ROMAN ARCHITECTURES

DESIGN AND TECHNOLOGY

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Introduction

The architecture of Rome played a significant role in its success. Even today, Roman architecture can be found in most European cities, serving as a reminder of ancient Rome's power. It is still possible to observe the influence of Roman architecture on western architecture through various popular monuments such as Buckingham Palace, the Smithsonian Institution building, the Galata Tower, the New York Stock Exchange, etc. What influenced Roman architecture so greatly? As a result of what factors did Roman architecture become as popular as it is today? By the time we reach the conclusion section of this paper, we will be able to answer these questions.

Each of us has been fascinated by a particular topic while studying history in school. To me, the Roman Empire was the topic of greatest interest. Eventually, I took an in-depth look at the topic and studied more about it. I realized the more I studied that the Roman Empire celebrated its achievements and successes so proudly because of their most unique and indestructible architectural designs. Further research led me to discover one of the most famous Roman architectural case studies entitled "**Roman Architecture**" written by Frank Sear, which was later published as a book. As the basis for this research, we will use this case study filled with Roman technologies and designs. Also, since this book examines ancient architectural designs and technologies, this paper will concentrate on the Roman Empire period.

This course (**module: Technology as a social actor**) has taught me that, in some ways, everything is technological. As we learned, technology encompasses not only man's most strenuous endeavors, but also his smallest efforts to create a positive impact on the external world. In the modules we studied, gunpowder, long distance navigation, windmills, etc., were discussed. However, when discussing Roman architecture, we will be discussing examples such as bridges, baths, amphitheaters and other ancient Roman architectural technologies, designs, and techniques. A reference book entitled "**The Genesis of Roman Architecture**" illustrates this process. To begin the discussion, let us first review the Roman architectural technologies, designs, and techniques.

Technology, Design and Techniques

"I like things that are kind of electric, when one thing does not go with another. That's why I love Rome. The town itself is that way. Its very fascist architecture meets classic renaissance, where the ancient bangs up against the contemporary. It has a touch of everything. That's my style, and that's what my work is about." – *Giambattista Valli (Fashion Designer)*

A building's architectural style and its design are a reflection of its creators' character, energy, and mindset (**module: design science**). For the Roman Empire, this was a powerful weapon that was used to rule various countries during the Roman Empire period. Using a variety of architectural techniques such as domes, vaults, and arches, the Romans exhibited their grand power through their architectural technologies and designs, which were actually ahead of their time. Additionally, they were one of the first to master the proper use of concrete. Taking all of these factors into account, their architectural technologies, techniques, and designs were unrivaled, as outlined in the text "**Principles of Roman Architecture**". As a result, the Roman empire was able to maintain a very strong political position. Can you believe that the right combination of technology and design can empower an entire empire to such an extent? Frank Sear mentioned several popular ones in his Roman architecture case study. Let us briefly discuss a few of them.

- **Building techniques**

  There is no doubt that the Romans absorbed some Etruscan building design techniques and greatly improved them. It is through this process that arch and vault designs came into existence. These designs can be seen clearly in monuments such as the Basilica of Constantine in Rome, while the Dome architecture was implemented in monuments such as Hadrian's Patheon and the Baths of Caracalla. Over time, these designs

Fig 1: Design of arch and vault

  were mastered and led to the development of concrete which, during the Roman Empire period, helped them solve one of the biggest problems of architecture technique called bridge space.
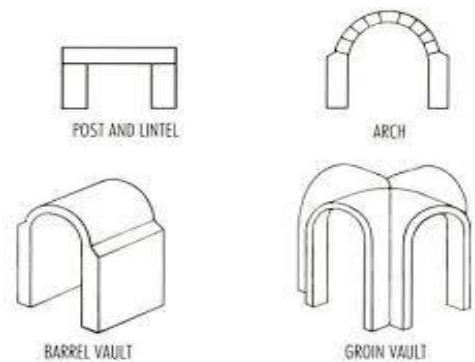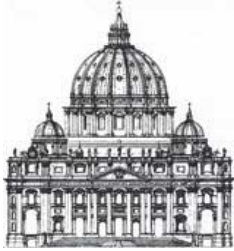
- **Basilicas**

Fig 2: Design of Basilicas

The word basilica appears in the names of many monuments in Italy. The Roman architects are credited with designing the most influential religious buildings of all time. According to Frank Sear, these basilicas were designed with large semicircular halls, ventilations, and natural lighting, and were used for political purposes, such as trade, banking and administration. Some of the most popular basilicas include St Peter's Basilica and Basilica of Maxentius.

- **The Pantheon**

The Pantheon is considered to be one of the most significant circular temples from ancient times and one of the most important works of art and design produced by the Romans. Even though the inner architectural elements of the building have been lost over time, just looking at the exterior of the building is enough to
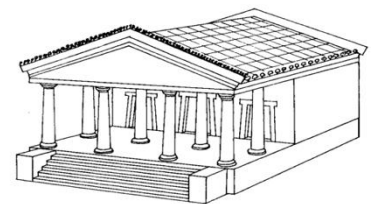

Fig 3: Design of the Pantheon

make a person feel overwhelmed (**module topic: user emotions**). One of the most fascinating aspects of this structure is the contrast between its vast dimensions and its simple form of structural design. It is a magnificent example of ancient engineering.

- **Amphitheaters**

Fig 4: Colosseum

Back in history, amphitheaters were used to host a variety of high-level events. There is no doubt that the Roman Empire encouraged people to fight in the arenas and shed blood. The fact that slaves were forced to work and perform in these arenas is also not a secret. In addition to being one of the 7 wonders of the world, the Colosseum is the most famous ancient amphitheater in the world. With the construction of the Colosseum, Rome was transformed from a city of bricks into a city of marble since the interior of amphitheaters were made out of marble. It has been stated by Frank Sear that this is the power that technology, technique, and design have when used in the right combination.

- **Statues**

According to Frank Sear, it is a non-creative people's misconception that architecture and design are limited to just buildings, something which the Romans have spectacularly demonstrated. It should be noted that their designs were not limited to buildings, but they also utilized various technologies to create monuments based on statues. There are many examples of this, including David, Pieta, Moses, Apollo and Daphne, and the Rape of Proserpina.

Fig 5: Rape of Proserpina

Roman architecture is not only notable for its monumental buildings and statues, but also for its brilliant designs. Frank Sear depicts several other Roman architectural designs, including public baths, bridges, cathedrals, temples, houses, and the list goes on and on. From these examples, it is clear that technologies and designs can not only enhance the beauty of ancient architecture but can also contribute to the nation's political well-being (**module topic: technology and politics**). Don't you think it is beautiful and exciting?

Fig 6: Collage of Roman architectures

Roman Architecture Merits

Specifically, Frank Sear has undertaken a great deal of research on this topic and explains several merits associated with Roman Architecture. In order to gain a better understanding of the revolutionary methodologies of design and technology, let us briefly discuss them.

- It is important to note that many of the most popular Roman architectural masterpieces were built in order to portray the power of the Romans and intimidate their enemies. While they concentrated on building a strong political position through architectural designs and technological advancements, they have also changed their civilization at the same time.

- Each time a major event was held in the Roman region, there was an architectural form of design built to commemorate the event. An example would be the arch of Constantine, which was constructed in celebration of the battle of Milivian Bridge. They have thus ensured that historical relics and artifacts will be left behind so that future generations will be able to recall the reign of the Roman empire.

- As a result of the Roman architecture, other larger cities have been able to grow to what they are today. New York is one of the most notable examples of this, where several buildings have been built using Roman technology and design, including the New York Stock Exchange.

- A rudimentary form of concrete was discovered by the Romans, which made the Roman architecture virtually unbeatable during ancient times. Although thousands of years have passed, you can still find a majority of the architectural ruins that have not changed over time. There are many famous monuments in Rome, one of which is the Colosseum, which is so rich in history.

- Due to their development of arch, domes, and vaults, they have a head start when it comes to architectural civilization. There is no doubt that these designs were considered ahead of time. The buildings could be larger and taller, and the bridges could be wider and longer. The dimensions of such a building were beyond the capabilities of even Greek architecture.

"Rome - the city of visible history, where the past of a whole hemisphere seems moving in funeral possession with strange ancestral images and trophies gathered from afar" – George Eliot

Limitations and Flaws

Throughout this course, we have learned that technology is an effect, not a cause (social constructivism), and therefore it may kick back in some way. The same is true for Roman architectures that were characterized by imperfections.

- During the Roman period, most of the revenue was spent on Roman architecture, which resulted in poverty among the common people. A statement made by Frank Sear states that in Rome everything was expensive, and there was a great deal of wealth required to live in the city. It is unfortunate that the common man had little chance of survival and lived in an unhygienic environment while suffering from hunger. There was a consequent economic crisis as a result.

- In most Roman regions, the ground was not flat and was built upon mountains and hills. This made agriculture and vegetation very difficult. In spite of its best efforts, the empire was not able to come up with the appropriate technological ideas to address this problem.

- In spite of the Romans having a great eye for architecture, they were unable to overcome the challenging floods with any kind of architectural design or technology, which would be equivalent to constructing a dam in today's society.

- A second area in which the Romans failed to come up with good ideas was the defense system for the empire. In spite of the fact that they had strong designs such as archways and vaults, they failed to come up with strong defending architecture, such as large walls and forts that divided nations. This resulted in the invasion of their territory by many travelers. The fall of the Roman Empire was primarily caused by this factor.

- In addition, the Roman Empire fell as a result of a lack of attention to governing the centralized control of the empire, due to their focus on the development of architecture and its expansion.

"From the dome of Saint Peter's one can see every notable object in Rome… he can see a panorama that is varied, extensive, beautiful to the eye, and more illustrious in history than any other in Europe" – Mark Twain

Conclusion and Discussion

As the most powerful and most influential people of their time, the Romans will most certainly be remembered throughout history for their achievements. In addition to their mighty power, they also possessed unique architectural technologies and designs. They established a civilization that has never been seen before or since. They were filled with genius engineering techniques, and it is evident from their design. Until this day, a majority of the European population lives near the roads that were constructed by the Romans. It was they who developed the designs for the aqueducts that supplied water to all parts of the empire. As a means of entertainment, they constructed amphitheaters. It is fair to say that a majority of the solutions to their problems had something to do with architecture, its design, and its technology. Also, they were able to contribute ideas to other civilizations, such as those ideas that were behind the construction of the world-famous Colosseum. The fact that such innovative technologies and designs were developed by an empire that existed thousands of years ago is commendable and beautiful.

Roman architecture has clearly demonstrated its effectiveness since it has inspired the modern architecture that we see today. In addition to utilizing the materials they had and developing them further, they also gifted their knowledge to other civilizations (although the gifting of knowledge may have been motivated by political reasons). Even though most architectural monuments were constructed for political reasons (such as trading, administration, power, fame, etc.) it does not alter the fact that they did the best work during their time period. Consequently, the Roman Empire was the world's most powerful empire during its heyday. Moreover, we have come across numerous instances in which their designs and technologies have influenced social behavior. Isn't it astonishing that just wondering about ancient architecture can arouse this level of interest and curiosity? It has the ability to evoke a wide range of emotions in those who are exposed to it. In this paper, quotations are given on every page as examples of human emotions directed towards Roman architecture. **It is the combination of design and technology that makes architecture such a beautiful art form.**

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VI. [Cover image] Peakpx. https://www.peakpx.com/en/hd-wallpaper-desktop-plzma

VII. [Images] All the other images used in this paper have been hyperlinked to its source website.