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Roman Art of Engineering

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# Roman Art of Engineering Final Essay: Structure and Function, in the Pantheon and Beyond

The Pantheon was an extremely important structure in Ancient Rome and remains an important structure today—its influence has continued in modern architecture as an impressive demonstration of Roman engineering. However, there remains a surprising amount of disagreement and debate about the purpose of the building: was the structure a temple, or did it serve the purpose of celebrating the Roman legacy? By analyzing the structural components of the Pantheon, we can learn about its function, and what it signified to the Roman people after being constructed. Further, we can use these analyses to understand Roman engineering as a whole, and how we study it in order to understand this era of innovational architecture and structure.

The original structure where the Pantheon stands today looked very different. Built under Agrippa, remains of this structure were discovered by Beaux-Arts archaeologist Georges Chedanne during an excavation under the portico of the current structure built by Hadrian (Yegül and Favro 2019). Judging from the foundational remains, it's quite possible that this original Pantheon had a similar circular shape. In the inscription made by Septimius Severus much after the construction of the current Pantheon, it is indicated that the project for the new Pantheon was as much the creation of something new, as a restoration of Agrippa's project. According to

scholars like John Stamper, Hadrian may have had an investment in creating visual evidence for the Roman people of a physical link with Augustus, in order to demonstrate a dynastic lineage that connected the two of them and to create a sense of political unity (Stamper 2005).

The Agrippa's Pantheon was likely built as a sort of museum/housing for sculptures honoring Augustus. Although Suetonius described that Augustus was opposed to the construction of strictly religious temples towards himself, structures like the Caesarion and the Augusteia indicate that it would not have been unprecedented for dynastic temple structures to be built honoring Roman rulers and their family legacy (Godfrey and Hemsoll 1986). The Pantheon may have housed sculptures of Julius Caesar (the adopted father of Augustus), Romulus, and the goddess Venus (who Caesar claimed to be his godly blood).

Often, it is suggested that the Pantheon was a temple for the gods due to the description by Dio Cassius. However, according to Vitruvius' treatises, temple tradition would require a rectangular structure, not a rotunda like the Pantheon. This may have roots in the *templum*, the original Roman space of worship with an augury that required the defining of four precise corners (Godfrey and Hemsoll 1986). With the circular dome structure of the Pantheon, this type of tradition would not have been possible. The pediment and entrance design of the Pantheon does heavily resemble temple structures, with the colonnade and marble relief across the entrance depicting sacral instruments that would have been used in religious events (Stamper 2005). A Roman visitor would have certainly recognized this structure from the outside as a temple. Scholars like Godfrey and Hemsoll suggest that this association might have been intentional, to cause a visitor to make a symbolic association with religion while that was not the actual function.

It is more likely that the function of the Pantheon was more tied to a kind of propagandist building to celebrate the accomplishments and lineage of Hadrian. The axis of the current building aligns directly with the Baths of Agrippa and the Mausoleum of Augustus, perhaps suggesting that Hadrian wanted to physically connect the building with the accomplishments of the general and the emperor (Wilson-Jones 2000). Beyond those two structures, the Pantheon was also part of a larger complex including the Arcus Pictatis, constructed by Hadrian for his adoptive father Trajan, and the Temple of Matidia, dedicated to his mother-in-law (Godfrey and Hemsoll 1986). The larger context of the complex suggests Hadrian's desire to implant this building within the larger history of the area. This theory certainly aligns with Agrippa's Pantheon and Hadrian's motivation to restore/continue this use of the space.

Further, passages by Dio Cassius describe that Hadrian may have actually used the Pantheon as a forum to work with the Senate. Using the stylistic traditions set by other contemporary structures, we see that this very well might be possible. The Forum of Augustus had a very similar style of niches and exedrae with sculptures to the Pantheon. Additionally, the Palatine Palace, where Hadrian also held Senate meetings, had a large domed ceremonial hall, just like the Pantheon (Godfrey and Hemsoll 1986). On the pediment of the Pantheon is a gold wreath and eagle, referencing the family of Augustus (Yegül and Favro 2019). Roman viewers would have understood this symbol as imperial and likely made the connection to a government building. According to Wilson-Jones, the marble columns inside from many different locations including Egypt, Asia Minor, and Greece would have represented the span of the Roman Empire and may have been symbols celebrating the Roman world.

Finally, the dome itself and the expanse up above a viewer certainly suggests themes of the celestial world. The seven exedrae may mirror the seven planetary deities, while the light

from the oculus aligns with the transverse axis of the building specifically on April 1st, Veneralia (the day dedicated to the goddess Venus). The sixteen-part ground plan may also reflect the sixteen-part Etruscan sky, with the number 28 symbolized by the coffers above also reflecting Archimedes' designation of the perfect number (Wilson-Jones 2000). The number 28 may also be in reference to the lunar cycle (Stamper 2005). Beyond all these numerical symbols, the giant dome itself and the looming shape it creates above the viewer is unique in inspiring a feeling of viewing the heavens up above. These celestial themes may have contributed to an association of a building for the emperor with the heavenly designation/favor towards the ruler of Rome.

In comparison, the Navalia in Rome on the Tiber has very different terms that allow us to study it, and therefore a very different passage towards understanding. While the Pantheon is understood through structural evidence and passages by writers like Dio Cassius, the Navalia was discovered/studied through the Forma Urbis Roma, a large map made of the city on stone that is now in fragments. While originally misinterpreted as the Porticus Aemilia on the map, scholars were eventually able to understand the structure through the *horrea*, or warehouses shown in lost fragments and through the unique location by the Tiber. This is similar to the choice to place the Pantheon in alignment with other buildings in the complex, but while that was for a symbolic purpose, the Navalia's pragmatic function as a building for ship storage made the choices much more technical.

In order to study the function of the Pantheon, one also has to use historical precedent in order to contextualize what different structural elements indicate. For the Pantheon, this included temples, forums, and palaces. However, for the Navalia, the historical precedent actually allowed scholars to identify the structure as *not* as portico, because it did not match the open side that most other porticos in Roman architecture had. In general, through studying and engaging with

ancient Roman engineering, one discovers that separating and distinguishing between the functional and the symbolic nature of structures is very difficult. While the study of the Navalia involved beginning with the ruins and working with evidence to figure out a function and therefore an identity, the Pantheon is primarily known through its identity and shape, while the function is still unclear.

Roman engineering as a whole is not as simple as strictly infrastructural elements—a great deal of engineering is concerned with making things that serve purposes that can only be understood through the lens of Roman culture and history. As stated in class, to understand a single example of Roman engineering, one finds oneself looking at every structure around it, what came before, and what came after. Understanding function and purpose requires deep understanding of context, and continuous growth as evidence continues to be discovered.

Bibliography

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