titus

sources" and in revealing information about trade and economics (p. 187 and 385). The discovery of an exceptional Late Roman coin hoard in England is reviewed on p. 576.

Dr. Stefani immediately identified the portrait as an image of the Emperor Titus. (So far, this discovery was not unexpected, since Titus *was* the emperor on the throne when Vesuvius erupted.) However, when Stefani read the legend, she noticed something shocking:

Obverse:

IMP TITUS CAES VESPASIAN AUG P M

Imp(erator) Titus Caes(ar) Vespasian(us) Aug(ustus) P(ontifex) M(aximus)

"Emperor Titus Caesar Vespasianus Augustus, the High Priest"

Reverse:

TR P VIIII IMP XV COS VII P P

Tr(ibunicia) P(otestate) VIIII [9 times] Imp(erator) XV [15 times] Co(n)s(ul) VII [7 times] P(ater) P(atriae)

"Endowed with Tribunician Power nine times, the title Imperator fifteen times, and Consul seven times, Father of the Fatherland"

Note that no actual date is impressed on the coin; however, historians know that Titus was not given the title "Imperator" for the 15th time until September 79 CE (Stefani 2006: 13). Thus, the eruption of Vesuvius cannot have occurred before September 79 and the coin establishes a ***terminus post quem*** for the eruption, an event "after which" the coin was brought to the city of Pompeii. This means that the popularly date of Vesuvius' eruption was *not* 24 August 79 and should no longer be accepted as correct. The evidence supplied by this one artifact disrupts the story about Vesuvius and the destruction of Pompeii. Moreover, this is a good case that demonstrates how numismatic evidence forces us to revisit traditional interpretations. (There is, by the way, a lot of other evidence that suggests that the eruption took place in the autumn of 79, and not in August; see Lapatin and Kozlovski 2019.)

> ***In situ*** archaeological remains are material objects found in the location where they were buried or abandoned. The discovery of tools at a manufacturing location, the excavation of pots on top of a kitchen stove, or bread found in an ancient bread oven are all examples of archaeological objects found *in situ*. The phrase is Latin and means "in place".

Vespasian and the Judaea Capta Coins

Even if a coin is *not* found *in situ*, it still retains much valuable information about the past. In 1932, Harold Mattingly, the renowned British numismatist, advocated for the use of coins as historical documents "as a means of access not to death, but to the life" of the ancient world (Mattingly 1932: 74). In fact, the analysis of coins yields much information about the history, culture and traditions of ancient Rome. A case in point is the coin series minted by the Emperor Vespasian (the father of Titus, the emperor mentioned above) to commemorate the suppression of the Jewish Revolt (66–70 CE). Examination of one *Judaea Capta* coin (Fig. 3) allows us to learn something about the coin as a material object, as currency, and as a record of historical events and imperial propaganda; it also provides a view into Roman concepts of gender and power. By studying this coin's physical make-up, its **legend** and **iconography**, one may better understand these aspects of Roman life.

The *Judaea Capta* coin minted under Vespasian (Fig. 3) is a *sestertius*, one of the most common coins of the Roman world. Representing a value of about one-quarter of a

Fig. 3
Silver Denarius depicting the Emperor Vespasian

denarius and four-times more than an *as*, six to seven *sestertii* could typically purchase a day's worth of food and provisions in Pompeii during the mid-1st century CE (Berry 2007: 229). The

fact that *sestertii* were used in trade, to pay for goods and services, serves to remind us that they were common, heavily circulated, handled and viewed.

The obverse of the *Judaea Capta* coin displays a portrait of Vespasian: the emperor is seen in profile, wearing a wreath of laurel leaves, a sign of victory (Beard 2007: 50, 52). His features have been rendered naturalistically with wrinkles, fleshy jowls, a bullish physiognomy, and receding hairline. Whether this is intended to be an accurate portrait is unclear and, perhaps, doubtful considering that other coin portraits of Vespasian depict variations in his appearance.

The legend circulates clockwise from the bottom center of the coin, framing the portrait. It is slightly off-center, evidence that the **blank** was imperfectly placed between the dies when struck;[5] hence, the first words of the legend are partially cut off, though legible:

IMP CAES VESPASIAN AVG P M TR P P P COS III

Imp(erator) Caes(ar) Vespasian(us) Aug(ustus) P(ontifex) M(aximus) Tr(ibunicia) P(otestate) P(ater) P(atriae) Co(n)s(ul) III [3 times]

In translation, the text identifies Vespasian as emperor and establishes a connection to the first emperor of Rome, Caesar Augustus. Not related by blood or adoption to the Julio-Claudians, Vespasian adopted the name and epithet "Caesar Augustus" as an imperial title. The legend continues to identify the offices and powers he held:

"*Imperator* Caesar Vespasian Augustus, High Priest; (vested with) tribunician power; Father of the Fatherland; consul for the third time."

These imperial titles and powers provide critical information that is needed for the dating of the coin. Since none is explicitly stated, a date can be teased from the inscription by cross-referencing literary documents of Vespasian's life and career. The Roman historians, Tacitus, Suetonius, and Josephus, all provide data about the emperor's life and deeds. We know that following the death of Nero in 68 CE, four men were named emperor in succession; Vespasian was the fourth, acclaimed emperor by his troops in Egypt on 1 July 69 (Suetonius *Vespasian* 6.3; Tacitus *Histories* 2.79; Josephus *Wars* 4.10). By December that year, the Roman Senate

[5] See "Coin Production in the Roman World" (video) by the Art Institute of Chicago, in the bibliography for a recreation of ancient coin-making techniques.

confirmed Vespasian, putting an end to a brief period of civil war (*Lex de Imperio Vespasiani*). Originally sent to suppress the Jewish Revolt, which began in 66, Vespasian left his son, Titus, in Judaea to conquer that land and capture Jerusalem in 70, while he returned to Rome from Egypt in the autumn (Suetonius *Vespasian* 4.5; Tacitus *Histories* 4.51, 5.5; Josephus *Wars* "Preface").

The *Judaea Capta* coin provides a *terminus post quem* and for its creation as it could not have been minted in Rome until Vespasian was proclaimed *imperator*, *pontifex maximus*, or *pater patriae*, all titles he assumed when he became emperor. Furthermore, he held his third consulship in the year 71 (Scarre 1995: 64), narrowing the date of the coin's creation to that year. Finally, when his son Titus returned to Rome in the same year, the two triumphed together in June (Ostrowski 1999: 153). Hence, it is likely that the coin series was minted during the first months of 71, in time to celebrate the Triumph (Barag 1978: 18; see also Josephus *Wars* 7.5).

The reverse of the *Judaea Capta* coin maintains a similar format to the obverse with a text arranged along the edge, encircling central figures in a clockwise manner:

IUDAEA CAPTA SC

"Captive Judaea," is stated prominently, with the abbreviated mark, *senatus consulto* ("with the permission of the Senate," Keppie 1991: 139), indicating that the coin series was minted with the approval of the Roman Senate. The reverse legend is simple and explicit, reducing five years of campaigning to the final Roman victory and subjugation of Judaea.

If the average Roman person who held this *sestertius* was unable to read the heavily abbreviated legend on the obverse, or the words on the reverse, the s/he could probably understand the recognizable imagery because it consisted of a standardized and popular **iconography** of defeated people. In the history of art, we see similar images in the famous *Augustus of Primaporta* (Fig. 4, below). Arranged symmetrically between the words *Judaea capta* and flanking a date palm are a seated female figure (right) and a standing male figure with hands bound behind his back (left); arms and armor are rendered in a slightly lower relief behind the male figure (thought to be an **allegory** of the Cessation of War; Pliny the Elder *Hist. Nat.* 35.93, cited in Ostrowski 1999: 158, n. 6).

An **allegory** is a personified symbol — that is, a symbol in the form of a person. The *Statue of Liberty*, for example, is a statue of a woman, symbolizing freedom. An allegory of the Cessation of War is depicted as a warrior at rest, symbolizing the end of a war.

In the history of art, allegories of countries or landscapes are usually female; bridges and rivers are often male.

Prominently located in the center of the composition is the date palm, a common symbolic reference to Judaea and the Judaean landscape (Pliny the Elder *Hist. Nat.* 5.73; Jos. *Wars* 1.6.6, 3.10.8; Psalms 92:12). Even coins minted in Judaea sometimes feature the beloved date palm (Madden 1866: 43–45). The die-carver selected a familiar icon to serve as a topographic symbol of the land referenced.

The die-carver also selected other recognizable, standardized images: the female figure, seated with one hand to her head, serves as an allegory of a defeated nation (Ferris 2000: 42ff). Such feminized personifications were present in Julio-Claudian art, as seen on the breast plate of the *Augustus of Primaporta* (Fig. 4). Here, the seated or kneeling position communicates weakness; and, when paired with the active poses of men, suggests that, to the Roman military mind of the first century CE, subjugation and power in war are visualized in gendered terms, male-on-female violence serving as a metaphor for Roman imperial strength (Ferris 2000: 56–57).

The *Augustus of Primaporta* is one of the canonical works of art reproduced in art history textbooks. As is typical, art history texts discuss this statue stylistically, commenting on the contrapposto pose (it's not really a true contrapposto) and its similarity to the also-canonical *Doryphoros* (*Spearbearer*), a High Classical Greek work by the sculptor, Polykleitos. In addition to a stylistic discussion, Stokstad's *Art History* mentions the historical significance of the central figures on the breast plate (the defeat of the Parthians and the return of the Roman standards to Rome) and identifies the allegorical figures of *Gallia* (France) and *Hispania* (Spain) on the sides (Stokstad 2018: "Art in the Age of Augustus—Augustus of Primaporta"). That said, the

textbooks stop short of contextualizing the images by comparing them to numismatic and archaeological evidence.

Fig. 4

Details of the Augustus of Primaporta, Vatican Museums
a) detail of torso and full view of cuirass
b) detail of right back of torso
c) detail of left front of cuirass (allegory of defeated nation)
d) detail of right front of cuirass (allegory of defeated nation)

(see Stokstad, *Art History*, fig. 6-18)

Thus, we may acknowledge the usefulness of numismatics in the dating of events and for a fuller understanding of Roman visual art and cultural values during the late 1st century CE. Coins can also be useful as documents of artistic and architectural monuments that no longer exist or exist in only in ruins.

Trajan's Building Coins

During the early 2nd century CE, the emperor Trajan came to power. Born in the city of Italica (near Seville in modern-day Spain), Trajan inherited rule as emperor in the year 98, until 117, when he died of an apparent age-related illness while in Turkey. In the history of ancient Rome, he was one of the most beloved emperors and was granted the title "*optimus princeps*" (the best "princeps" / "first-man"). He is famous for having defeated the Dacians — a people who lived in the area of modern-day Romania — and bringing extraordinary wealth back to the city of Rome. With this wealth, he performed acts of generosity to Rome's citizens (e.g., the *alimenta*, or food supply to the poor), expanded the main port of Rome (i.e., bringing higher volumes of goods to the city, improving its economy, and the well-being of its inhabitants), and went on a building campaign to enhance and beautify the city and other sites in Italy.

Sadly, many of Trajan's building projects cannot be seen today, as they were either destroyed over the course of the Middle Ages, or they are buried under the modern city of Rome. We do, however, have a coin series that was minted to celebrate Trajan's building projects; some of the coins enhance our knowledge of partially surviving artworks — canonical works seen in art history textbooks. This coin series is also extremely valuable because Trajan's life and his significant architectural commissions are poorly documented. So, to understand how he beautified and monumentalized the city of Rome, we must turn to coins.

Twelve edifices from Rome were impressed onto coin **reverses**[6] (Figs. 5 and 6; Marzano 2009: 129), communicating Trajan's character as a "great man." These buildings could be seen and experienced first-hand in Rome, or "seen" on coinage that traveled far and wide. Both buildings and coinage served as propaganda to promote Trajan's identity as a Good Emperor. One aspect of his personality and his role as a Good Emperor was to behave as *Pater Patriae*, "Father of the Fatherland" and patron to a city of clients. In this capacity he devoted much attention to the repair and expansion of roads, harbors, aqueducts, and bridges. As examples of urban planning and civic engineering, these monuments do not often find themselves published in "art" history textbooks, pointing to an inconsistency and bias within the discipline. However, three monuments depicted on coins are visible today, widely published in art history texts, and

[6] Marzano (2009: 127 and 127, n. 8) further notes that bronze Roman coin mints tended to circulate locally and in western provinces, while silver and gold denominations likely had wider dissemination in the hands of the elite and army.

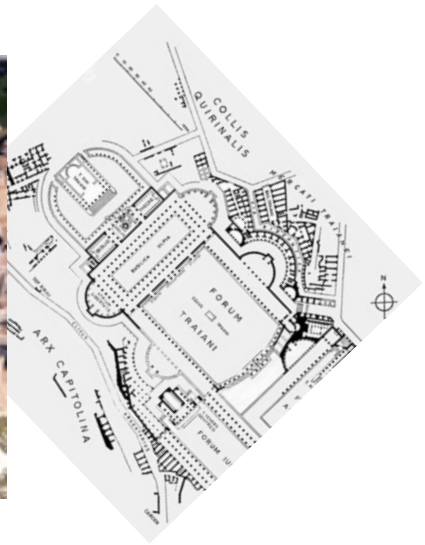
constitute some of the most visited sites in Rome: Trajan's Forum, the Basilica Ulpia, and the Column of Trajan.

Fig. 5, nos. 1–6 Six of the twelve known Trajanic coins depicting edifices

Fig. 6, nos. 1–5 Five of the twelve known Trajanic coins depicting edifices

(Source: Marzano 2009: 134, fig. 1 and 139, fig. 2)

As expected, the coverage of these monuments in art history textbooks is scanty, hardly moving beyond pure description and failing to inform students of the numismatic evidence that provides many of the details about the Forum's, the Basilica's, and the Column's appearance. Today, these monuments are in a very ruined state — the upper levels of the buildings are almost completely gone. This Google Earth image shows how early archaeologists opened a "window" into the pavement to dig down to the Roman levels (Fig. 7a). A comparison with the site plan (Fig. 7b) shows how much is still underground.



Figs. 7 a and b
a) Google Earth view of the Forum of Trajan
b) Plan of the Forum of Trajan.
(see Stokstad, *Art History*, Fig. 6-42)

Ground-level (Fig. 8) and aerial (Fig. 9) photographs also show how the upper elevations of many buildings were destroyed and how barren the site is today.

Fig. 8
Ground-level view of the Basilica Ulpia and Column of Trajan from the plaza of the Forum of Trajan
(see Stokstad, *Art History*, Fig. 6-43)

Fig. 9

Aerial view of the
Column of Trajan and
the western corner of the Basilica
Ulpia.
(see Stokstad, *Art History*,
Fig. 6-46, 6-47)

However, numismatic evidence shows us what is missing of the archaeological remains: On top of the façade of the Forum, statues of Dacian prisoners of war alternated with Roman standards and inscriptions honoring the victorious legions (Lanciani 1897: 316). These Dacian prisoner statues were reused on the Arch of Constantine, illustrated in all art history textbooks (Fig. 10; see Stokstad 2018: Ch. 6.5: "Constantine the Great—The Arch of Constantine"). Moreover, coins show us that bronze statues also once stood above the façade of the Basilica Ulpia: the emperor flanked by triumphal chariots, standards, and trophies. This **iconography** is also well-known in art history and is seen on the famous Arch of Titus (Fig. 11).

Sadly, the emperor's account of the Dacian wars, the *Dacica*, has not been preserved; however, a highly-regarded Italian archaeologists has proposed that the unbroken, heliacal frieze on the Column of Trajan (Fig. 12) is a visual rendering of the work, originally recorded on scrolls (Coarelli 2007: 119). Both of Trajan's victorious campaigns were based (literally) on the defeat of any who would not submit. Decorating the pedestal of the column (Fig. 13) — and visible in the bronze coin — are heaps of Dacian arms and armor; the carved trophies rest upon which sits a laurel wreath of victory.

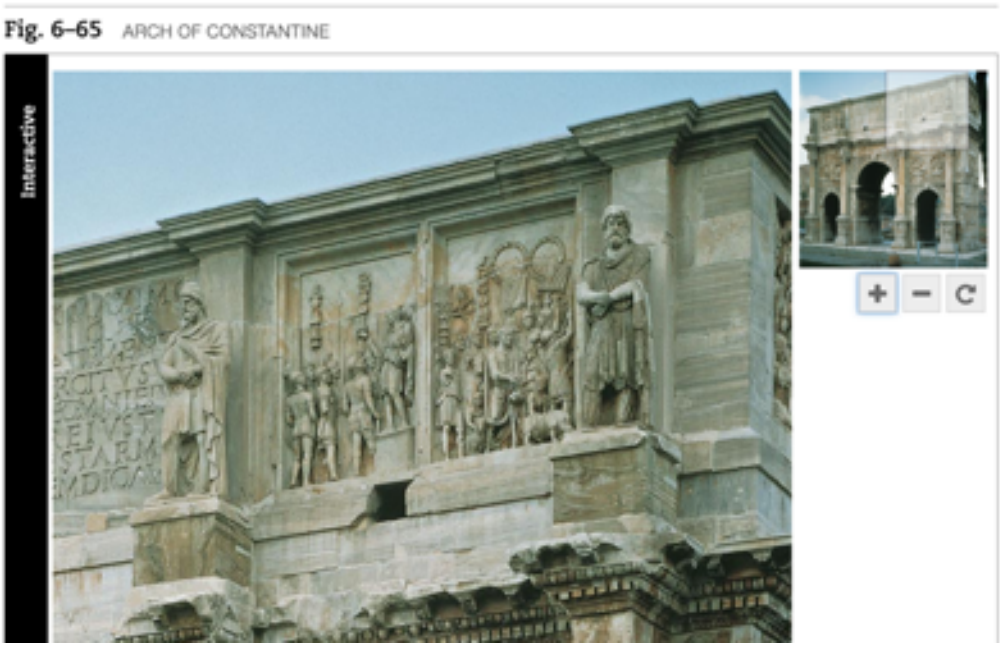


Fig. 10
Screenshot showing a detail of the Dacian Prisoners reused in the Arch of Constantine (from Stokstad *Art History*, fig. 6–65).

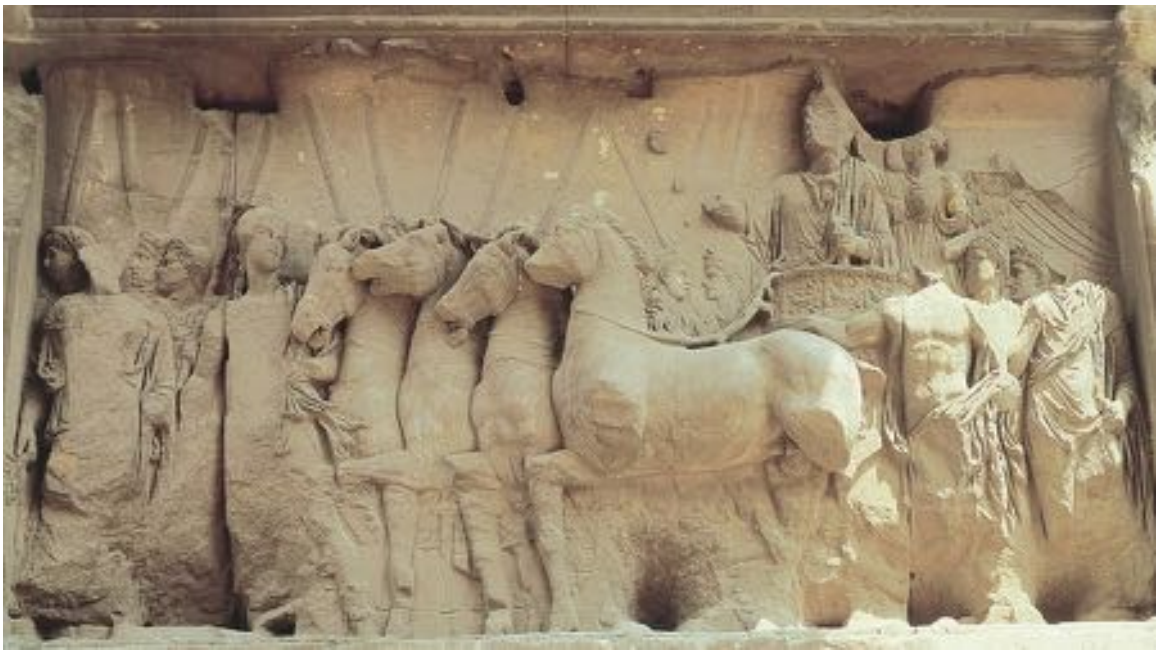


Fig. 11
Detail of the Emperor in a Triumphal chariot. Arch of Titus.
(see Stokstad *Art History*, Fig. 6–35)

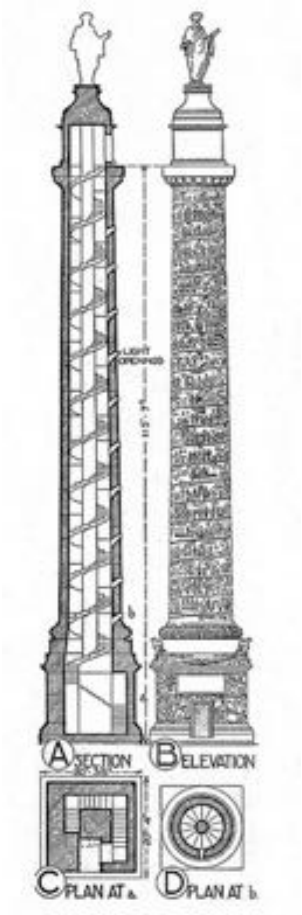


Fig. 12 (L)
Diagram of the Column of Trajan (section, elevation, and plan)
(see Stokstad, *Art History*, Fig. 6-46, 6-47)

Fig. 13 (R) Base of Column of Trajan
(see Stokstad, *Art History*, Fig. 6-46, 6-47)

Minted at the same time (A.D. 113) as the carving of this victory monument, the Trajanic building coins depict the Column of Trajan capped by a heroic statue of the Emperor; the example printed here is a rare hybrid coin with two reverse images of the Column on one side and the Forum façade on the other (Fig. 14).

Fig.14.

"Hybrid" Aureus from the reign of Trajan
Legend (Column side): SPQR OPTIMO PRINCIPI
Legend (Forum side): FORUM TRAIAN
British Museum, BM # 1874,0714.1

Today, a statue of St. Peter (the patron saint of Rome) stands where the statue of Trajan once stood. Although Trajan's statue no longer exists — it was may have been made of bronze and was melted down in the Middle Ages — we do have comparable statues of heroic nude Roman emperors, like the statue of Antoninus Pius, carved in the mid-2nd century CE (Fig. 15).

Fig. 15 Heroic nude of Antoninus Pius

Walking into the Forum, Romans viewed the top of the Column over the bronze roof of the Basilica and the **heroic nude** portrait of Trajan appeared to rise god-like before their eyes (Fig. 16). Since we know that Trajan's ashes were placed in the room at the base of the column (Aurelius Victor, *De Caesaribus*, 13.11; Eutropius 8.5), the heroic portrait of Trajan at the top symbolically communicated his apotheosis (transformation into a god) after his death.

Classical nudes.
Nude representations of men and women in Classical Mediterranean art are very common. Both Greek and Roman cultures had a long history of depicting the nude in vase painting, wall painting, sculpture, on coinage, and in architectural contexts. As we see here, it was not unusual, nor was it unacceptable, to depict the emperor naked. In fact, male nudity in ancient Greece tended to be non-erotic, emphasizing a man's athletic strength and physical health.

Fig. 16 Reconstruction of the Forum of Trajan with the façade of the Basilica Ulpia and the top of the Column of Trajan with the heroic nude statue of the emperor visible above the Basilica roof. (see Stokstad *Art History*, Fig. 6–42)

The inclusion of coins in art history text discussions should not be limited to a review of their portraits and the stylistic appearances of human faces. Instead, some discussion of the use of coins in archaeological contexts and in establishing absolute dates for deposits, cities, and monuments should be incorporated. The study of numismatics proves to be a valuable method to better understand how art historians know what they know about ancient Roman art, architectural monuments, and the built environment. Moreover, coin iconography is useful evidence for archaeologists who wish to better understand ruined monuments. It is simply not sufficient to tell students that there were triumphal statues above the Basilica Ulpia façade or that the Column of Trajan once held a statue of the emperor. Finally, an integrated analysis of coins, historical text, and archaeological remains (of "art" and "architecture") sheds light on the ways that the Roman Empire advertised and promoted its power, as well as how masculinity and femininity (gender) was woven into the fabric of Roman visual art and empire-building.

Questions for Review and Further Study

1. What is numismatics?
2. What kind of information can be gathered from ancient coins?
3. What are some of the dangers in using textual evidence uncritically?
4. Referring to Fig. 2.2, can you identify the **obverse**, the **reverse**, and the **legend**?
5. What is **historical chronology** and how are coins used to establish an historical chronology for an archaeological deposit?
6. What do *terminus post quem* and *terminus ante quem* mean in the context of an archaeological deposit?
7. Can you describe the iconography (standardized images) even if you can't interpret them?
8. How does the study of coin iconography enhance our understanding of Roman visual representations (e.g., images of men, masculinity, women, and femininity)?
9. How are images of (nude) males and females similar or different in Ancient Roman imperial art?
10. Of the information described in your art history textbooks (cf. the Arch of Titus, the Column of Trajan, the Arch of Constantine), what (art-)historical data is actually drawn from coin evidence?
11. Visit the American Numismatic Society at this link:

    http://numismatics.org/search/department/Roman

    and enter a following keywords (e.g., Augustus, Vespasian, Titus), and click on "Refine Search." (Be sure to click the box that says, "Has Images.") Can you identify the obverse, reverse, and legends?
12. Refresh the search page and enter keyword "Roma"; click "Has Images": How is the allegory of the city of Rome depicted? Male, female? Is there a separate iconography associated with Rome? What is depicted?

Chapter Correspondences

The following artworks and architectural monuments are illustrated in Stokstad's *Art History* (2018):

A Denarius of Julius Caesar (6–14)
The Augustus of Primaporta (6–18)
The Forum of Trajan (6–42)
The Basilica of Trajan (Ulpia) (6–43)
The Column of Trajan (6–46 and 6–47)
The Arch of Titus (6–35)
The Arch of Constantine (6–65)

The following topics/materials/methods are reviewed in Renfrew and Bahn's Archaeology (2016):

Numismatics (not explicitly discussed)
Historical Archaeology and Absolute Dating Methods (Ch. 4)

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CASE-STUDY #3

The Archaeology of Roman Buildings: Geology, Materials, Techniques, and Dating

Introduction

Art history textbooks do a very uneven job in their treatment of the history of architecture. As such, students are deprived the opportunity to learn about and appreciate the sophisticated engineering skills and knowledge possessed by builders of the ancient world. This case study will demonstrate the value of close visual examination of the **archaeological remains of Roman architecture**, in order that student archaeologists may learn to properly record the masonry of the archaeological remains of buildings. To contextualize this material, students must know a little about the volcanic and geologic foundations of the city of Rome and most of Italy. Furthermore, analysis of the physical remains helps archaeologists and art historians date Roman buildings and sites.

An Art-Historical Treatment of Roman Architecture

Authors of traditional art history texts tend to treat Roman buildings superficially, focusing on their stylistic characteristics (i.e., their appearance) and their forms (e.g., their use of space, the use of arch and arch-based forms). Fred Kleiner, a Roman art historian who took on the task of updating *Gardner's Art Through the Ages* does a slightly better job at introducing some of the technical processes and materials used in Roman architecture, but he stays close to the spirit of the *Gardner's* text by diminishing technical information for the sake of stylistic and formal descriptions (2010: 159–161). The authors of Stokstad's *Art History* (2018: 6.4, "Architectural Animation: Concrete") do a less impressive job of covering archaeological material in the text, but partially make up for it in their animated video of concrete processes. This scant coverage of Roman archaeology is unfortunate because Romans excelled in the arts of architecture, urban planning and design, and civil engineering.

Canonical Works

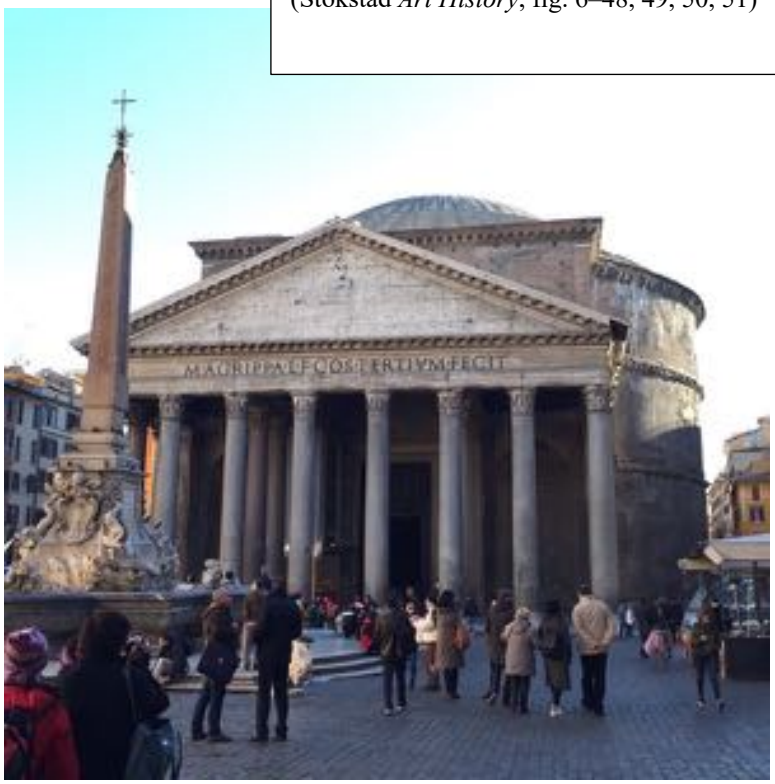
Two of the primary works located in the city of Rome and presented in art history textbooks are the Temple of Portunus (a temple to the allegory [god] of the commercial port in the Tiber River; Republican Period; Fig. 1) and the Pantheon (High Empire; Fig. 2).

Fig. 1

Temple of Portunus, Rome
(note its newly cleaned condition)
White stone is travertine; beige-grey stone is volcanic tuff; the entire zone on the side of the temple, below the roofline, is restored.
(Stokstad *Art History*, fig. 6–17

Fig. 2

The Pantheon, Rome
(Stokstad *Art History*, fig. 6–48, 49, 50, 51)



The Temple of Portunus is presented as one of the earliest surviving examples of Roman Republican architecture and is typical of Roman temple design, which incorporates elements from both Greek and Etruscan predecessors. These facts are true: the temple is based on the Greek Ionic Order but is built atop a high podium and had a pronounced "front," like Etruscan temples. Kleiner (2010: 159) alludes to the materials, but incorrectly identifies the local volcanic stone (in the walls) as *tufa*, which, geologically, refers to travertine. In fact, both *tufo* (volcanic stone) and *tufa* (travertine) are used in the construction of this temple. He also explains that the temple would have been stuccoed and painted with imitation marble panels — a style known as Pompeian First Style (Fig. 3). (By contrast, the discussion of this temple in Marilyn Stokstad's *Art History* fails to incorporate any information on building materials.)

Fig. 3

Archaeologists cleaning the newly excavated Pompeian First Style wall paintings in the House of Jupiter, Pompeii.

Note the variations of color, meant to depict exotic stones from around the Roman empire.

Unfortunately, by not explaining the geological and archaeological context of the building materials, art historians set up the Temple of Portunus as "derivative," a pastiche of earlier elements and an inferior copy of either Greek or Etruscan architecture, or both. Moreover, by using the Temple of Portunus as their illustrative example — a temple constructed with stone material that is heavily eroded —many students react to Roman temples as "ugly" and decide that they are inferior to their predecessors. It is likely, in fact, that the temple was completely stuccoed and, possibly, painted with brightly colored faux stone veneers.

On the other hand, The Pantheon amazes most people who view it or have the privilege of entering it. (I did have a colleague who described this building as "ugly"! He did *not* represent the dominant view of people, tourists, and historians around the world!) The Pantheon is, in fact, one of the greatest buildings in this global history of architecture *and* it is the best-preserved

Roman temple to survive to this day. Its mark of distinction is its 142-foot tall dome, which sits on top of a 142-diameter drum (the body of the temple is cylindrical in shape, not rectangular; Fig. 4). Again, Kleiner (2010: 188) does a better job than Stokstad in discussing its aesthetic and functional design; however, more information about the role volcanic stone and archaeology play in the design is useful.

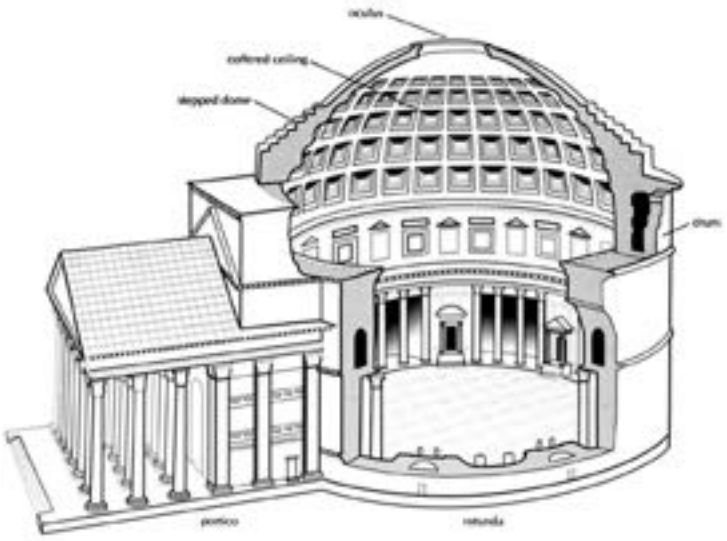


Fig. 4 The Pantheon (section diagram), Rome (Stokstad *Art History*, fig. 6–48, 49, 50, 51)

Geology and Materials

Few students realize that ancient Roman architecture in and around the city of Rome would not exist if not for volcanoes. The region around Rome and the Bay of Naples is entirely volcanic. Vesuvius is one of the active volcanoes near Pompeii, but there once were many active volcanoes around Rome. Because of this volcanic activity, the land around Rome and Pompeii is made up of volcanic rock that was formed from either ashfall, pyroclastic flows, or molten lava. In the most general terms, there are two types of volcanic rock that we see used in Roman architecture: volcanic tuff (***tufo***; sometimes erroneously called *tufa*) and ***silex*** (cooled lava).

Depending on how compacted or consolidated tuff is, it can appear very solid or it might be easily crumbled. Most of Pompeii was covered with tuff from ashfall followed by shallower layers of pyroclastic flow. Because the volcanic material was not as consolidated and was

shallower than at Herculaneum, archaeologists were able to excavate Pompeii with shovels. Welded tuff, sometimes the result of pyroclastic flows, is the result of high heat during the consolidation process. Welded tuff is the material that covered the city of Herculaneum to a depth of c. 80–90 feet and was extremely difficult for archaeologists to excavate.

Because tuff is literally everywhere under and around Rome, this became the primary building material for Italian Roman architecture. Many ancient walls (in buildings or in defensive walls) are made of tuff and, most of the time, the blocks of stone contain variously sized pieces of pumice, glass, and other volcanic material that originally erupted out of the volcano with the finer particles of ash. The famous Servian Wall remnants near the main train station at Rome are constructed of a tuff containing mostly fine particles of ashfall (Fig. 5); by contrast, the large tuff blocks that were used in the portico of the Tabularium (the records building in the Roman Forum, built against the Capitoline Hill) is made of Peperino Tuff, which consists of large chunks of ash, rock, and pumice pieces (Fig. 6).

Fig. 5

The Servian Wall outside of the main train station in Rome

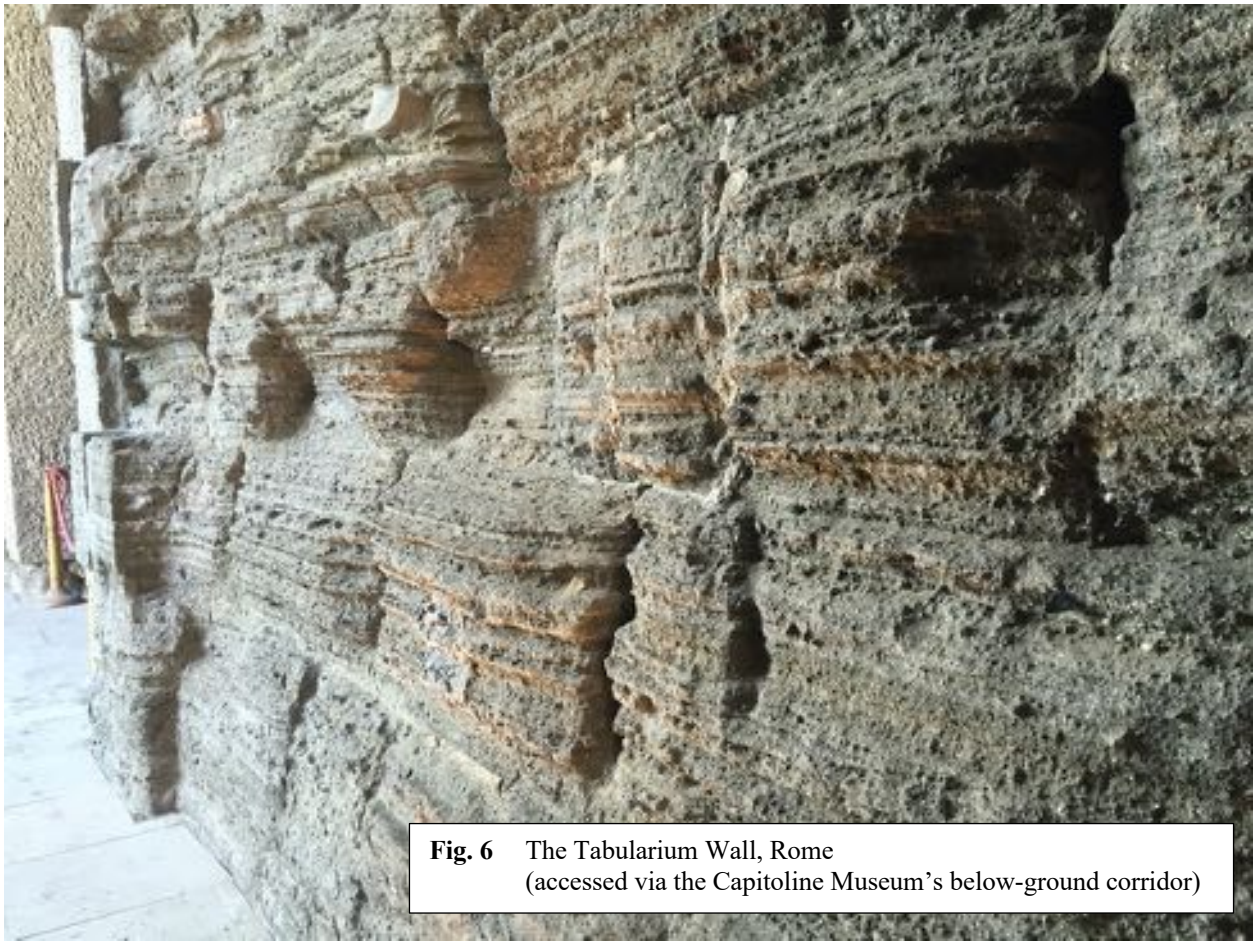


Fig. 6 The Tabularium Wall, Rome
(accessed via the Capitoline Museum's below-ground corridor)

In general, Romans didn't think that tuff looked particularly beautiful, so walls were plastered over in order to make their surfaces look more uniform and better resemble the marble architecture of ancient Greece. However, another reason for the plaster surface was to protect tuff walls from rain and erosion; it is clear to see how exposure to climatic elements have deteriorated the surfaces of the Servian Walls and Tabularium Façade. The ancient writer, Vitruvius (*de Architectura* 2.7.2), explicitly tells us that tuff was a readily available and easy-to-carve material, but that it was susceptible to damage from rain and wind.

Also, around central Italy are deposits from ancient lava flows. Cooled lava stones (referred to as *silex* in Latin) are much, much harder than tuff and, as such, are excellent stones for use in roads. The roads in Pompeii are particularly famous, but by no means the only surviving Roman roads. Wherever Romans had access to cooled lava stone they paved roads with this material and examples have been uncovered by archaeologists in and around the city of

Rome, itself. A famous example is the road in front of the Markets of Trajan (Fig. 7), to the east of his Forum (discussed in the previous case study).

Fig. 7 Roman road between the Markets of Trajan and the Forum of Trajan, Rome
(Stokstad *Art History*, fig. 6–44)

Roman road masonry is referred to as **polygonal masonry** because the *silex* stones have an irregular, polygonal ("many-sided") shape. It is important to note that it is only the surface of the road that is paved in this hard stone, while the layers underneath were composed of various types of materials to build up the road foundations. Depending on the amount of feldspar in the cooled lava, archaeologists can see more erosion from cart wheels that rolled over the roads during decades and centuries of use, as feldspar erodes more easily that other components in the stone.

Fig. 8 Travertine foundation stones under the remains of the Temple of Hadrian, Rome

Although not volcanic in origin, **travertine (*tufa*)** is a popular stone used in Roman architecture. This material is also sedimentary (like volcanic tuff) and, so, is often composed of irregular layers and so the surface doesn't always look smooth. Because this stone is denser and stronger, it is often used in foundations (Fig. 8). Vitruvius himself states that travertine can withstand heavy loads (*de Architectura* 2.7.2). Pieces of travertine, marble, or

limestone were sometimes burnt to make **lime** for use in **concrete**, a material for which Romans were famous.

Roman Concrete

Students can never fully appreciate the importance of Roman concrete until they know the role volcanic ash played in its creation. Roman concrete is made like many other concretes in the world: by mixing lime (burnt travertine) with an aggregate (e.g., broken terracotta, volcanic tuff, pumice stone) and water (especially seawater). Romans, however, added a powder-like volcanic ash called ***pozzolana*** to their mixtures, which allowed building foundations, pilings, and walls to dry under water. The animated video in Stokstad's digital *Art History* (2018: 6.4, "Architectural Animation: Concrete"), **erroneously** states that "concrete can deteriorate if exposed to too much moisture" and that Roman builders covered their constructions with stone veneers or painted plaster to protect the concrete's integrity. While modern concrete often deteriorates when exposed to the elements, concrete used in 2000-year old Roman harbors, have actually become harder over the centuries (Pliny *Natural History* 35.166; Jackson 2017: n.p.) because Roman concrete was mixed with *pozzolana* that formed hard crystals when exposed to water.

Techniques and dating

Most art history textbooks present the "invention" of concrete and the widespread use of the Roman, or Round Arch in Roman architecture. Not all books discuss the construction of walls or what these walls tell us about the dating of buildings. The presence or absence of certain building techniques can help archaeologists and architectural historians place a structure's construction into a general period of time; this is a **relative dating** method, used in conjunction with other relative dating methods and absolute dating methods, like the use of coins and historical (text) documents.

Because Romans didn't have easy access to marble — a material they coveted in Greek architecture — they had to develop other ways to construct walls and columns using the softer, weaker volcanic tuff. The early Roman Servian Walls (early 4th century BCE) mentioned above were constructed in a technique called ***opus quadratum*** ("ashlar block work") In English, we refer to this type of architecture as **ashlar masonry**, where blocks of stone — in this case, tuff —

were carved into fairly regularly shaped cubes and stacked into **regular horizontal courses**. *Opus quadratum* produces heavy, solid walls; there is no rubble, dirt, or sand *in* the wall, as it consists of uniform courses of ashlar block. The disadvantage of this type of wall is the expense: even blocks *inside* the wall must be carved and finished, even though they are never seen. The facades of numerous Pompeian elite houses (Fig. 9) were also built in *opus quadratum* for its majestic, imposing, and monumental appearance.

In some parts of the Roman world (including Pompeii) we can see that early builders (2nd century BCE and earlier) constructed walls in a technique called *opus africanum* ("African work"; because it supposedly originated in North Africa). *Opus africanum* is a variation of ashlar masonry — the wall is only constructed with carved blocks of stone — but the blocks of stone are smaller than those seen in *opus quadratum*, set in **random courses**, and separated by a "framework" of upright stones (Fig. 10). This design follows a kind of architecture called (in English) "half-timber," where a framework of wood was filled with adobe brick, fired brick, reeds and plaster, or some other material. Romans used "half-timber" — or *opus craticium* — walls for lightweight partition walls or upstairs walls. *Opus africanum* was used for heavier walls, like exterior walls of buildings or houses.

Fig. 9 Travertine *opus quadratum* façade, House of Orpheus, Pompeii

Fig. 10 Western wall of Bakery I.12.1. Travertine and lavastone *opus africanum*, on the Vicolo del Nave Europa, Pompeii. (The curvature in the wall is an optical distortion resulting from the panoramic photograph.)

Because *opus craticium* was used for lighter partition walls or within upper floors, this masonry technique doesn't survive well in the archaeological record. At Pompeii, for example, the volcanic eruption of Vesuvius swept away or collapsed upper floors. Nonetheless, there is a famous house in Herculaneum — aptly referred to as the House of *Opus Craticium* — which survived as a testimony of this popular building technique (Fig. 11).

Fig. 11

House of Opus Craticium (*Casa a Graticcio*; Trellis House), Herculaneum

(Note that this balcony/exterior wall is heavily restored.)

The ancient architect and engineer, Vitruvius (*de Arch*. 2.8.20) had a very low opinion of *opus craticium* and criticized it for its flimsy and flammable materials; he also noted (in the 1st century BCE) that it expanded and contracted every easily with changes in temperature and humidity. Nonetheless, ethnographic analogies with the architectural traditions of other cultures demonstrates that *opus craticium* ("half-timber") is widely used and valued in regions prone to a lot of earth movement (earthquakes; as occurred around Vesuvius) because the wooden timbers flexed but did not collapse (Langenbach 2007: 33–35; Ulrich 2007: 100).

To reduce the expense of walls (by reducing labor and cutting back on the carving of materials), Romans developed a number of **concrete-core wall construction** techniques (Fig.12). Walls of concrete cores are referred to as *opus caementicium* ("cement work"). As far as archaeologists can tell, *opus caementicium* and the use of ***pozzolana*** to make hydraulic-cement dates to an early period in Roman architecture — c. 3rd century BCE.

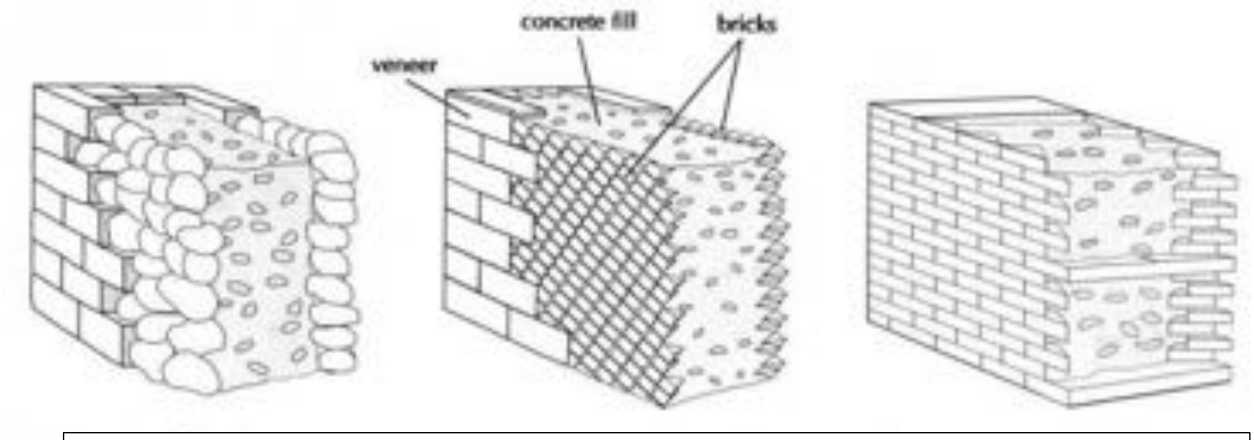


Fig. 12

Roman concrete-core wall types: *opus incertum* (left); *opus reticulatum* (middle); *opus latericium* (right)

Concrete-core walls were made by sandwiching the facing-stones and the concrete-core between a framework. *Opus incertum* ("uncertain [irregular] work") was one of the earliest types of walls, made by layering fist-sized stones against the framework and pouring cement into the core; the result was a solid wall with rocks "inserted" into the concrete-core surface. The appearance of the stone did not matter to Roman builders at this point because they typically **plastered over the surface**, sometimes with a painting technique designed to look like high-quality stone veneer (Fig. 12, middle), while wealthy patrons covered their walls with stone **veneer**. Even though *opus incertum* dates as far back as the late 3rd century BCE, Romans continued to use this technique in the 2nd and into the 1st centuries BCE, so it is hard to date buildings by looking at wall construction only.

In the late 2nd/early 1st century BCE, Romans began constructing walls in *opus reticulatum* ("net-design work") in which the points of little stone pyramids are embedded into a concrete-core. The fact that some of the stone inserts were inserted to create a visually-pleasing pattern of colors suggests that some *opus reticulatum* walls may have been left exposed so that

people could enjoy their designs. This would have certainly cost less, while leaving the wall with a decorative surface. *Opus quasi-reticulatum* walls are an earlier form of this wall type.

In the early 1st century CE, Romans began building walls with fired brick. "Brick-work" walls are known as *opus latericium* or *opus testaceum*. Fired brick is very hard and could withstand fire better than stone walls; this may have been one of the reasons Roman builders shifted to concrete-core *latericium* walls.

Quite often archaeologists see concrete-core walls constructed with a mixture of brick and stone; these are referred to as *opus mixtum* walls (Fig. 13). Although these walls are sometimes built with a pleasing geometric pattern, *opus mixtum* walls were typically plastered with a thick layer of stucco and painted.

Fig. 13

Opus mixtum masonry doorjamb (nearest the viewer, on the left) at Villa A, Oplontis.

(Note the variety of concrete-core wall techniques used in this small portion of wall.)

The Temples in Geologic and Archaeological Context

The Temple of Portunus in Rome is one of the oldest extant buildings from the Roman Republican period; it dates to c. 75 BCE and was dedicated to Portunus, the god of the Harbor. One of Rome's early import stations was located nearby. Because it was built with volcanic tuff and porous travertine, it needed to be **stuccoed** in order to protect it from the elements. Note that the walls of the temple's main room are constructed in *opus quadratum*, with blocks of **ashlar masonry** laid in **courses**. Although there is reason to believe that it was plastered white, to

imitate Greek marble, it is possible that it was painted in the Pompeian First Style, with faux **veneer** panels painted to imitate various exotic stones from around the Roman world. Meanwhile, the wealthiest elite (like the Emperor) could afford real stone veneers. Pentelic and Parian marbles were available to the Romans after the conquest of various regions in Greece; Numidian Marble (*giallo antico*) was sourced from North Africa after the conquest of Carthage; purple porphyry and grey granite were both quarried in Egypt, which fell under Roman control at 30 BCE (Figs. 14 a, b, and c).

Figs. 14 a, b, and c

a) Temple of Hercules Victor, Rome (Pentelic Marble and travertine)

b) Pavement of the Pantheon, Rome (purple porphyry and grey granite from Egypt; Numidian Marble from North Africa.

c) Temple of Romulus, Roman Forum, Rome (purple porphyry columns from Egypt)

a.

b.

c.

The use of real or faux exotic stone veneers became popular in the Late Republic and Early Imperial periods as a way for individuals to showcase their wealth, as well as for rulers to show off the power of the Roman army and the Empire in subduing, controlling and exploiting foreign lands (Bradley 2006: 2; Hunt 2012: 33).

The Pantheon (Fig. 2) is, indeed, one of the most magnificent and influential buildings ever constructed by human hands and most art history texts devote a sizable amount of space to its discussion. I will only present it briefly here but will point out some of the archaeological features that make this building remarkable.

The temple dedicated to "all the gods" was built under the Emperor Hadrian to replace an earlier Augustan-period temple commissioned by Agrippa. The building we see today consists of a deep, colonnaded porch supported by a "forest" of Egyptian granite columns. These were quarried in Egypt and transported across the Mediterranean in their monolithic form — a testament to the engineering skill of Roman Egyptians and seafarers.

The interior dome is 142 feet high and wide, encompassing the space of a perfect sphere. The dome is considered an architectural marvel because it is the largest, unsupported concrete (*opus caementicum*) dome in the world. It could not have been constructed without Roman knowledge of volcanic materials, concrete, and the arch. Moreover, for students of Roman archaeology, some understanding of these materials and their virtues is indispensable.

Most art history books devote a small amount of space to an explanation of the arch and arch-based architectural elements (like the dome), so they will only be discussed here briefly: The **round (or Roman) arch** is an architectural element used widely in Roman construction. In terms of its basic geometrical form, it is composed of two vertical posts (or columns, or walls, for example), topped by a semicircular arch (Fig. 15). Where the arch and the vertical posts meet the ends of the arch is called the **springing** of the arch. The springing points are the weakest points of any arch or arch-based construction, such as **barrel (or tunnel) vaults** or **domes**. The weight of the building and the pull of gravity (the **thrust** of the building) travels down the curved sides of the arch-stones (called *voussoirs*), but when it reaches the springing, the pressure is directed outward at a roughly 45%-angle. To reinforce this weak area of the arch (or tunnel or dome), architect-builders reinforce the springing.

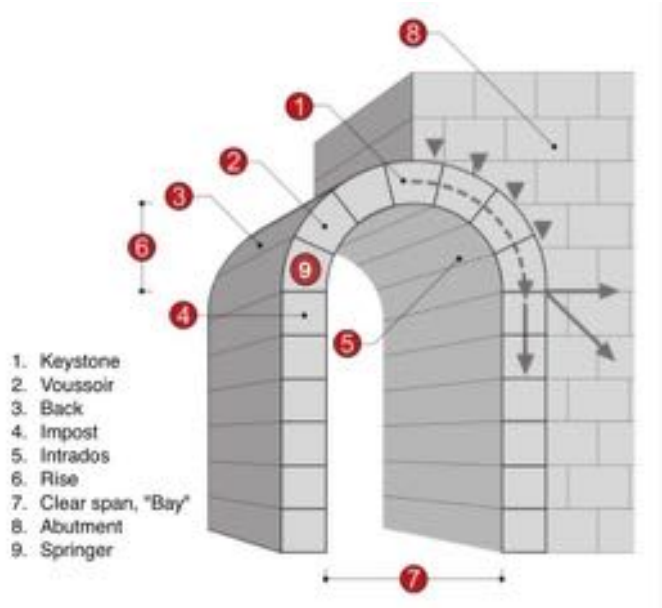


Fig. 15

Diagram of the Roman Arch

(In this diagram, the springing is below #9 and at the top of #4.)

This can be seen in a diagram of the Pantheon building and its dome (Fig. 4). When observed in section, it is clear that the base of the dome is much thicker than the upper shell of the dome. Moreover, the walls of the round drum upon which the dome sits are also extremely thick (21 feet) and constructed of concrete and *opus latericium*. At the center of the dome, where one would expect to see a solid ceiling, visitors are instead amazed by a view of the sky, seen through a 31-diameter *oculus*. (When it rains heavily, water does indeed enter the Pantheon.) Given the estimated weight of the 4535 ton dome, one must ask how the concrete structure still stands intact today — especially with a 30-foot hole in the center.

The oculus actually functions as a large tension ring, counteracting the weight of the dome in its upper regions, while compression rings (visible on the outside) run around the base of dome. Nonetheless, at almost a million pounds in weight, Romans utilized their knowledge of volcanic materials and cement to build a dome that has stood for almost 2000 years. In addition to reinforcing the dome with compression rings, tension rings, and vertical ribs, Roman builders also decreased the weight of the dome by building out of concrete, rather than out of stone. By choosing this material, they were able to cast the dome with varying degrees of thickness. For example, the "waffle-like" depressions (called **coffers**) literally represent areas where heavy material is missing from the entire dome. The structure is, therefore, lighter. Additionally, the composition of the concrete is heavier and denser in its lower regions, near the base of the dome

and the springing (where the dome meets the walls). Conversely, the concrete near the oculus is constructed with lightweight, volcanic pumice stone — a type of stone that is so full of air pockets that it literally floats on water. Obviously, there is no floating taking place here, but the lightweight, pumice-filled concrete decreases the stress on the oculus, the springing, the walls, and the dome itself.

Wilson-Jones (2003: 187) notes that the concrete aggregate at the lowest portion of the dome is travertine; terracotta is used as the aggregate in the next upper layers, followed by volcanic tuff (also more porous and air-filled) in the third upper layer, and pumice in the thinnest area of the dome, near the oculus. By utilizing different aggregates in the various levels of the dome and combining the cement with pozzolana ash, 2nd century Roman builders constructed an extremely strong, lightweight, and reinforced structure.

An analysis of Roman architecture's stone and building techniques ties into an aspect of archaeology concerned with ancient society and human experience — social archaeology and the archaeology of technology and technical knowledge. This case-study provides material for students learning reading Ch. 5 ("How were societies organized? Social Archaeology), Ch. 8 ("How did they make and use tools? Technology"), and Ch. 9 ("What contact did they have? Trade and exchange") in Renfrew and Bahn's 2016 textbook, Archaeology. Though these chapters tend to focus little on complex states, like that of the Roman empire, students may apply some of the questions posed in social archaeology to Roman building materials, techniques, and technical knowledge.

Questions for Review and Further Study

1. What types of stone material did Romans (in Italy) have access to? (What was their geologic environment?)
2. What is tuff (*tufo*), *tufa*, *pozzolana*, and *silex*?
3. How did the Roman geologic environment impact their architecture and its appearance?
4. How did the Roman geologic environment impact building techniques?
5. Name and describe stone building techniques, *opus caementicum*, and concrete-core wall building techniques.
6. Visit the site *Pompeii in Pictures* or *Herculaneum in Pictures* and browse the houses and buildings you see there. Choose a building, identify it on a separate sheet and identify the stone materials and wall building techniques visible in the photos. Can you see evidence of plaster/stucco surface coverings? Is there evidence of stone veneer?

   http://pompeiiinpictures.com/pompeiiinpictures/index.htm

   https://herculaneum.uk

7. Describe the functioning of the arch and dome.
8. What is the Pompeian First Style painting technique? Explain its connection to stone materials and techniques.
9. What real stones were Pompeian First Style paintings meant to imitate?
10. What social and political information do exotic stone veneers give us?
11. Research: How many labor hours do scientists believe were employed to build the Pantheon? (cf. "How much labor was invested in the monuments?" in Renfrew and Bahn 2016: 501.)
12. Research: Where were some of the actual quarries located where Romans accessed Pentelic Marble, purple porphyry, or Numidian Marble? What is known about Roman quarrying techniques? (cf. Renfrew and Bahn 2016: 319–325).
13. How did Romans gain access to these valuable stone sources and what does this tell us about wealthy and elite Romans in their society? (cf. Renfrew and Bahn 2016: Part II, Ch. 9; esp. 364, 374.

Chapter Correspondences

The following artworks and architectural monuments are illustrated in Stokstad *Art History* (2018):

The Temple of Portunus (6–17)
The Pantheon (6–48 to 51)
The Markets of Trajan (6–44)

The following archaeological topics/methods/materials are discussed in Renfrew and Bahn's *Archaeology* (2016):

Social Archaeology (Ch. 5)
Technology (Ch. 8)
Trade and Exchange (Ch. 9)

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CASE-STUDY #4

Formation Processes:
Pompeii and Herculaneum Urban Sites, Art and Artifacts

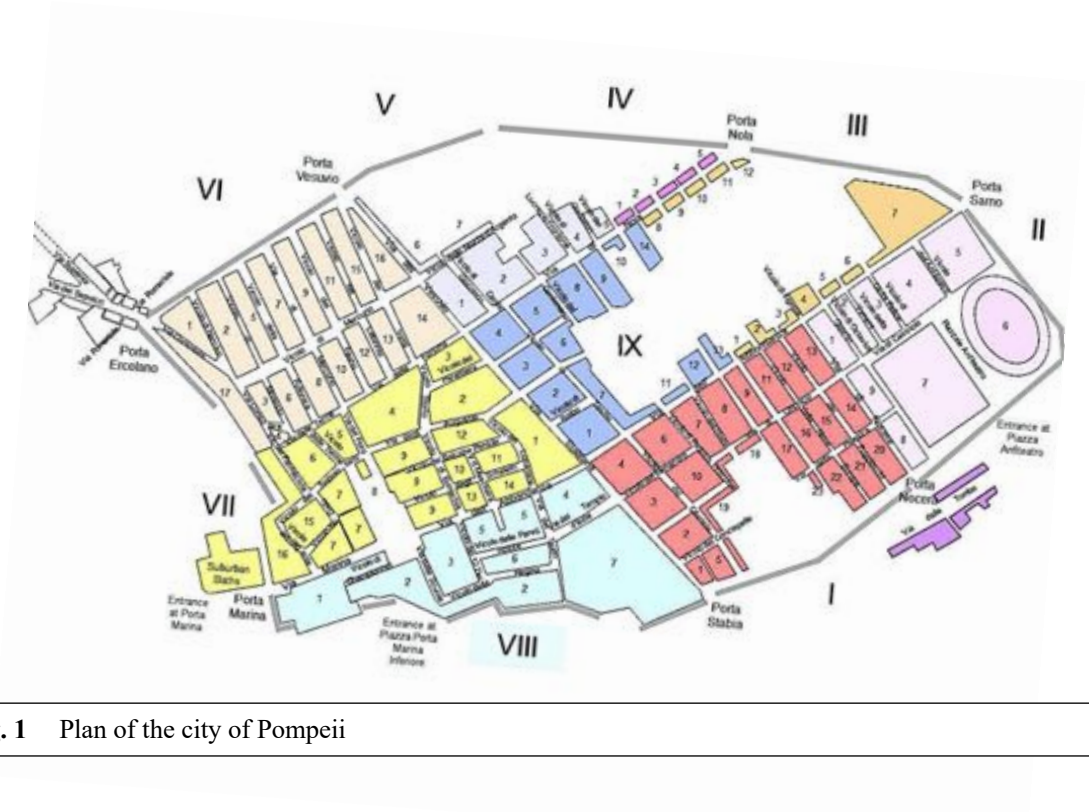

Fig. 1 Plan of the city of Pompeii

Every chapter on Roman art and architecture in survey textbooks or in specialized texts on Roman art history includes and introduction to the cities of Pompeii and Herculaneum. These sites are typically introduced in discussions of the Republican period, urban site planning, Roman painting styles, and domestic architecture, though the cities of Pompeii and Herculaneum were inhabited during the Early Empire (27 BCE–96 CE), until the eruption of Vesuvius in 79 CE.

This case-study will focus on the **natural formation processes** that shaped the sites of Pompeii and Herculaneum before, during, and after human habitation, but will also touch on **human formation processes** that are evidenced through the material remains and impacted the sites after the eruption (cf. Renfrew and Bahn 2016: Part I, Ch. 2). As will be seen below, it is impossible to fully understand these sites without understanding the role of Vesuvius in their history. In fact, the volcano was an important factor in the settlement, situation, and urban

design; the preservation of the site and its material remains also cannot be fully appreciated without understanding the multi-staged volcanic eruption in the late summer/autumn of 79 CE; and — contrary to the impression given by many textbook authors — the sites did *not* lie "undisturbed for nearly 1700 years" (cf. Kleiner 2010: 164).

Pompeii—Urban Design (an art-historical approach)

In Fred Kleiner's updated edition of the famous *Gardner's Art Through the Ages*, only two elements of the Roman city are introduced with the site of Pompeii: the *forum*/civic center and the amphitheater (Kleiner 2010: 164). In the case of the former, the *forum* is described as a large public square within and around which temples, administrative structures, and commercial spaces were located. Kleiner (2010: 164) notes that the *forum* formed the geographic center of the city (where the main north-south street —the *cardo*— and the main east-west street — the *decumanus* intersected) and was typically "closed to all but pedestrian traffic."

Curiously, in the most recent edition of Stokstad's *Art History*, Pompeii is introduced as part of the Early Empire and the urban center of the city is only shown as a partial plan (Fig. 2; Stokstad and Cothren 2018: 6.3 "Roman Cities"). By presenting only a portion of the city, this art history text gives an incomplete and incorrect view of urban design and planning. (The amount of greenspace is wildly inaccurate.)

Fig. 2

Abbreviated plan and reconstruction of the city of Pompeii.
(Stokstad *Art History* 6–24)

Fig. 3 Google Earth view of the city of Pompeii / archaeological site of Pompei Scavi. (cf. Stokstad *Art History* 6–24)

As one can see the textbooks concentrate on the "civic center" of the city of Pompeii — the area around the *forum* (pl. *–a*), or town square. While it is true that *fora* Roman were often originally located in the center of a settlement, as cities grew this geographical center shifted. Instead, the *forum* became the ideological center of the city — "downtown," in all respects. It is at the forum that one could find the hub of religious life (temples), economic life (markets), and civic life (administrative buildings).

Often, in Roman urban planning (Figs. 1 and 3), there are two major roads that intersect at the *forum*. The main street that runs from north to south is called the *cardo* (the "hinge" of the city) and the main east-west street is the *decumanus* (a name derived from the road's presence in military camps — the tenth road that separated parts of the encampment). At Pompeii, the

original *decumanus* can be seen running from the Porta Marina,[7] through the south end of the *forum*. The *cardo*, on the other hand, emerges from the north-east corner of the *forum*.

As the city of Pompeii grew, the somewhat irregularly laid-out city blocks around the *forum* were organized so that they took on a regular, grid plan. This type of plan is called an orthogonal, or Hippodamian, plan, made up of parallel and perpendicular roads that intersect to produce "blocks." In the Mediterranean, the Hippodamian plan is credited to the 5th century BCE Hippodamus of Miletus, who was an architect and urban planner. In Greece, the urban grid layout was also arranged around a "town square," called the *agora*.

In Pompeii, the old city (the "*altstadt*," arranged around the forum) appears to be the areas shaded in yellow and blue in the plan above. Archaeologists have looked for evidence of walls that might once have surrounded the *altstadt* but have not found any. It seems that the city expanded and was encompassed by defensive walls early in its history. Nonetheless, one can easily observe the development of orthogonal rectangular blocks to the north of the *altstadt* and square city blocks to the east and north-east.

The old *decumanus* was extended, cutting across the entire city and exiting at the Porta Sarno. A second *decumanus* was constructed to the north of the original road; it runs along the top of the old city and exits at the Porta Nola to the east. The old *cardo* was absorbed into the new neighborhood north of the *forum* (although it is still visible as it is wider than the flanking roads) and a new *cardo* connected the Porta Vesuviana (at the north) with the Porta Stabiana (at the south).

The Influence of Natural Formation Processes on Urban Planning and Site Location

The formal description of the Pompeian urban design is superficial and lacks the cultural and natural contexts that contributed to the layout of the city. In fact, the city of Pompeii is shaped by natural formation processes (i.e., geologic and geographic formations) in addition to cultural traditions. As can be seen in Figs. 4 and 5, Pompeii grew from a settlement that was located on an ancient lava flow "finger" on the southern slope of Vesuvius. The majority of the city is situated between 25–50 meters above sea level so that the western and southwestern edges of the city are actually perched on the lava cliff-face.

[7] All city gate and road names (in Italian) are modern.

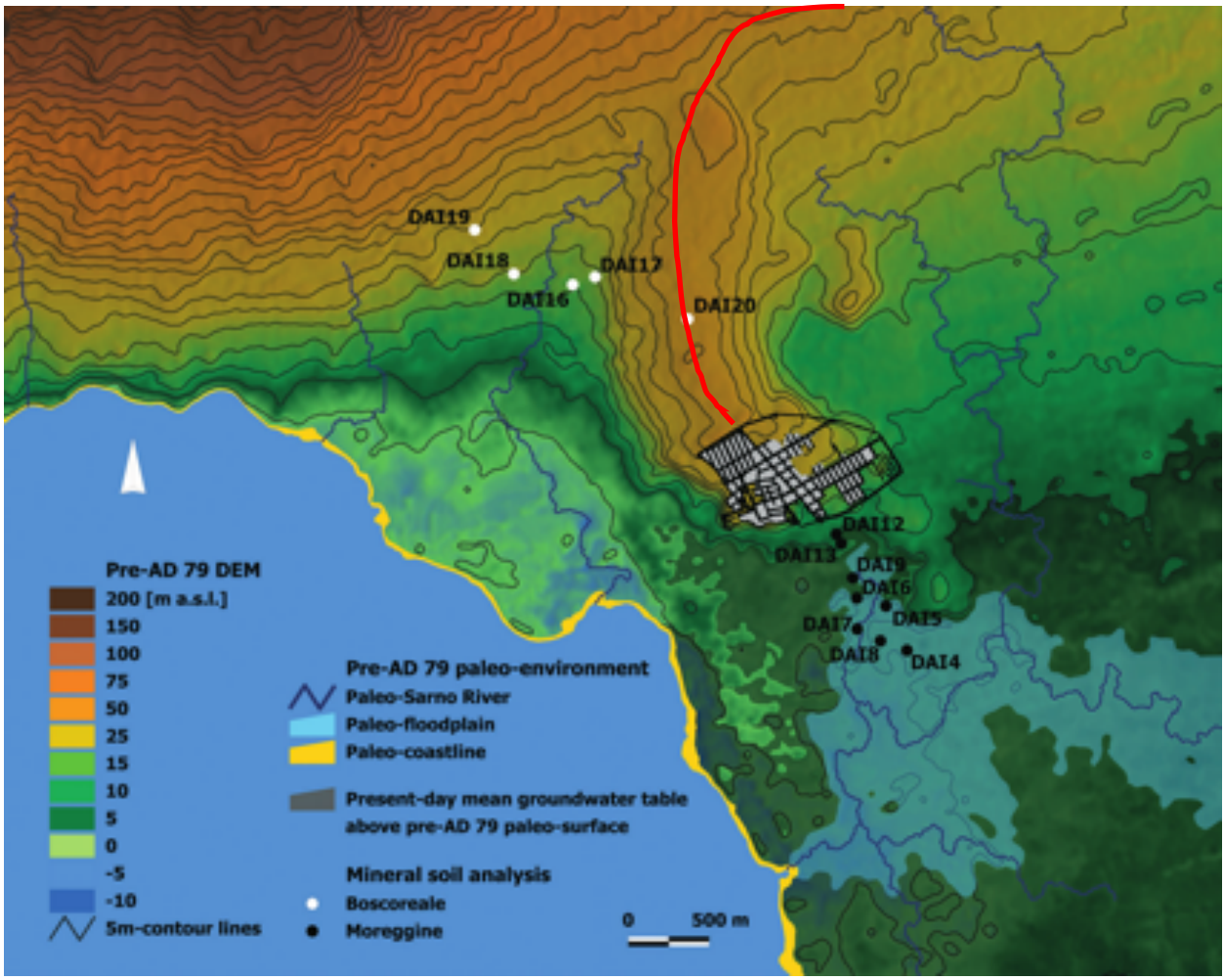

Fig. 4 Topographic map of the region around of the city of Pompeii. (The curved red line marks the purported course of the Aqua Augusta aqueduct that supplied water to Pompeii.)

Fig. 5 Google Earth view of the southern cliffs of the city of Pompeii.

This geographic location is critical to understand as it shaped the urban design of this particular Roman city.

Defensive Walls

Because Pompeii is built on top of an ancient lava flow, defensive walls were unnecessary on the western and southwestern faces of the city. The precipitous drop from city-level to the plain below provided a natural defense for the city and enabled inhabitants to see approaching visitors, friend or foe. Visitors to the site are immediately aware of the site's elevation because the main modern entrance is located at the Porta Marina and requires a bit of a hike up the paved road. The modern "exit" is also characterized by a steep decline down ramps and stairs to reach the ancient Sarno River valley.

Around the remainder of the city — the parts of the city that were not naturally defended by a cliff — a circuit of defensive walls can still be seen. Although these were rendered more or less useless after Rome conquered and colonized the city, their height and defensive purposes can be appreciated, especially at the southern Porta Stabia (Fig. 6). This gate is characterized by a bottle-necked approach, which would "funnel" visitors into the city; its tall flanking walls allowed guards to see approaching visitors or attack enemies.

Fig. 6 Historic photograph and plan of the Porta Stabia, Pompeii (plan includes newly discovered tombs).

Water Supply and Drainage

Another aspect of the city that is not obvious to students reading a formal description of the urban design is the fact that the city is laid over an irregular volcanic topography. The highest point of the city is at the Porta Vesuvio (Fig. 1). *All* roads to the west, south, and east are lower than this point in the city. Consequently, water that was brought to the city by an aqueduct (constructed under the emperor Augustus in the 1st century BCE) entered the city at the highest point and was piped down to all public facilities, fountains, baths, and public latrines, exiting at various points at the western, southern, and eastern edges of town.

This urban layout also makes use of the natural topography to ensure proper drainage of the streets during heavy rainstorms. Drainage was largely — but not entirely — above ground (i.e., not in underground channels). Consequently, the main drainage roads also featured extremely high curbs — at times, just over a half-meter high (Fig. 7) — so that pedestrians could continue to move around the city during torrential rains and water flow would not enter the houses. Coupled with *silex* block "crosswalks," passage along the city sidewalks facilitated movement in and around town.

Fig. 7 Walking up the Via Vesuvio, Pompeii. (Notice the height of the curb next to the woman walking on the right-hand side of the photo.)

Natural Formation Processes and the "Preservation" of the Site and Material Remains

The Bay of Naples is the product of thousands of years of volcanic activity. There have been eight (8) eruptions at Vesuvius during the last 25,000 years. Its three most notable eruptions occurred in 1944, in the year 79 (which destroyed Pompeii and surrounding sites), and ca. 1700–1600 BCE (the Avellino Eruption). When Vesuvius exploded in 79 CE, the entire eruption event lasted for over 24 hours and consisted of two (general) stages: 1) the explosive eruption with fallout from the ash column and cloud, followed by 2) a series of super-heated pyroclastic surges and flows.[8] Volcanologists can track the passage of time by studying the stratification of ash fall and intermittent surges/flows (Siggurdson and Carey 2002: 60–6). Depending on when and how people and objects were felled and buried during the Vesuvian eruption impacts how the remains were preserved.

A timeline of the main Vesuvian eruption of 79 CE is summarized on the following table (Table 1). The timeline is based on the only eyewitness accounts of the eruption, written by the younger Pliny, almost 30 years after the event (see Case-Study 2). He tells us in Letter 6.16 that the eruption took place around the seventh hour of the day (i.e., at about 12 noon). During the first 12 hours of the eruption (between midday and midnight), the explosive eruption was characterized by an ever-increasing ash column that reached up to 20 miles into the sky. The ash was pulled in the wind currents to the south, thus depositing ash, rock, gasses, and volcanic glass particles onto the city of Pompeii, burying it unevenly and collapsing roofs under approximately 20 feet of volcanic material, called tephra. There is abundant archaeological evidence that many people survived these initial hours of the eruption. Humans and animals found buried under tephra are typically reduced to skeletons because the porous nature of the tephra allowed them to decompose into the surrounding ash and rock. This can be seen in Fig. 8; this mule was trapped in a stall, buried and suffocated by tephra.

At midnight the second phase of eruption began — a series of pyroclastic surges and flows. These gas and rock "avalanches" are characterized by extreme temperatures (estimated to be between 400° F) and moving as fast as 62–187 miles/hour (Siggurdson and Carey 2002: 55). Because of the direction of the initial pyroclastic surges/flows, the town of Herculaneum —

[8] Pyroclastic surges are characterized by a high gas-to-rock ratio. Pyroclastic flows consist of a higher volume of volcanic matter (e.g., ash, rock material, minerals, and glass).

Fig. 7 (above right)

Mule killed by roof collapse and suffocation in tephra fall-out.

Fig. 8 (below right)

Skeletal remains of Roman soldier who was felled by the pyroclastic flows that engulfed the beach of Herculaneum.

which had initially escaped the majority of the ash fall — was incinerated (literally) in the first two surges/flows. The preservation impact on Herculaneum was notable: any organic material was either vaporized or, in the case of wood, carbonized. Thus, archaeologists have an abundance of carbonized wood material at Herculaneum, in the form of furniture; doors, jambs and lintels; and structural architectural beams. A boat was preserved on the beach; roof rafters, complete with decorative marquetry and remnants of paint decoration have been found. The people of Herculaneum suffered a more horrible, though instantaneous, death: skin, bone, muscle, and bodily fluids were immediately vaporized and skeletons were charred. This can be seen in the photograph in Fig. 8. It is believed that this skeleton belonged to a Roman soldier (one can see the short sword at his right hip). When the pyroclastic flow hit Herculaneum, he was standing on the beach, facing the bay. (We know that soldiers were attempting to assist in the evacuation of the site; Pliny *Letters* 6.16).)

The force of the pyroclastic flow toppled him forward, face-down, and the heat of the surge/flows instantaneously vaporized his body, charring the bones (notice the burn marks on his skull and left shoulder blade).

At Pompeii and other nearby sites, however, the pyroclastic flows consisted of such fine (small particle) materials that when humans and animals were engulfed by the flow, their bodies were encased in a sort of volcanic "cement"; the temperatures were extremely hot, but not hot enough to vaporize organic material. When these victims are found in archaeological excavations, the cavities in which their bodies decayed are filled with plaster (a technique developed by Giuseppe Fiorelli in the 19th century) and excavated when dry. This technique has also been applied to other organic materials in Pompeii, such as wooden doors, helping architectural historians to understand how Romans constructed this part of the house. Recently, the bone remains of these victims have been studied using CT scans in order to identify the health conditions, sexes, and ages of some of the people who died at Pompeii. It was apparent that ancient Pompeians ate a low-sugar, high fiber diet.

In the case of Fig. 9, it has been determined that this young boy died at about age four, alongside two adults (a male and female) and another child — probably his family. The cast was of exceptional quality, capturing small details, such as the folds of his clothing. The flexed and rigid position of the body (seen with other plaster casts, as well) is a result of the muscle contractions in response to high heat.

Fig. 9

Plaster cast (above), CT scan (middle), and xray (below) of young boy who died in the pyroclastic flow that engulfed Pompeii.

Pompeii: A City Not Frozen (or "Fossilized") in Time

Although more commonly seen in popular magazines or news sources, Pompeii is sometimes described as a "city frozen in time," as if the volcanic eruption of Vesuvius buried the site, interrupted people's lives in the middle of their daily activities, and perfectly preserved the town until its discovery in the 18th century — this is called the "Pompeii Premise" (Allison 1992)

In the previous section, we have seen how the city's layout was shaped by natural formation processes and how it was destroyed and "entombed" by the multi-stage eruption — another natural formation process. In this section, I will present some **human formation processes** that impacted the site before and after its destruction. It is important for archaeologists and architectural historians to take these into consideration, as they shape the interpretations that emerge in modern scholarship.

In the 18th and 19th centuries, it was very popular for people to view Pompeii as a place where life was interrupted in an instant. Early "archaeologists" (more, Indiana Jones-like explorers) found bread "baking" in ovens, cooking utensils still on the hearth, eggs sitting in terracotta bowls. Views of the body casts made this notion of "life-cut-short-in-an-instant" — the transience of life — even more dramatic and shocking, inducing a pathos felt by tourists. It is apparent that some individuals engulfed by the pyroclastic flows were struggling to breathe or rise from their fallen positions (Figs. 10 and 11).

Fig. 10

Plaster case of victim who died in a crouched position, covering his/her face.

Fig. 11

Plaster cast of victim struggling to rise at time of pyroclastic flow.

There is no doubt that that Pompeii saw real human tragedy and loss of both human and animal life. People did suffer; but, the desire of archaeologists to *see* and be confronted with drama, to *see* the transience of life, and to *see* the decline of a once-great civilization sometimes shaped their interpretations and the way artworks and archaeological finds were displayed. Here, we have human formation processes impacting the archaeological sites through the manipulation of artifactual discoveries. For example, Amedeo Maiuri, one of the directors of the Pompeii and Herculaneum archaeological sites, sought to maximize the emotional potential of the archaeological finds by staging them in dioramas. Maiuri also increasingly cultivated a romantic and nationalistic element in his interpretations of Herculaneum's houses and households. Visitors who saw his reconstructions were (and still are) awed by the "preservation" of the houses, leading many to believe that the site was "frozen in time," and by recreating the urban environment, one is transported emotionally, contemplating at once, the magnitude of Herculaneum's destruction, while closing the gap between the living (us) and the dead (them).

This romanticized approach to the archaeology is evident in Maiuri's staging of dioramas—a manipulation of the archaeological finds—in Herculaneum's *Insula Orientalis II* where the installations appealed to visitors of the site *and* readers of his publications (see Bon 1997: 10). Take, for example, the bronze baking forms that were found in an upstairs apartment of the *Insula* (Wallace-Hadrill 2011: 272–278 citing Maiuri's unpublished notes) but hung on the back wall of a ground-level commercial establishment (Fig. 4; *Ins.Or.II*, no. 8) and described as the bakery of "*un vero e proprio pizzaiuolo*," ("a true and proper pizza-man"; Maiuri 1958a: 457). The discovery of an ancestral pizza-man in the ruins of Herculaneum would charm Campanian visitors, indeed!

The dioramas likewise touched the sentiments, especially of those visitors who saw the skeletons of Vesuvius' unfortunate victims. The technique of staging the discovery of human remains contemporaneously made its way into film, as seen in Roberto Rossellini's *Viaggo in Italia* (made in 1952–53), when the "excavation" of (plaster-cast) bodies unsettled an emotionally fragile Katherine Joyce, played by Ingrid Bergman (Kellum 2014: 706–707). One might expect the same reaction from visitors to Herculaneum who saw the skeletal remains of a "female weaver" lying on a cot in room *a* of *Insula Orientalis II*, no. 10, alongside a candelabrum, stool, and reconstructed loom (Fig. 12; Maiuri 1958a: 463, fig. 420). In fact, the

remains of the (*male!)* adolescent were not found in *Taberna 10* but in another location with no associated finds (Wallace-Hadrill 2011: 278 citing Maiuri's unpublished notes).

Fig. 12

Maiuri's diorama of the "Little Weaver-Girl's Room." (The loom has been reconstructed and the bones [of an adolescent boy] have been relocated to this room and placed on a carbonized cot.)

Maiuri did not read the archaeological evidence to understand Herculaneum's residents or their behaviors; instead he "contextualized" the finds within a nationalistic and identity-affirming mythology. Visitors and readers were encouraged to connect emotionally with their fallen Roman ancestors through the manipulation of the site and its archaeological remains, demonstrating to us that we cannot always accept the archaeological, artistic, or architectural finds as they are presented to us.

Human behavior (a human formation process) closer in time to the actual 79 CE eruption also impacted the way we see, interpret, and understand Pompeii and its neighboring sites: All of the Vesuvian archaeological sites are difficult to analyze because of pre- and post-eruption disturbances. We suspect, for example, that during the weeks and days *before* Vesuvius erupted some residents removed their possessions and abandoned their homes (cf. Pliny *Letters* 6.20). Volcanologists know, for example, that a catastrophic eruption is preceded by earthquakes and bradyseism (earth uplift) that would have disrupted daily life and, most critically, water-supply to the city. *Prior to and during* the actual eruption, earthquakes, ashfall, and pyroclastic flows caused parts of buildings to collapse, thus relocating objects from one area to another. Finally, *after* the eruption, we know that residents and members of the Imperial government went to

Pompeii to salvage whatever could be recovered from houses (Bon 1997: 10). All of these interventions disturbed the buried city and altered evidence of "normal" daily life.

After the discovery of Herculaneum and Pompeii in the 18th century, that which *was* preserved under the pyroclastic flow was also disturbed by indiscriminate explorations —human formation processes that *disrupted* items buried during the eruption. Undertaken at a time before the scientific methods and ethical concerns of modern archaeology had been established, the intent of 18th century explorers was to treasure-hunt and obtain antiquities for their royal estates and gardens. There was little to no interest in recording the provenance of objects, leaving many home sites bereft of material remains and many museum collections full of unprovenanced items. The recently concluded *Grande Progetto Pompei* (Great Pompeii Project), which focused on stabilizing areas of Pompeii's Regio V, have also shown evidence of human disturbances: the tunnels of ancient salvagers and 18th century explorers have been located and, in the House of the Garden, six human skeletons were disarticulated and scattered by looters who only saw value in the recovery of artifacts of monetary value (Fig. 13; Soprintendenza 2018: n.d.).

Fig. 13

One of six disturbed and disarticulated skeletons discovered in a room in the House of the Garden, excavated in 2018.

Human and natural formation processes continue to impact the site of Pompeii, forever changing how art historians and archaeologists view and understand the ancient city: the bombing of the archaeological site in the 1940s obliterated numerous houses beyond recognition; however, time and natural elements have also permanently destroyed precious wall paintings and mosaic floors. Even the most recently exposed frescoes in the Regio V excavations have begun to fade, while those uncovered in the 18th, 19th, and 20th century are almost invisible (Fig. 14).

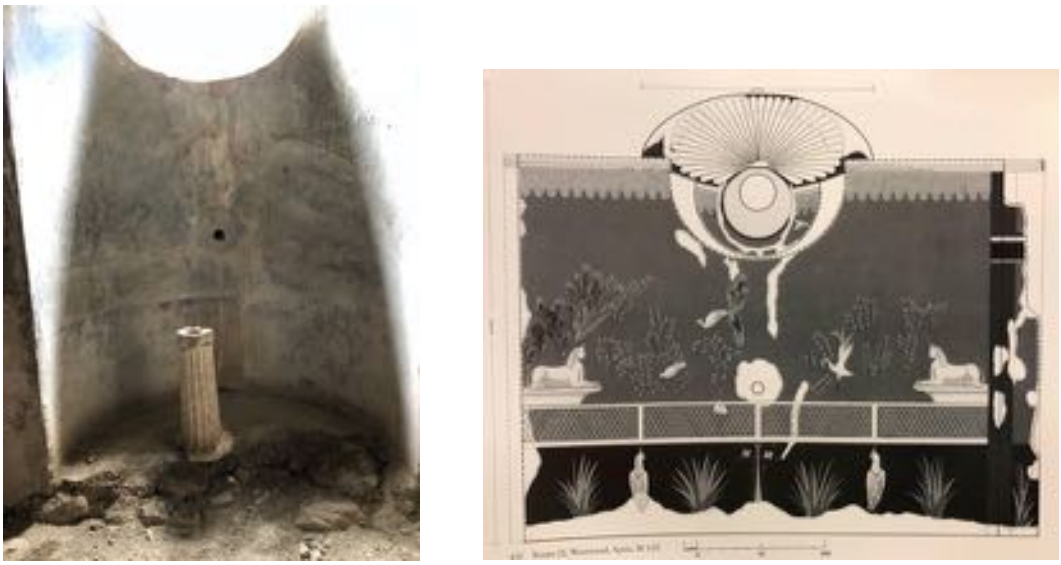

Fig. 14

Photograph (2018) of the apse in the *caldarium* (hot bathing room), House of the Labyrinth, Pompeii (left). Archaeologists drawing of the same wall fresco (right).

Rain-saturated walls have crumbled; ceramic vessels have been broken by collapse; sticky-fingered tourists have sauntered off with bits of mosaic, terracotta, or frescoed wall plaster; careless visitors bump, break, or damage objects for the sake of the souvenir selfie; and famed artifactual discoveries (e.g., the 40-piece kit of surgical implements from the House of the Surgeon, Pompeii) have sometimes disappeared, all or in part. Unfortunately, human beings are the worst threat to any archaeological site's well-being. Natural and human-made formation processes have been a part of Pompeii's history since before the city was established and have continued long after its demise. For the purposes of this case-study, it is important to remember how these formation processes came together to influence the urban design, construction materials, and civic infrastructure. Natural formation processes, likewise, functioned to "preserve" the site and shape how art historians view and understand the human remains, artworks, and artifacts buried during the volcanic eruption of Vesuvius.

Questions for Review and Further Study

1. What are natural formation processes?
2. What are human-made formation processes?
3. How have natural formation processes influenced the layout of the city of Pompeii?
4. How have they impacted the choice of building materials?
5. How have they impacted hydraulic engineering, the supply and drainage of water?
6. How did the natural topography of the site work together with the Hippodamian plan of the city?
7. What human-made formation processes influenced the artifactual record? What types of objects were found or not found in house remains?
8. How have human-made formation processes impacted what we see at Pompeii today?
9. How have human-made formation processes negatively impacted the preservation of Pompeii?
10. How have natural formation processes negatively impacted the preservation of Pompeii?

Chapter Correspondences

The following illustrations are included in Stokstad's *Art History* (2018):

Plan of Pompeii (6–24)
Aerial view of Pompeii (6-23)

The following archaeological topics/materials/methods are discussed in Renfrew and Bahn's *Archaeology* (2016):

Natural and Human Formation Processes (Ch. 2)

Though not technically an aspect of traditional "art history," Pompeii offers students the opportunity to learn about the daily lives of the inhabitants who occupied the town down to the minute details of their physical health, diets, places of origins, position in society through the discovery of plant and food remains, and through the analysis of their bones.

Human Remains and osteoarchaeology are discussed at length in Renfrew and Bahn's Ch. 11. Ch. 7 contains sections dealing with subsistence and diet as evidenced through bone material, and Ch. 9 on trade and exchange, which can also be tracked through bone material and artifacts.

Whether studying Ancient Egypt, Greece, Rome, or the cultures of Native North, Meso, or South America, art historians and archaeologists must also consider attendant issues related to the **ethics** of excavating, handling, displaying, and studying human remains.

Renfrew and Bahn (Ch. 14)

Concerns related to the **preservation** of cultural heritage sites:

Renfrew and Bahn (Ch. 14)

TABLE 1 — *Time-line of the Vesuvian Eruption of 79 CE*

ca. 2:00 – 7:00 am (Venting. Ashfall to the north-east of Vesuvius)

A–1 5 to 10 hours before main explosion

ca. 12:00 noon *(Eruption column and cloud; ash cloud moving to the south, away from Vesuvius and Herculaneum)*

A–2 9 feet of ash fall at Pompeii
A–3 initial = small hail
A–4 roof collapse
A–5 disorientation, darkness, breathing ash, "cemented airways"; breathing glass particulates

Height of column first 7 hrs = 8.7 miles
Height of column last 5 hrs = 20.5 miles

ca. midnight *(S-1 — S-2 pyroclastic flows flowed to the west of Vesuvius, S-3 — S–6 flowed to the south and west of Vesuvius)*

	at Pompeii		***at Herculaneum***
S–1	did not reach Pompeii	S–1	Pyroclastic surge engulfed Boscoreale, Oplontis, Herculaneum 5 feet flow deposit carbonized and uncarbonized wood wood planks, vegetal material fr. slopes
S–2	did not reach Pompeii	S–2	5 foot deposit Wall fragments, large building material Hotter first surge
		F–2	16.5 deposit
S–3	reached Pompeii's northern walls	S–3	4 inch deposit
		F–3	33 foot deposit
	A–6 continued ash fall		

ca. 6:30 am *(S-4 buried Pompeii in the morning hours of the second day of eruption.)*

S–4	overwhelmed Pompeii	S–4	½ foot — 2 foot deposit
		F–4	6.5 — 10 foot deposit
S–5	a few minutes later	S–5	less than ½ foot — 4 foot deposit
		F–5	6.5 — 10 foot deposit
	A–7 often hard to identify in geology		
	A–8 increasingly dense lithic fragments		
S–6	toppled walls, swept away building tops Reached Stabiae (8.7 miles south of Vesuvius) Prob. the surge that killed Pliny the Elder 6.5 feet deposit	S–6	3 inch deposit
F–6	ca. 2 inches pyroclastic flow	F–6	3.3 foot deposit

Key: Ash fallout layers = A–1 to A–9
Pyroclastic surge layers = S–1 to S–7
Pyroclastic flow layers = F–1 to F–6

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CASE-STUDY #5

The Roman atrium house: Architecture, Archaeoastronomy, Sustainable Design, and Climate-Responsive Building

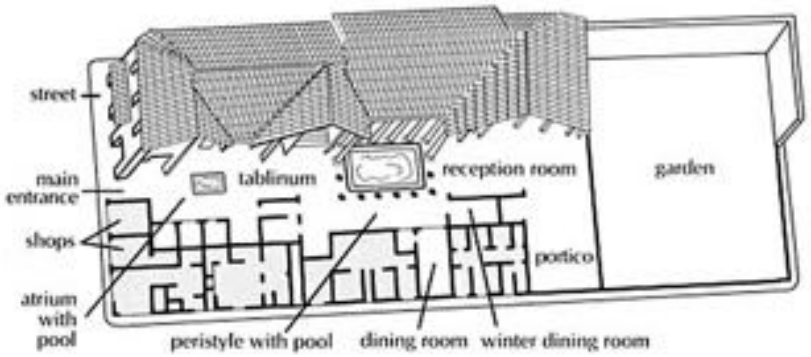


Fig. 1 Plan and isometric view of a "typical" Roman atrium house (cf. Stokstad *Art History*, fig. 6-25)

Some discussion of the Roman atrium house (Fig. 1) is found in virtually every art history, humanities, and specialized textbook on the architectural history. Those that focus on art and architectural history tend to emphasize the formal articulation and identification of rooms; some art history texts — but especially humanities texts — prefer to discuss the social contexts of the house, with a brief review of the famous *salutatio* (morning greeting) or *convivium* (dining) rituals. Unfortunately, authors often treat the history of the Roman house so cursorily that the information is simply inaccurate. In Stokstad's *Art History*, the authors identify the various rooms of a canonical atrium house, but fail to properly identify all of those rooms in the diagram; in Ching's *Global History of Architecture* (2017: 162) the authors incorrectly identify the dining room, convey inaccurate information related to the knowledge of sundials (which, relates to architectural design, as shown below), and identify the *lares* (household deities) as a single, personified god ("Lares"), who never existed.

This case study is dedicated to presenting a fuller view of the atrium house by integrating archaeological material and archaeoastronomical methods, to showcase the sophisticated, climate-responsive knowledge possessed by Italic Samnite (and later Roman) builders, as early

as the 4th century BCE. I will introduce the atrium house and briefly mention its social functions, but focus on the application of archaeoastronomy and the design of the house as a model of what we today call "sustainable design" or "green building," where Romans built to maximize access to the sun (in cool weather), provide natural cooling (in hot weather), and harnessed water (to augment aqueduct supply).

Archaeoastronomy is a specialized branch of archaeology that is concerned with the astronomical alignment of human-made monuments and buildings for cultural reasons. Alignments to the sun are the most frequently studied in archaeoastronomy, but orientations to the moon, planets, constellations, and other celestial phenomena (e.g., solstices and equinoxes) are also analyzed.

Cultural aspects tend to focus on political or religious reasons for alignments between celestial markers and human-made monuments, but this case-study will demonstrate how buildings were oriented to (or away from the sun) for practical reasons, which in turn took on social significance.

Archaeoastronomy is inexplicably neglected in Renfrew and Bahn's *Archaeology* text, mentioned only in passing, yet a sophisticated astronomical knowledge can be documented for the most ancient peoples of the world. This can be demonstrated in Paleolithic art (Renfrew and Bahn 2016: 398–399), at Stonehenge (Renfrew and Bahn 2016: 204–208), the emergence of early calendrical systems and the ordering of time (e.g., among the Maya; Renfrew and Bahn 2016: 140–141; 405 and 408. Instructors of archaeology can integrate the work of archaeoastronomers and archaeoastronomical data into Renfrew and Bahn's chapter on "Cognitive Archaeology, Art, and Religion" (Part II, Ch. 10).

Three notable archaeoastronomers are Anthony Aveni, Clive Ruggles, and E.C. Krupp, whose canonical works are listed in the Bibliography.

The Atrium House and its Spatial Articulation

The "typical" Roman house was one of a variety of house design types that were common in the Italian Peninsula prior to and during the length of Roman history. Because the site of Pompeii was destroyed by the volcanic eruption of Vesuvius in 79 CE, we have many examples of atrium-style houses preserved for archaeological study.

As seen in Figure 2, the basic atrium house (to the left of the dashed line) consisted of an open-roofed entrance hall around which rooms (sometimes labelled "cubicula" [sg. -um]) were organized. The layout of the "typical"/canonical house is axially symmetrical with the *vesitulum* (porch), *fauces* (entry corridor), atrium, *tablinum* (master's room), and *peristylium* (peristyle; colonnaded courtyard) lined up in a sequence. Atrium houses were also frequently constructed with upper floors, most of which were destroyed in the volcanic eruption.

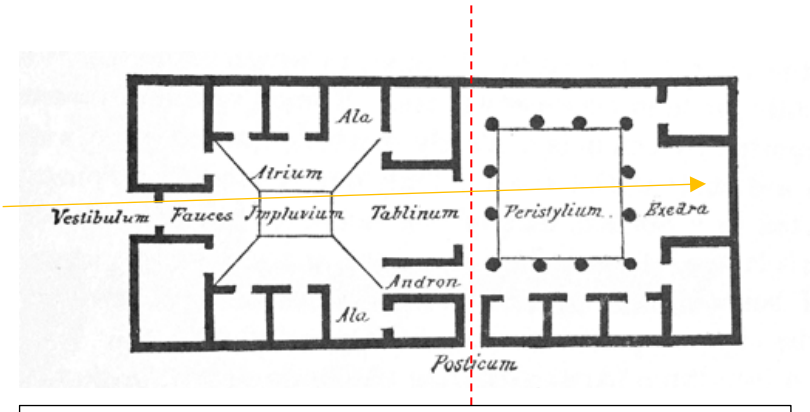


Fig. 2 Plan of a "typical" Roman atrium house (basic and enlarged forms)

Early scholars tended to emphasize the axial viewshed (orange arrow) from the front door to the rear of the house, forgetting that during most times of the day (and night) the doors and curtains of each doorway would have been variously closed or open, and visitors would *not* have had an unimpeded view through the house. Figure 3 illustrates where archaeologists have found evidence of doors (in red) or curtains (in blue) in Pompeian houses.

Fig. 3 Plan of a "typical" Roman atrium house with locations of door panels and curtains indicated.

This is not to say that visitors and guests were never welcomed to see the long, axial view from the entry door to some focal object at the back side of the house. Sometimes there is, indeed, a special room, a fountain, or altar set up as a visual "reward" (Fig. 4); Roman householders would have opened the doors and pulled open curtains to make these views available to visitors.

Fig. 4

View into the House of the Tragic Poet, Pompeii from the front door threshold. Notice the direct view from the front door, through the *fauces*, across the *atrium*, *tablinum*, and peristyle to the household shrine (*lararium*) built against the rear wall of the garden.

The core of the atrium house was generally regarded as the area of the home for public reception, much like traditional living rooms in American households. In elite Roman homes, a peristyle garden and rooms were sometimes added behind the *tablinum* (to the right of the dashed line in Fig. 2); this area tends to be more private because it is separated by more doors, curtains, and only a narrow corridor (called the "*andron*" on the provided plans) next to the *tablinum*.

Social Use of the House

Some male members of Roman society rose to important political and social status and took on the role of *patronus*, or "patron." As a patron, he was not only the head of his family (which included slaves) but of an extended network of individuals and former slaves. These people were his clients, whom he protected, advised, and provided for. Clients, in turn, provided political support, safety, and performed tasks for their patron. The morning *salutatio* was a ritual where clients arrived at their patron's house — sometimes waiting for a long time outside of the

front door on built-in masonry benches! — before being admitted to speak with their patron. As far as we know, that meeting took place in the atrium, *tablinum*, or side rooms (*alae*; sg.- *a*) — the main reception zone of the house.

During the rest of the day, when the atrium was not hosting clients, this area of the house was used by weavers and servants, as evidenced by the artefacts discovered in these areas (Allison 2004a: 271). Storage cabinets with food utensils, tools, and toiletry-items have also been found, along with strong-boxes (for the storage of coins, silverware, and other valuables), as seen in the House of Caecilius Iucundus, the House of Obellius Firmus, and the House of the Vettii, at Pompeii.

The Atrium House as "Green Building"

The following segments of this case-study will focus on various aspects of the atrium house's design and solar-orientation which make this type of house a prime example of what can be called "green" or "climate-responsive" building. Beginning with its basic form, the atrium house is a common type of courtyard house found throughout hot climate regions of the Mediterranean. Courtyard, or atrium, houses are designed so that the roof of the courtyard/atrium is higher than the surrounding architecture; as a result, the high-ceilinged internal space and the opening (*compluvium*) in the roof of the room function like a chimney, allowing hot air to rise to the ceiling and escape out of the *compluvium* (Bouchair et al. 2013: 502; Rajapaksha et al. 2018: 8–11). The rising and escaping hot air pulled cooler air from the lower levels of the room and, if the *tablinum* doors were open, from the peristyle and garden. Whether the Roman house possessed a peristyle, or simply a rear garden, the areas tended to be shaded by covered porticoes and planted with fruit and shade trees, which cooled and refreshed the air by cleaning and oxygenating it (Bordelon and Boyles n.d.: n.p.). During a period and in a region where artificial air conditioning did not exist, early Samnite and Roman builders made use of the atrium house design to live in comfortably, air-conditioned spaces. Romans, then, "turned on" the air conditioning or modulated indoor temperatures by variously opening and closing doorways.

The atrium of a Roman house was not only used to enable natural air conditioning via convective air flow, it was also used to collect and store rainwater for the household at a time before the arrival of aqueduct water. In Pompeii, the Aqua Augusta arrived c. 30–20 BCE, under the authority of the first emperor Augustus and his friend-advisor, Agrippa (Hodge 2001); this

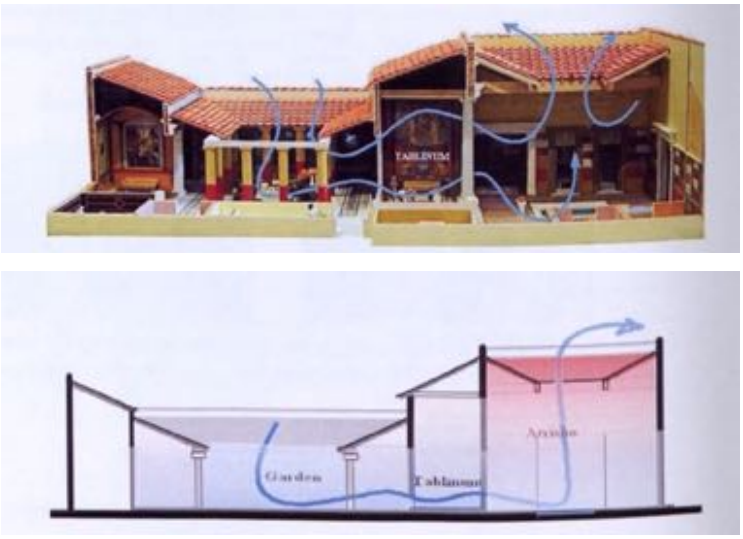


Fig. 4 Convective airflow in the Roman atrium/courtyard house.

aqueduct brought water from the southern Serino mountains via an aqueduct that travelled around Vesuvius on its eastern flanks, toward Naples and finally ending in Misenum on the northwestern tip of the Bay of Naples. In order to reach Pompeii, a subline of the aqueduct branched off at Ponte Tirone and approached the city from the north, feeding a number of elite rustic villas along the way, before entering the city at the Porta Vesuviana, where a water storage tower is located. There may have been an earlier aqueduct that followed this same route, bringing water from the mountains beyond Avella (Lorenz 2012: n.p.); although clear evidence of an earlier supply line is unknown since all traces of the aqueduct line(s) were buried under the volcanic eruptive material.

Although atrium houses tend, by definition, to be elite houses, not all households were connected to the aqueduct-fed urban water supply, so water catchment systems in the house served to provide or augment water available in town. Like modern water catchment and storage systems, rainwater was directed from the roof of the atrium (and peristyles) and channeled through waterspouts to an *impluvium*, or shallow indoor pool, below (Fig. 5). (Outside, water spilled into ground-level rain gutters that flowed to drains in the corner of the peristyle courtyard and then to underground cisterns.)

Under the *impluvium* a cistern collected rainwater (either directly from the *impluvium* or from pipes from the garden). Any sediment that ran off the roof settled to the bottom of the *impluvium* or to the bottom of the cistern and had to be cleaned periodically. Members of the Roman household gathered water from a well-head (*puteal*), many of which can be seen in Pompeian houses today (Fig. 6). This system provided water at times of drought and maximized access to this important natural resource for daily use.

Fig. 5
(Left) View of compluvium, left, and peristyle, right.

(Right) Isometric view of compluvium in roof, impluvium, and water cistern below impluvium/

Fig. 6 View of atrium with impluvium and *puteal*, House of the Tragic Poet, Pompeii

Additionally, the presence of a small body of water in the *impluvium* and a large body of water underneath the floor of the atrium functioned to temper the indoor microclimate of the house during warm months. During the summer, warm temperatures caused water to evaporate from the *impluvium*, pushing cooler air down as moisture particles and hot air rose to escape the *compluvium* (Julien 2019: sec. 5). It is possible that during the cold season the below-ground water cistern could have passively absorbed solar heat, as water has a very high thermal mass (Bouchair et al. 2013: 502; Rajapaksha et al. 2018: 8–11); this means that it could effectively absorb and store heat during the day and radiate that warmth into the air overnight. However, to serve as a repository of solar heat, the atrium pavements would have to have been exposed to a significant amount of sunshine (especially in winter) in order to heat the cistern below; this level of sun exposure *inside* the atrium is not typical in Pompeian atrium houses.

The masonry and concrete construction a Pompeian home's walls also lent itself well to passive solar heat absorption, since volcanic stone and cement-core walls (see previous Case Study #3) are materials of excellent thermal mass (just like bodies of water, mentioned above): they absorb and store heat well, while keeping daytime temperatures quite cool, as wall thicknesses of 20–24 inches were fairly common. Since it takes solar radiation (heat) approximately one hour to penetrate (conduct through) one inch of masonry, buildings simply were not exposed to the sun for enough hours for heat to pass *through* their walls. However, they functioned well to store and radiate heat overnight (Rajapaksha et al. 2018: 11).

One negative effect of the ancient use of volcanic building materials was the fact that the entire town of Pompeii was built with these same heat-absorbing materials, resulting in the creation of an urban heat island (UHI) like the one we experience living in the Los Angeles area. Throughout the year, solar radiation was absorbed in walls, sidewalks, and the stone pavers of city roads, radiating it back into the environment. An UHI makes outside air temperatures significantly warmer than those experienced in the countryside due to the lack shade trees, greenspace, and natural (permeable) land surfaces (U.S. Environmental Protection Agency 2008: 1.1–2, 7; 2.1; 5.1, 8).

To keep the stone walls from absorbing solar heat, most Pompeian buildings were covered with white plaster to reflect as much sun away from the walls as possible — a technique that, unfortunately, exacerbated glare. Inhabitants also protected the home by placing buildings close together (so that they shaded each other) and by controlling the type, size, and number of

external apertures. By installing only a few, small windows (or forgoing their use entirely) interior spaces were protected from direct solar radiation and thermal gain (Shepperson 2017: 1–2).

Seasonal Heating and Shading of the Roman Atrium House

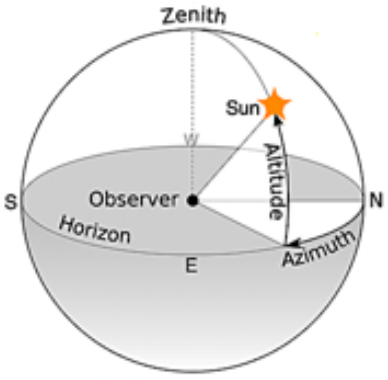
The design and construction of a Roman atrium house did not begin and end with the erection of four walls, a roof, and its internal finishes. Pompeian architects, and apparently, their Italic Samnite predecessors possessed a sophisticated understanding of astronomy, the movement and positions of the sun, and solar time. The Roman writer, Vitruvius, in fact, identifies this knowledge as requisite for builders of homes in order to make living spaces healthy and pleasant to occupy:

> It is necessary, in fact, [for the architect] to know… the inclination of the sky [heavenly bodies] (*propter inclinationem caeli*) — what the Greek's call κλίματα (*climata*)—air and places which are healthy or diseased, and the benefits of waters. For without these considerations, the healthiness of a house cannot be assured…. From astronomy we find the east, west, south, and north, as well as the order of the heavens, the equinox, solstice, and paths of the stars. If one has no knowledge of these matters, he will not be able to have any understanding of sundials. (Vitruvius *De Arch*. 1.1.10)

In order for archaeologists to understand the intersection of astronomical knowledge, Roman architecture, and culture, we must turn to a basic methodology from the discipline of archaeoastronomy: the understanding of building alignments; solar position (**azimuth** and **altitude**) and **sun path** (Fig. 7); and the role these played in culture.

Fig. 7

Diagram depicting the sun's position (azimuth and altitude), relative to an observer on earth.



Solar **azimuth** (Fig. 7) is defined as the position of the sun relative to the horizon and the points of the compass. For example, the point on the eastern horizon at which the sun rises — the azimuth — changes throughout the year. At Pompeii during the winter solstice (21/22 December), the sun rises at 121° SE and sets at azimuth 239° SW (or –121° SW; Fig. 8). Conversely, during the summer solstice (21/22 June), the sun appears higher in the northern hemisphere and, therefore, rises at 58° NE; the summer sunset is located at azimuth 303° NW (or –57° NW; Fig. _____).

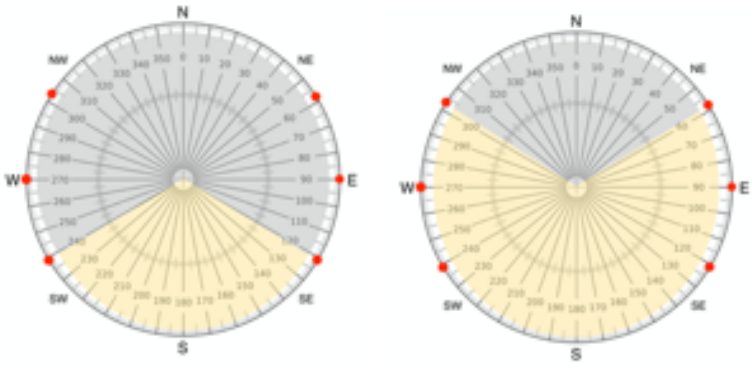


Fig. 8

Sunrise and sunset azimuths at Pompeii, Italy, during Winter Solstice (left) and Summer Solstice (right);

Shaded (grey) and highlighted (yellow) areas indicate the amount of daylight during winter (left) and summer (right).

To identify the alignments of Pompeian atrium houses, a visitor to the archaeological site can easily use a handheld compass or a digital compass app, like those available for smartphones. By placing one's back against an exterior wall or by aligning the compass with an exterior-facing window, one can read the orientation of the building. (Students may also take a solar-alignment reading from a map of Pompeii that includes an accurate North arrow.)

Some houses may have more than one exterior-facing façade. The city of Pompeii is generally oriented with two main roads running northeast and southwest (NE–SW) and one main road from the northwest (NW) to the southeast; consequently, all city blocks are also turned

toward the intercardinal directions.[9] Depending on the location of atrium houses in the city block, a house may have no walls exposed to the sun, or it may have one or more NE, NW, SE, or SW walls exposed to sunlight. The importance of this will be explained below.

Whereas the sun's azimuth marks its alignment to points on the compass, solar **altitude** is defined as the height of the sun above the horizon (Fig. 9). Altitude is calculated as an angle, with the vertex of the angle at a geographic point on the earth's surface — in this case, an observer or building at the main intersection of roads at Pompeii. What is critical to remember here is that the sun appears lower in the sky during the winter at Pompeii (latitude 40.75°), reaching its maximum height/altitude at 12:00 noon (26° altitude at winter "Solar Noon"). By contrast, the summer sun reaches a much higher altitude of nearly 73° at 12:04 (summer "Solar Noon"). At the vernal and autumnal equinoxes, solar altitude at noon is nearly identical (i.e., 49°).

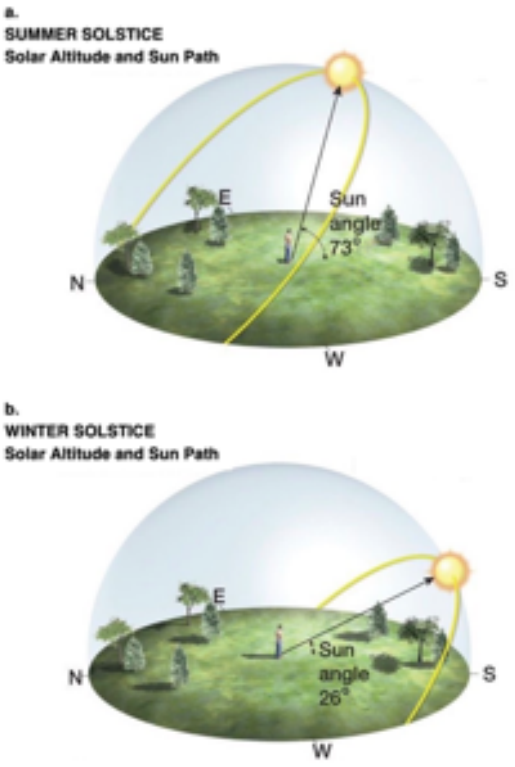


Fig. 9

Solar altitude and Sun Path at Pompeii, Italy during Summer Solstice (a) and Winter Solstice (b)

[9] The cardinal directions are north, south, east, and west. The intercardinal directions are northeast, northwest, southeast, and southwest.

In addition to reading solar azimuth and altitude, an archaeoastronomer must consider **sun path**, or the apparent daily and seasonal movement of the sun through the sky. Andrew Marsh's 3-D Sun Path app models the sun's paths during the day and year.[10] Sun path modelling software is useful to envision the intersection of time, sun position, and the built environment of Pompeii, and allows one to "see" changes in light and solar radiation that are only alluded to in still diagrams (cf. Fig. 9). To an observer in Pompeii, the summer sun appeared high overhead during the summer, while the winter sun path transited low over the Sarno River Valley. The long, high-altitude sun path produces intense sunlight and thermal radiation, while the low-altitude winter sun path is characterized by low-intensity sunlight and heat. Thus, the seasonal sun was tied to varying quantities and qualities of sunlight.

Sundials and Solar Time

Daily and seasonal sun positions are also reflected in the **solar time**: summer days are longer, with fifteen hours of daylight at Pompeii during the summer solstice, while winter days are reduced to nine hours, fifteen minutes at the winter solstice (see Fig. 8). In ancient Rome, the day was divided into twelve units, whose length varied depending on the season (Vitruvius *de Architectura* 9.7.1, 7; 9.8.10): this resulted in a winter Roman "hour" of approximately 45 minutes at winter solstice and a summer Roman "hour" of 75 minutes at midsummer in Pompeii. Only near the equinoxes were Roman hours equal to the modern hour of 60 minutes in length. Solar time was tracked with sundials, of which thirty-six have been found at Pompeii (Talbert 2017: 120, n. 33) and the seasonal hours are reflected on the surface of the sundial. From winter solstice in December until the summer solstice in June the hour lengthened (from 45 to 75 minutes) and from June to December the hour contracted (from 75 minutes to 45 minutes) as daylight waned.

The division of the day hinges on the solar position in the sky, which places the end of the 6th hour and the beginning of the 7th hour at midday, or "noon," regardless of the season. This was the moment when the sun reached its highest altitude of the day and was located closest to due south (180° azimuth), or what astronomers refer to as "Solar Noon."

[10] Andrew Marsh's free software is available at: < http://andrewmarsh.com/software/sunpath3d-web/ >. The Solar Position Calculator provided by NOAA (the U.S. National Oceanic and Atmospheric Administration) allows one to calculate sun position for the first century CE: < https://www.esrl.noaa.gov/gmd/grad/solcalc/azel.html >.

What does this have to do with Roman houses? Archaeologists find that the way atrium houses were situated in the city and whether they were exposed to the sun impacted indoor temperatures. In Pompeii, it is apparent that builders designed living spaces to be cool during the summer and warm during the winter. They did this by *minimizing* solar heat gains and glare (by orienting buildings *away* from the sun), or by *maximizing* access to solar radiation (by aligning the home *toward* the sun) when heat and sunlight were desired (Plin. *Ep*. 2.17.6–8; 5.6.24, 38; Vitr. *De Arch*. 8.2.3; Bouchair et al. 2013: 502; Rajapaksha et al. 2018: 8–11).

Since Pompeian buildings are oriented to the intercardinal directions (e.g., northeast to southwest), the city's and houses' architects indicated their interest in maximizing heat during fall, winter, and spring, while sheltering from the sun during the summer. Southwest-facing houses actually experience *less* exposure to the sun's heat and light during the summer. Studies of southern Mediterranean architectural traditions demonstrate a preference for southwest-oriented buildings because southwest-aligned structures receive *more shade during the summer* (when inhabitants wanted to escape the sun's glare and excessive temperatures) and *more thermal radiation and sunlight during spring and fall seasons* (when inhabitants wanted to maximize access to the sun; Bouchair et al. 2013: 499). During the winter, southwest-facing surfaces received very little sun, but southern or south-eastern façades were illuminated all day. The *decrease* in summer sunlight and heat is due to the fact that the sun passes *over* the city at a higher altitude, shining its rays on the roofs and upper levels of buildings, and only illuminating the house's exterior walls with a raking light. Notice, for example, how the sides of southwest-facing buildings are shaded during the summer but illuminated during the winter at Pompeii. This phenomenon — alluded to by Pliny the Younger (*Ep*. 2.17.19) — results in cooler temperatures within lower-level areas of the house: "Indeed, the portico has least sunshine when the sun is blazing down upon its roof." Around the equinoxes, houses with exposed southwest, southern, and southeast-facing façades received *increased*, but less intense light. Equinoctial light and radiation are weaker due to the sun's lower altitude and resulted in a more diffuse ambient light and less heat.

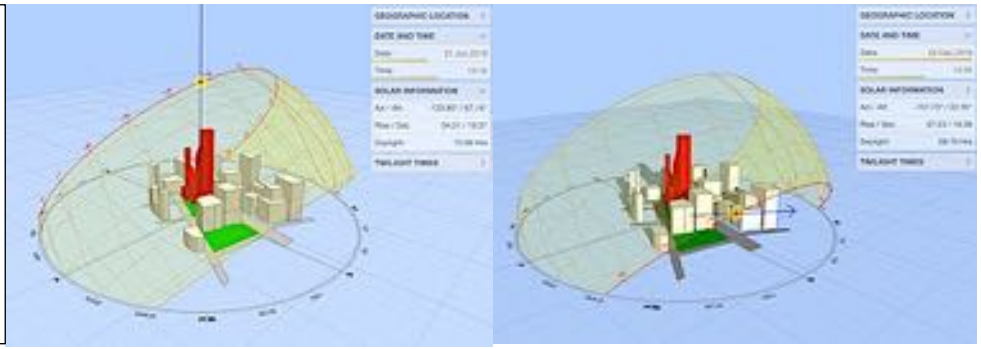


Fig. 10 (left) Lateral sun exposure during Summer Solstice.

Fig. 11 (right) Lateral sun exposure during Winter Solstice.

The phenomena of decreased solar radiation during summer and increased solar radiation during fall, winter, and spring are visible in models of sunlight related to sun path and altitude at Pompeii. In Figures 10 and 11, the roof planes of a generic city model are illuminated during the summer, while walls receive most solar radiation during the winter season. Southwest-aligned houses, thus, *did not* harness the same quantity of light or passive solar heat throughout the year.

Example

Let's look at an example of a Pompeian house to see how builders constructed a home in relation to the sun:

The so-called House of the Tragic Poet (address: VI.8.5, Pompeii) is one of the most famous houses in the ancient city. Its floor plan and articulation of rooms is very close to a canonical atrium-style house (Fig. 12). Like other houses of this type, it possessed a tall atrium and a rear, peristyled garden to allow for convective air cooling. Evidence of doors have been identified at the front and back of the *tablinum*, as well as at the narrow corridor that linked the atrium-zone of the house to the peristyle-zone. These doors would allow the inhabitants to control airflow to cool the house or to prevent drafts during the cold season.

At the center of the atrium is an *impluvium* with a below-ground cistern. When this house was excavated by archaeologists, a columnar well-head was found next to the impluvium; and this well-head remains *in situ*.

What is interesting to note is how this house is designed for (or to prevent) passive solar heat absorption. Note in Figure 12 that this house's front façade and entry doorway faces toward 145° SE. According to the sun's seasonal movements, the front façade of House of the Tragic Poet absorbed indirect, raking sunlight at sunrise and sunset during the winter and direct sunlight especially during morning hours until 9th Roman Hour of winter. During the summer, the sun

passed overhead during the hottest hours of the day and never fully illuminated the façade. During the fall and spring equinoxes, the façade enjoyed some direct illumination during morning and midday hours.

Fig. 12

Plan of the House of the Tragic Poet, Pompeii

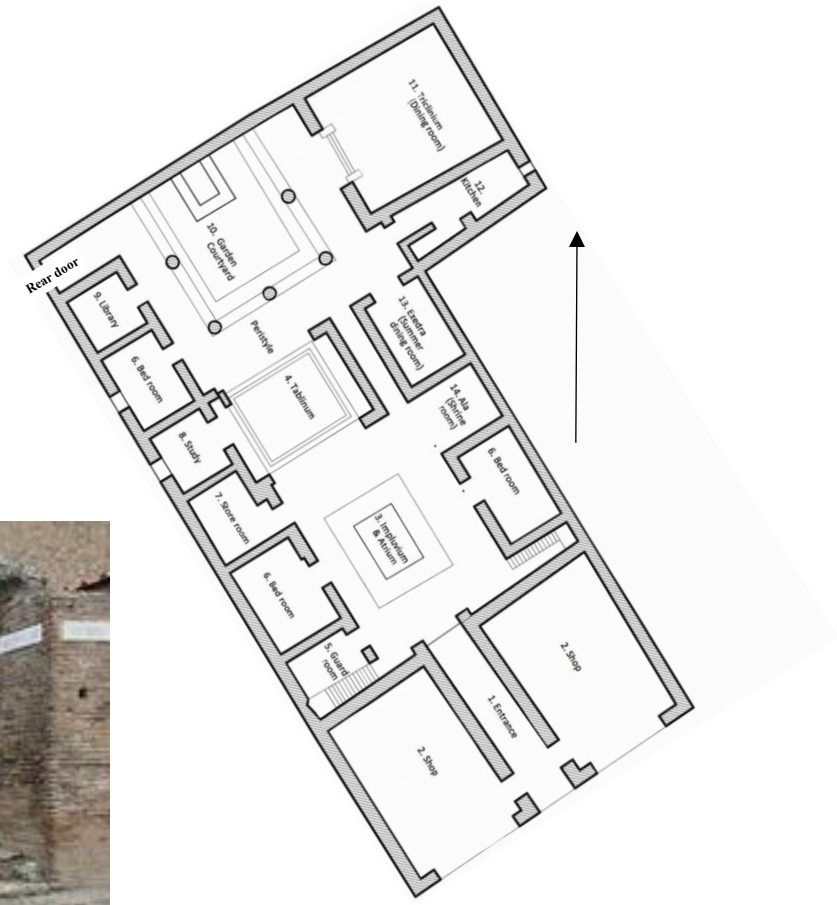


Fig. 13 Southwest-facing lateral facade of the House of the Tragic Poet, Pompeii; Viccolo della Fullonica

However, house itself was protected by the sun. Did you notice that there are two shops at the front of the house, on either side of the doorway? The upper floors of the house certainly received sunlight and heat — and were probably very warm during the summer — but the lower levels of the house and atrium were insulated by the shops. The only other exposed wall was the southwest-facing lateral façade, which flanked the street (today called the Vicolo della Fullonica,

or “Small Street of the Laundry”; Fig. 13). Both in the plan and in the photograph, you will notice that the lateral, southwest façade has very few windows. Most rooms, in fact, have no windows whatsoever, and received their main ventilation via the atrium. In other words, the rooms on the southwest side of the house were shaded for the majority of the day and received no direct sunlight. During the summer, the overhead sun entered the peristyle and atrium allowing reflected light to illuminate those rooms. This means that they remained cool but they were not necessarily dark, as they received ambient light, and would have been especially enjoyable during hot summer days. The exterior face of the wall did not receive any sunlight until the very end of the day in winter; it received afternoon light (i.e., from midday to near sunset) around the equinoxes; and indirect light from around 3:00 pm until 5:00 during the summer (remember that the midday sun passed *over* the house).

By utilizing a method adopted from archaeoastronomy and analyzing Roman house’s building materials and design in relation to the sun’s position in the daily or seasonal sky, it is apparent that wealthy Romans made integrated many climate-responsive building techniques in their homes. Romans knew how to produce convective air flow and how to construct water catchment systems to live comfortably in an environment without electricity and for many years before the arrival of the Imperial aqueduct system. Not all Romans had access to homes like this, so we should understand that having a comfortably cool house in summer and a warm house in winter was a mark of high status for those who could hire architects with specialized knowledge and pay for the construction of a climate-responsive home. In addition to serving as a site for Roman social rituals, the architect-builders of atrium houses employed astronomical knowledge for cultural, social, and practical reasons. Above all, the atrium house was designed for comfortable living for those who could afford such privileges.

Questions for Review and Further Study

Here are some questions to think about in reviewing this unique type of archaeology and the analysis of archaeological house remains:

1. What is archaeoastronomy?
2. What are the three aspects of sun position that must be factored into an archaeoastronomical analysis of the Roman home?
3. Define azimuth, solar altitude, and sun path?
4. How was the Roman house designed to produce natural air conditioning?
5. How was the house designed to collect rainwater for use during the annual dry season or periods of drought?
6. What practical function did the impluvium, compluvium, and cisterns have?
7. How did Roman house designers construct the exterior walls of the house to maximize or minimize exposure to the sun?
8. What is an Urban Heat Island?
9. To what cardinal or intercardinal directions were Roman houses oriented? Why did Romans prefer these solar orientations?
10. What does a climate-responsive house say about Romans and their social or domestic values? Would all Romans have had access to this kind of specialized knowledge, skill, or resources to build a house like this?
11. Download or use a Compass app on your smartphone and use your own house or apartment as a case-study: How are the exterior walls of your house oriented? Is your house constructed to be climate-responsive? Is your house designed to be warm in the winter or cool in the summer? Do you have any "natural" air conditioning mechanisms built into your house? What could we learn from the ancient Romans about climate-responsive home building?
12. Think about the questions posed in #10. What does your house say about the architect who designed it, the company who built it, the people who bought/own it, and the people who live in it?

Chapter Correspondences

The following illustration of a Roman atrium house is provided in Stokstad's *Art History* (2018). Note that the photographic illustrations provided by the authors do *not* represent a canonical atrium house.

Plan of Roman atrium house (625)

As noted in the Information Box on p. 2, archaeoastronomy is inexplicably neglected in Renfrew and Bahn's *Archaeology* text; however, historians and anthropologists know that ancient peoples possessed a sophisticated astronomical knowledge that can be documented archaeologically. Mentions in Renfrew and Bahn's *Archaeology* (2016) can be found in the following areas:

Paleolithic art (Renfrew and Bahn 2016: 398–399)
Stonehenge (Renfrew and Bahn 2016: 204–208)
Early calendrical systems and the ordering of time (e.g., among the Maya; Renfrew and Bahn 2016: 140–141; 405 and 408)

Cultural manifestations of archaeoastronomical knowledge and alignments relate to Renfrew and Bahn's chapter on "Cognitive Archaeology, Art, and Religion" (Part II, Ch. 10).

A student-friendly introduction to Archaeoastronomy is freely available via a Coursera MOOC (link in the bibliography).

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CASE-STUDY #6

Phenomenology and Sensory Archaeology: Paleolithic Caves, Mesoamerican Urban Sites, and Roman Homes

One of the most problematic aspects of teaching art history and working with art history textbooks is that we study and present static images of artworks, architecture, and the built environment. Statues and paintings are experienced through photographs; architectural space is conveyed with photographed or virtual-reality views of one part of a building at a time or through two-dimensional floor plans. This case-study will examine the impact and benefits of phenomenological theory and sensory archaeology on the study of art and architecture through four examples of canonical works from the history of art. To introduce this topic, consider, for example, this commercially-available image of a Late Imperial Roman/Late Antique (5th century CE) mosaic of St. Lawrence in a building known as the Mausoleum of Galla Placidia (Fig. 1).

Fig. 1

Commercially reproduced photograph of a mosaic in the Mausoleum of Galla Placidia, Ravenna, Italy (see Stokstad *Art History*, fig. 7-19 and 7-20)

Although not a poor-quality image by any means, there are a number of problems with learning about art through the medium of "professional" photography and glossy-print textbooks. First, the image is detached from its architectural context. Students cannot see where this is situated in

the building or how high or low it is located on the wall. It is also difficult to see and appreciate the materials used in this artwork: even though this work is constructed of tiny pieces of glass *tesserae*, the colors, human figure, and space appear very flat (two-dimensional) and abstract (unnatural). There does not seem to be any real depth to the space and St. Lawrence appears to float over the front edge of the shallow niche. When students study artworks via commercially available photographs, they are missing out on the **corporeal and sensory experience** of the artwork and three-dimensional space that were integral parts of the first-hand experience.

Phenomenology refers to a body of philosophical theories that are concerned with the study of lived, human experiences. In archaeology, a phenomenological approach has tended to focus on the human, bodily (or corporeal) experience of architectural spaces, cultural places, and landscapes. Typically, phenomenological studies of archaeology have focused on vision (how see or experience something visually) or movement (how we experience a space or landscape by moving through it). However, phenomenologists maintain that, since **human beings experience everything through our bodies and our senses,** we actually experience artworks, buildings, landscapes, and the entire world, through a multitude of senses — through our sense of sight/vision, touch (haptic sensation), taste (gustatory sense), smell (olfactory sense), and hearing (audition). In addition to the five Aristotelean senses are our senses of space/our place within a space (proprioception) and our ability to sense humidity or temperature (thermoception). We also experience many of these senses simultaneously (synesthesia) so that our experience of a place is multisensory by definition.

We are so used to having our experience of art and architecture mediated through a printed textbook or on display in museum, that we don't realize how much we have missed by not experiencing works of art first-hand and in their original contexts.

(See Renfrew and Bahn 2016: "Postprocessual Archaeology" 43–44; and the incorporation of phenomenological approaches in interpretive archaeology [p. 222], cultural meaning in landscapes [403–405], and an expanded discussion of postprocessual and interpretive archaeology in Part II, Ch. 12, pp. 498–501.)

When the mosaic of St. Lawrence is seen in person the viewer finds him or herself in the midst of a very different visual, spatial, and spiritual experience. Unfortunately, in order to study the phenomenological experience of the *Martyrdom of St. Lawrence*, we must continue to rely on still photographs. (It would be better for us to visit the site in person!) Nonetheless, consider the photographs of the same artwork (on the next page, Fig. 2a, b, c, and d). Students may

immediately notice that the work is high over the head of viewers; we see St. Lawrence and the instrument of his martyrdom (the grill) in a better perspective than if we view the mosaic head on. Other students may notice the richness of the alabaster "window" that admits a soft amber light. The image that looked flat and abstracted in the commercial photograph begins to look more naturalistic: St. Lawrence stands in a space that is much more three-dimensional when viewed from below and in low, ambient light (Fig. 2c; Fig. 3); and, the more "natural" the light appears the more the flames and the representation of cast shadows come to life.

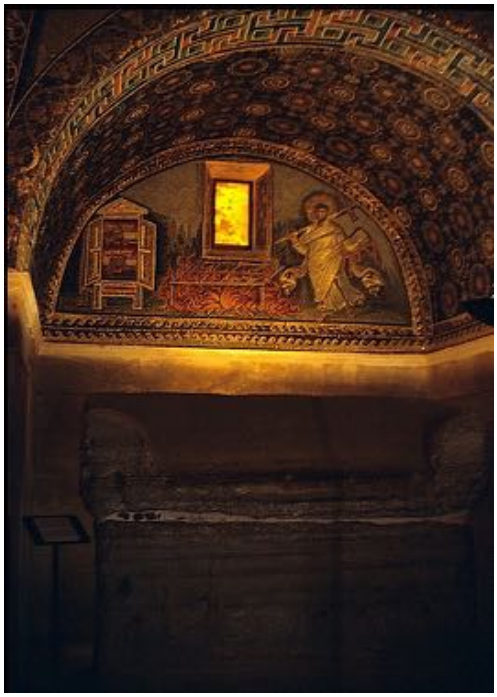
a.

b.

Fig. 2 a–d (clockwise)

Various lighting conditions in the Mausoleum of Galla Placidia with the mosaic of St. Lawrence *in situ* in the rear lunette. (See Stokstad *Art History*, fig. 7-19 and 7-20)

c.



d.

Fig. 3 Detail of the *St. Lawrence* lunette mosaic, photographed with an analog film camera in low, ambient light conditions with a "half-flash." (See Stokstad *Art History*, fig. 7-19 and 7-20)

Of course, the light in these photographs is still not natural and photos hardly replicate the way ancient Romans would have viewed this space, so it is helpful to keep in mind the technological, temporal, and cultural differences that separate modern and ancient viewers. In the 5th century CE, artists and visitors to this building would have used oil lamps. These tend to be small and portable (Fig. 4) and most similar to a candle flame. None of the above photographs were taken by candlelight; we can see electric light sources (e.g. lamps and spotlights) set up in the building. Figures 2a, b, and d were taken with digital cameras whose lenses adjust for the amount of light in a room. Only in Figures 2c and 3 do we approximate how the naked eye would have seen this mosaic; though there is artificial light in the room, it is otherwise a very dim environment and one can appreciate how the flicker of the flash reflects off of the glass mosaic pieces.

Fig. 4 Replica oil lamps with flame.

Applying phenomenological theory to art history and archaeology

Artworks, architecture, and the built environment were meant to be experienced in person and *in situ*. Commercially reproduced textbook images literally separate images from space, separate buildings from bodies, and detach human experience from cultural places. The theories of phenomenology are, put simply, concerned with the "lived experience" of any given phenomenon. In archaeology, phenomenology has been employed to better understand how buildings, spaces, and material objects were experienced by the people who made, used, or inhabited them. While this approach may seem simple, it is fraught with complications: How does a scholar living in the 21st millennium understand the "lived experience" of people who lived a thousand, two-thousand, or even 20,000 years ago? Is it even *possible* to understand a foreign/distant/dead culture? The most obvious problem is that we, in the 21st century, are separated temporally and culturally from humans of the past. We simply do not see a building or space the same way it was seen by a person who experienced it first-hand. We are also separated by culture, gender and status. We experience ancient art, architecture, and artifacts as "ruins"; ancient objects have been lost, buried, discarded, broken, and destroyed. Oftentimes, what is left is a fragment of what was once experienced by an ancient person. Moreover, just as it is problematic to experience art and architecture via a textbook or print photograph, we might ask how our experience of a place is altered when we only look at it through the brilliant screen of a smartphone camera? (Do we actually see the objects that we photograph with our phones? How is what we see different or changed? Do we remember the object better or worse than if we weren't distracted by our phones? Do we continue to see the digital photograph or is it lost?)

> **Sensory archaeology** is related to phenomenology, as it is a branch of archaeology that is concerned with how people experienced places and spaces of the past. As is evident by the name, sensory archaeologists focus on experiences and our perception of landscapes, architecture, objects, rituals, food, music, noise, and so on.

Knowing these problems, phenomenologists and sensory archaeologists argue that it is still possible to reconstruct "lived experience" — at least in part — by 1) taking into account cultural, gendered, social, and temporal distances, 2) relying on other types of historical, cultural, artifactual, and quantifiable evidence, and 3) engaging first-hand with artistic, architectural, and

archaeological objects or spaces (that is, by viewing, walking, and experiencing the phenomenon to be studied, as did the photographers of *St. Lawrence* in the Mausoleum of Galla Placidia). One way that phenomenologists and sensory archaeologists study (and gather data) is by using their own bodies and their personal experience of a space, ritual, building or artwork. They maintain that there are "human" or "bodily" experiences that are shared because ancient and modern people are all physiologically human. Moreover, because humans perceive the world, objects, and spaces via our senses, our perception may shed light on ancient lived experience. For example, if a modern human enters an extremely small, dark space (e.g., a 5' x 8' room with a 7' ceiling and tiny 20" x 20" window), s/he may have a similar feeling of enclosure — even, claustrophobia — as an ancient person.

So, how might a phenomenological/sensory approach contribute to a fuller understanding of ancient art, architecture, or urban space? Now that we have gotten a taste of what it is like to experience a work of art, let's look at a cave painting from Paleolithic Europe, the "typical" Roman house, and the urban site of Teotihuacan and its "Pyramid of the Moon" to consider how phenomenology/sensory archaeology can supply us with a more complex idea of how these objects and spaces were experienced and understood.

Paleolithic Cave Painting

Perhaps the most famous Paleolithic cave painting discovered in Western Europe is the cave of Lascaux in the Dordogne region of France. Discovered in 1940, when Marcel Ravidat's dog fell into a fissure, the cave is best known for its enormous, naturalistic paintings of wild bulls and horses (Fig. 5). Radiocarbon dating demonstrates that Paleolithic cave paintings were made as far back as 30,000 years ago to as recently as 15,000 years ago.

While art historians may discuss the natural animal features (such as fur patterns) or various abstract elements (such as the horns in twisted perspective) or the materials used (e.g. charcoal, ochre), the presentation of still photos in textbooks, with paintings artificially illuminated by high-wattage lights, gives students an extremely artificial impression of how cave paintings were made, seen, and experienced. In some textbooks, the cave paintings are depicted as a photomontage of Lascaux II, the replica cave that was built near the original for tourists! The result is that students are learning from replicas (photographs) of replicas (reconstructed caves and paintings). To experience the cave paintings first-hand, one needs to travel to France

or Spain to enter and see the cave paintings first-hand. Unfortunately, most Paleolithic caves are closed to visitors because of the negative impact of high volumes of visitors on the paintings.

Fig. 4 The so-called "Hall of Bulls," Lascaux Cave, France (cf. Stokstad *Art History*, Fig. 1–11)

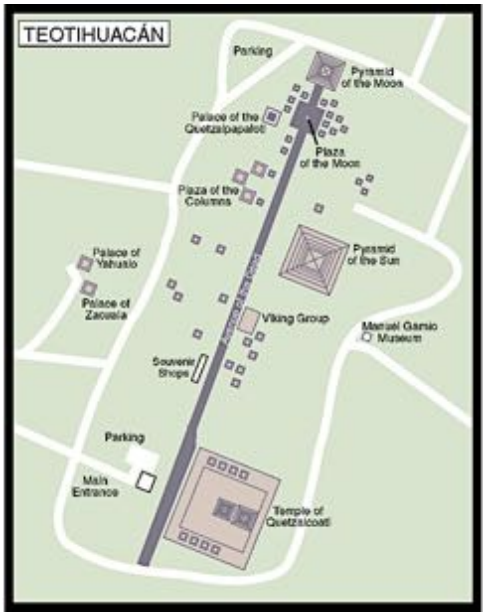
We can partially experience Paleolithic cave paintings by watching a documentary that walks us through the Chauvet Cave — also in the Dordogne region of France. Take note of the various phenomenological and sensory experiences in Werner Herzog's documentary, the *Cave of Forgotten Dreams* (2017), and notice how the archaeologist's first-hand, bodily/sensory experience prompts him/her to understand aspects of cave art that couldn't possibly be experienced through static photographs in a textbook. How do the animal paintings look in low light? What elements can be seen (that are otherwise washed out in full-light textbook photographs)? (Remember that Paleolithic peoples used even smaller lights — small, handheld oil or animal fat lamps, like a tiny candlelight.) How do the animal paintings look as one moves through the cave? How easy or difficult is the physical movement? Were other senses engaged — in other words, what might the cave have felt like (temperature, spatial sensation, moisture), what might it have sounded like, would there have been any notable smells? (What happens when one walks into a completely dark space and can't see?) Notice also how one of the scientists described his emotional feeling and the effect the cave had on him once he was outside of the space: How did he describe the emotional impact?

The areas in which Paleolithic paintings have been found are typically in the deepest parts of the cave that would have required significant effort to reach. Archaeologists have reported that ancient people must have crawled on their knees or bellies to get to some of the

chambers; in other cases, they must have shimmied between two closely placed rock surfaces. Their only light came from ceramic lamps, some of which have been found in the pristine Chauvet cave. Anyone who has explored a cave will tell you that it is completely dark — so dark that one cannot see one's hand in front of their face. Light from ceramic lamps would have been extremely useful, but they would have illuminated the space very much like candles, casting flickering shadows on the walls, lighting only the nearby surfaces and leaving the rest of the cave walls in darkness. Thus, Paleolithic paintings of animals may have been experienced (seen) as if they were appearing from and disappearing into darkness; the light may have created a strobe-like effect where painted animals appeared to move or run.

Recent research published by Azéma and Rivère (2012: 318) argues that the "superimposition of successive images" of animals was meant to convey movement. By depicting animals with multiple and variously positioned legs, heads, and tails, the phenomenon of movement would appear when illuminated by a flickering lamp or torch (Azéma and Rivère 2012: 319; an animation was supplied by the researchers and is available at: http://antiquity.ac.uk/projgall/azema332/). Thus, the introduction of a phenomenological approach and sensory interpretation enhances our understanding of this ancient art, which is typically characterized as abstracted in traditional art history texts.

Teotihuacan's "Pyramid of the Moon"



The "Pyramid of the Moon" is one of three principle temple platforms in the ancient Mesoamerican city of Teotihuacan: the "Pyramid of the Sun," "Pyramid of the Moon," and "Pyramid of the Feathered Serpent (Quetzalcoatl)" (see city plan at right). Although not the largest of the three buildings, the so-called "Moon Pyramid" occupies a place of honor at the top of the "Street of the Dead." (The names of the three principle pyramids and of the main avenue that links them are names given to these monuments by Spaniards after the conquest of Mexico; these are not names used by the ancient

inhabitants of Teotihuacan.) Like all Mesoamerican pyramids, it is constructed of a rubble core that was faced with cut stone (masonry), plastered, and painted. Similar to other pyramids, it was built and re-built over successive generations, where builders broke down the surface of the previous structure and erected a new one over it. The layers of construction might be described as an onion or Russian doll.

Fig. 5 "Pyramid of the Moon," Teotihuacan, Mexico, with the Cerro Gordo behind it.
(cf. Stokstad *Art History*, Figs. 13-6 and 13-7)

Today, in its ruined state, the Moon Pyramid's surface appears very damaged and the upper surface is rounded and eroded like a natural mountain (Fig. 5). It would *not* have appeared like this in antiquity; instead, the pyramid was terraced with a flat top that supported a temple built with natural materials, like wood and fabric. In front of the "Pyramid of the Moon" is an additional platform, simply referred to as a *plataforma adosada* (or, an "abutting platform"). The terraces and masonry surface of this feature are in better condition and visible today.

It is known that the people of Teotihuacan purposefully aligned their pyramids to natural and celestial landmarks: the "Pyramid of the Moon" is aligned to the mountain behind it, the Cerro Gordo (Fig. 5); the "Sun Pyramid" is placed over a lobed cave; and the "Pyramid of the Feathered Serpent" was constructed over a man-made cave. The "Pyramid of the Sun" also

served as an astronomical platform from which the equinox sunsets were visible as the sun descended behind the Cerro Colorado (Šprajc 2000: 411; see Case Study #5 for a discussion of archaeoastronomy. Many Mesoamerican monuments were oriented to celestial bodies and phenomena and, thus, carried socio-political and religious significance.).

One aspect of the site that is not discussed in art history textbooks is the phenomenological interpretation of Teotihuacan and the way the city and its buildings were experienced by those who walked the main road, approaching the pyramids on foot. The distance from the "Feathered Serpent Pyramid" to the "Moon Pyramid" is about a mile and (since the "Moon Pyramid" is at the base of the Cerro Gordo) a walker experiences a change in elevation — in other words, one walks upslope toward the pyramid. In fact, there are two or three sets of broad staircases along the way.

Fig. 6

View of the Pyramid of the Moon from a distance of ca. 1.2 miles

From a distance of just over 1 mile (Fig. 6), the pyramid is almost invisible; instead, one is acutely aware of the size of the Cerro Gordo. But as one approaches the "Pyramid of the Moon," (Figs. 7 and 8) it begins to "grow" in our vision:

Fig. 7 View of the Pyramid of the Moon from a distance of ca. .5 mile

… until, finally, the pyramid dominates our vision and the mountain behind it utterly disappears.

Fig. 8 View of the Pyramid of the Moon from its plaza.

It is doubtful that the indigenous people of Teotihuacan sought to diminish the importance of the Cerro Gordo — even today the mountain is *still* considered the embodiment of a female deity by the native people who live in the region. Instead, this phenomenological

experience was designed to intentionally create a conceptual connection between the pyramid, the deity to whom it was dedicated, and the sacred mountain (that was also the embodiment of a goddess) by creating a visual and spatial connection. Here we can see that the visual experience was utilized to link the pyramid — the man-made, sacred mountain — to the natural, sacred mountain. Conceptually, the two were not only connected, they were the same; and, as people walked to the "Pyramid of the Moon" and climbed its steps, they were conceptually climbing the mountain and communing with the goddess.

As seen in the previous examples, a phenomenological interpretation of canonical works of art can enhance our understanding of otherwise "static" paintings, mosaics, and buildings in urban settings. All of these interpretations are based on the belief and assertion that works of art manifest cultural traditions, rituals, and patterns of movement and, in turn, shape them. Viewing the mosaic of St. Lawrence *in situ*, with its glittering mosaics and the appearance of flickering fire, momentarily transports the viewer to another world, a spiritual world, closer to the holy saint, and perhaps feeling the heat of the flames that took his life. A similar experience of darkness and flickering light may have been enhanced the sensation that Paleolithic hunters had entered a magical world of animals and animal spirits; indeed, scholars of Paleolithic art suggest that caves were the site of shamanistic rituals (Clottes 2016: 15–18; 164–169). And, ancient visitors to the city of Teotihuacan — a place believed to be imbued with spiritual power and a pilgrimage destination (Heyden 1981: 4, 22) — saw and spatially experienced a communion with sacred deities as they processed toward the "Pyramid of the Moon."

The "Typical" Roman House

The phenomenological experience of movement, vision, and space manifests itself in domestic settings, as well, and, as such, take on a social significance. In a "typical" Roman atrium house (like those discussed in Case Study #4), we see how the ancient inhabitants of Pompeii designed their houses to enhance the dominant position of the homeowner, while reinforcing the submissive position of visitors.

The "typical" Roman atrium house (Fig. 9) was a common domestic form seen in various cities of ancient Italy, including the capital city, Rome. Numerous examples of this house type can be seen in Pompeii, by virtue of the fact that the city was destroyed and buried by the

volcanic eruption of Vesuvius in 79 CE. Roman social historians have long noted the social significance of the house and the topic frequently makes its way into art history textbooks, particularly in Fred Kleiner's updated version of *Gardner's Art Through the Ages* (2010a), a standard text in the field (also briefly in Stokstad's *Art History*).

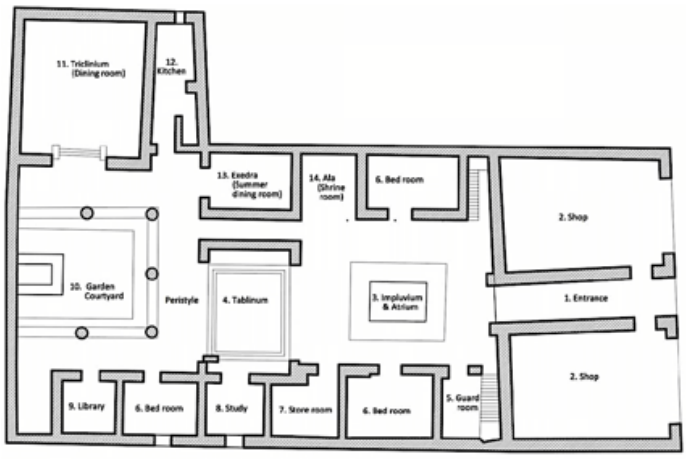


Fig. 9 Plan of a Roman atrium house
(House of the Tragic Poet, Pompeii)
(cf. Stokstad *Art History*, fig. 6–25)

The Roman house was, indeed, the site of a very important social ritual and one that was exclusively gendered male: the *salutatio*. To understand the *salutatio*, one must understand an important organizational structure built into Roman society: Individuals were organized in a hierarchy of patron and client, where the head of one family held power and influence over his family, slaves, freed-persons, and a network of clients. The more clients loyal to a patron, the more powerful the patron. Patrons offered family (including slaves), freed-persons, and clients protection, employment, money loans, and social stability; clients, in turn, offered protection, political support, and social loyalty. One of the duties of the client was to pay his patron a visit in the morning, to pay his respects and to carry out business. As far as we know from written sources, the *salutatio* took place in the first hours of daylight in the atrium or *tablinum* (the master's room) of the Roman house (Fig. 9).

Many scholars have perpetuated the belief that clients arrived at their patron's home — a home that was designed to "welcome" clients through its design, furnishings, and spatial articulation (Wallace-Hadrill 1994: 5). For example, it has long been believed that the doors were opened in the morning and that the atrium was a public congregation space where clients

could enter, uninvited (Vitruvius *de Architectura* 6.5.1). Clients were also offered an unimpeded view into and through the house, a viewshed that is obvious to tourists who visit Pompeii, today (Fig. 10). Indeed, there is often a visual reward (e.g. an altar, a painting, or a fountain) at the end of the viewshed (Fig. 11). The visitors' gazes were also directed to the patron seated in the master's room, as if on a stage. The patron was, in a sense, another visual reward that the client's eyes "consumed."

Fig. 10

Watercolor painting of the view through the House of the Pansa, Pompeii. Notice how the ruined state of the home allows tourists to look straight through the house to the rear garden.

Fig. 11

View through the House of the Tragic Poet, Pompeii. Notice how the ruined state of the home allows tourists to look straight through the house to the household shrine on the back wall of the house.

In some respects, this interpretation of Roman domestic space may seem like a phenomenological study of the client's experience; however, descriptions of the space and vision are two-dimensional and lack a full integration of archaeological knowledge and first-hand bodily experience. As I mention in Case Study #5, the viewshed into the Roman house was never unimpeded; there were door panels, wooden gates, shutters, and curtains at almost every single doorway from the entry portal, into the atrium, into and out of the tablinum, and between peristyle columns. The patron-homeowner, thus, controlled the view and controlled whether the client was allowed to see into the house.

Furthermore, clients did not freely enter Roman houses at whim; a *nomenclator* (a "name-announcer"; i.e. a butler) was charged with receiving clients, admitting them according to rank, and announcing their entrance to the reception room. Clients walked into the entry corridor in single file (due to the narrow, constricted dimensions of the space). Although entry corridors do not generally feel tight or claustrophobic, it is uncomfortable for two people to enter side-by-side (Fig. 12) — first-hand, bodily experience is an essential aspect of phenomenological archaeological research.

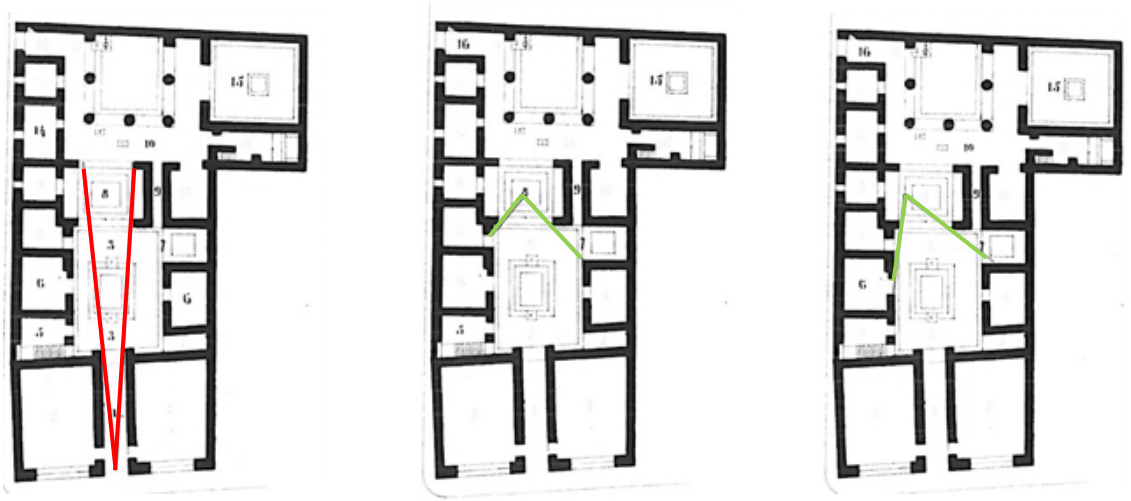
Fig. 12

Entry corridor to the House of Casca Longus, Pompeii. Notice how the tourist leaving the house instinctively clings to the side wall to get out of the way of the photograph and allow another person to enter.

There are no windows in the entry corridor and the rafters/joists of the upper floor create a ceiling of approximately 9 or 10 feet in height. The field of vision is typically between 10°–20°, only allowing the client to see a sliver of what is in the atrium; he cannot see what or who is located on either side of this very restricted viewshed (Fig. 13, red lines). Moreover, during morning hours, no direct light entered the atrium space; and, if the patron opened the rear doors of the *tablinum*, he/his body was backlit, making it hard for the client to see his patron's face until he got into the atrium. (One gets a sense of the strong backlighting by looking at the figures standing in the *tablinum* in Fig. 12.).

Fig. 13a, b, and c

Visitor's viewshed (red) and homeowner's viewsheds (green) from two different points in the *tablinum*.



a. b. c.

It is evident that the client's entry and vision were both highly controlled and choreographed, which reinforced his subservient position. Furthermore, just as the client was controlled, the patron exercised a dominant position physically and visually. From the point of view of the patron, he experienced a much broader field of vision while seated in the *tablinum*: between 60–90° (Fig. 13, green lines; and Fig. 14) The patron could see everything and everyone in the atrium, at all times.

Fig. 14

Homeowner's viewshed from the northwest corner of the tablinum into the atrium. House of the Tragic Poet, Pompeii.

Moreover, many *tablina* are elevated by one step as if on a stage but more like royalty on a dais. This slight elevation enhanced the sensation of submission and subordination felt by clients. So, while the master of the house could see more of the atrium and sat slightly higher than his guests, clients were only allowed to enter when permitted and their lower position discouraged participation, as demonstrated by Fogelin (2003: 135–137).

Adopting a phenomenological and sensory approach to art, architecture, archaeological sites, and ancient cultures is proves to reveal aspects of the human experience that might otherwise be lost when one utilizes analytical art-historical or quantifiable archaeological approaches. The incorporation of theoretical perspectives and qualitative/interpretive methodologies is often shunned in the hard or social sciences; however, by implementing both qualitative and quantitative, subjective and analytical, scientific and humanistic approaches, students are given opportunities to explore art history and archaeology from a variety of perspectives, thereby enhancing the their critical thinking skills and appreciating the fruitful linking of humanities and scientific disciplines, like art history and archaeology.

Questions for Review and Further Study

1. What are some important differences between viewing art, architecture, and cultural spaces in a printed textbook vs. in person? What are some benefits and drawbacks?
2. What is phenomenology? What is sensory archaeology?
3. What are some factors that phenomenologists and sensory archaeologists need to keep in mind when studying a different or ancient culture?
4. In addition to the questions posed on p. 7, view *The Cave of Forgotten Dreams* (or clips on YouTube; a trailer is available here: https://www.youtube.com/watch?v=qfJfRx2IAYo). In this video clip for *Scientific American*, Werner Herzog, the filmmaker is interviewed. What is his experience of the cave's silence (lack of sound), light and shadow, and movement? How does he describe the impact of his movement and light on the cave walls, on the paintings? How does Herzog's own sensory experience impact interpretations of the cave art and what they might have meant to ancient people?

Interview with Werner Herzog for Scientific American:
https://www.youtube.com/watch?v=DcjLW1YMhUY

5. How does a phenomenological/sensory approach enhance our understanding of Paleolithic caves, Mesoamerican urban sites, or Roman domestic spaces?
6. How does a sensory approach enhance our ability to consider the psychological, religious/spiritual, or social impact of a space? How do the senses relate to psychology, religion, society, politics, and so on?
7. How does a visitor's bodily movement shape the experience of the urban center at Teotihuacan?
8. How do the ruins of Pompeii distort our view of ancient houses? What is missing from the house and how would these elements change our experience of walking into or "being" in the house?
9. How do the monuments and urban space tie into the religious experience of Teotihuacan?
10. How does the physical structure of the Roman house shape the interior space *and* shape vision?

11. How would the experience of cave paintings be changed if they were located out in the open (i.e., *not* in caves)?
12. Visit an urban space, political setting, religious building, or house. Do you sense that the architects or builders designed any of these spaces to enhance your experience of vision, sound, touch, smell, or even taste? … your sense of space (proprioception) or temperature (thermoception)?

    (A couple of popular places where your senses and sensory experiences are purposefully manipulated are houses, Disneyland, libraries, places of worship, athletic events or concerts.)

    Identify the place you have visited and take note of the time of day, the weather conditions, the presence or absence of people. What senses are highlighted; which are downplayed? Why?

Chapter Correspondences

The artworks and architectural monuments presented in this case study are canonical and found in most art history textbooks. In Stokstad's *Art History,* these are:

Mosaic of St. Lawrence, Mausoleum of Galla Placidia (Figs. 7–19 and 7–20)
The "Hall of Bulls," Lascaux Cave, France (Fig. 1-11)
"Pyramid of the Moon" and Teotihuacan, Mexico (Figs. 13–6 and 13–7)
Roman Atrium House (Fig. 6–25)

Phenomenology (but not sensory archaeology, *per se*) is discussed in the following areas of Renfrew and Bahn's *Archaeology*:

Social Archaeology (Ch. 5)
Interpretive Archaeology (Ch. 14)

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