The underlying pattern
to patterns

A comprehensive research of the underlying philosophy of designing patterns during the Byzantine era carried out by comparing 6 case studies in Ravenna.

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History & Complexity

Contents

Introduction

They may not always be noticeable, but you can find patterns everywhere you look. The world is full of patterns and that is not just by chance. Patterns do not merely come from human inventions; they originate from nature. The application of patterns is deeply embedded in our biological roots. According to British mathematical biologist and computer scientist Alan Turing, the patterns and structures we can recognize in our fellow animal organisms are caused by "morphogens" (OnzeNatuur, 2021). For the embryo's children to have the best chance of surviving in the natural world, a chemical reaction results in the formation of stripes, spots, and/or squiggles (OnzeNatuur, 2021). Eventually, this knowledge evolved among humans into not only a method of survival; it also served aesthetic and ornamental purposes.

Patterns have been utilized for a wide range of functions ever since the beginning of humanity. Patterns are used to decorate various items such as clothing, decoration, the interior or exterior of buildings or even human bodies. While patterns have historically been constructed by humans for aesthetic purposes, they also carry symbolic meaning for several ethnic groups all around the world. For example, it can serve to ward off negative influences, provide information about civil status, social status or religious purposes (Delachieve, 2018). Nonetheless, we are unsure of the significance of the symbolism behind some historical patterns in art.

There are many patterns and motifs to be observed in one particular era of our history, namely Byzantine art, but there is still little knowledge about them. These motifs and patterns were applied in mosaic, a form of art where a surface is decorated with tiny, colored pieces of material, such as stone, marble, glass, tile, pearls or shell (Nordhagen, 2023). Many prominent and powerful individuals in Byzantine art were responsible for constructing structures, often for religious purposes. These buildings often had a gloomy façade that contrasted with a lavishly adorned interior. The projection of authority was just as crucial to the powerful as the images' actual content. To accomplish this, the church was richly decorated to the extent that essentially no surface was left empty. This is known as horror vacuiii, a Latin phrase that translates to "fear of emptiness." (Frijlink, n.d.)

In 313, Emperor Constantine proclaimed that all religions could be freely practiced. Emperor Valentian ll, however, about 80 years later proclaimed Christianity the state religion (GooiseGalerie, n.d.). This marked the end of the Roman Empire and the start of the Byzantine Empire. The Byzantine era spans a period of more than 1,000 years, which is why it is often split into three distinct periods: Early Byzantine (330-750), Middle Byzantine (850-1204) and the Late Byzantine (1261-1453), (Hurst, 2014).

  The Byzantine Empire's capital, Constantinople, was named after Constantine and moved to the Greek city Byzantium in 330. (GooiseGalerie, n.d.). The city benefited economically and strategically from its location; ships and maritime traffic from the Mediterranean Sea and the Black Sea had to pass through the passage near the city. It was situated along the trade routes between Asia and Europe (IsGeschiendenis, n.d.). Upon Theodosius I's passing in 395, the empire was split into its eastern and western halves. Following this, the western section was governed from Rome, while the eastern part was ruled from Constantinople (ColorfulWorld, n.d.)

  The western capital city was frequently being attacked and endangered by barbarians, causing Emperor Honorius to transfer the capital of the western Roman empire from Rome to Ravenna in the early fifth century (p.5, Bovini, 1957), see Figure 1. Briefly, the new capital was taken again by barbarians, but ruler Justinian l conquered Ravenna and established the Byzantine seat of government in Italy there (Mosaics of Ravenna, 2015).

Figure 1. Map of Italy, showing the location of Ravenna.
From *FreeVectorMaps* [Illustration]. Map of Italy

Priests, rulers and many other influential people came to Ravenna. They constructed several significant structures there, on which the best artists were permitted to work. Because of this, mosaics had their greatest development in the first period of the Byzantine era. A commonly used type of tile called smalti has its origins in Ravenna (Lee, 2023).

To establish the purpose of the research various terminology and terms are first defined in greater detail. This study focuses on the patterns used in mosaics in buildings constructed during the first Byzantine era in Ravenna, one of the most significant cities at the time. The study of mosaic patterns will be conducted more thoroughly in six significant buildings. A variety of factors will be examined concerning the designs, which will provide a clear understanding of the purpose underlying the philosophy of the patterns. The patterns used in this study have been chosen because they either appeared more frequently in different case studies, stressing their significance, or patterns that became characteristic of Byzantine art that there is most likely underlying symbolism underlining them.

The research is divided into three sections. The first part includes a comprehensive examination of the six case studies. This chapter looks at the rationale behind the construction, who was responsible for the construction and will describe the content of the mosaics depicted. The case studies' patterns will be more extensively discussed in the second section. It will primarily provide an in-depth technical description of the patterns. Three subtopics will be examined for each pattern: function, symbolism, and technical construction. A thorough table of data will be assembled in Chapter 4 for the full research.

The chart is supplemented with information highlighting the various variations discovered for each design to emphasize the significance of the patterns; while the design was derived from earlier structures, the artist was inspired by what he saw yet desired to add his unique touch. This chapter will examine the relationships between symbolism, purpose pattern, and the function of the church using this table. Finally, in the conclusion we can look at the general importance of patterns used in early Byzantine art in Ravenna to finally answer the research question: How can the design of different patterns from early Byzantine mosaics applied in religious buildings in Ravenna be explained?

Ch1. Terminology Patterns and Mosaics
    1.1 Patterns
This research is focused on manmade patterns, where a surface is converted into an aesthetically appealing composition through the repetition of a defining shape in certain arrangements and sequences (ArtInContext, 2022). ArtInContext (2022) states that patterns in artwork may manifest in sequential order or progression to produce rhythm, movement, visual appeal, or emphasis. Shapes, figures, or lines can be arranged to create patterns; these elements are also referred to as "motifs. (ArtInContext, 2022).

Patterns have been used in architecture for centuries. The term patterns have multiple meanings. A pattern can refer to the casing used to package gunpowder, or the word pattern is used to describe when there is a strict recognizable repetition (NederlandseEncyclopedie, n.d.). This can be found in behavior but also through visible shapes. The latter definition is the term used in this research. The term is widely used in art history and means a repetition of simpler units or arises from a repeated implementation of the same rules (Wikipedia, 2022). A pattern is made up of elements or motifs that are rhythmically alternated and repeated in a particular order (Delachieve, 2018). Colors combined with shapes can have a certain meaning and symbolic value. Based on research by Delachieve (2018) and ArtInNature (2022), four categories of patterns can be distinguished.

Shapes	Symmetry	Sequence	Defining element
Geometric	Symmetric	Regular	Color
Organic	Asymmetric	Irregular sequences	Lines
Animalistic			

Table 1. Categories patterns
Own Work [Illustration]*,* by Maaike Salters. 2023.

1.2 Mosaics

Approximately four thousand years ago, the first mosaics were applied (Lee, 2023). Their primary purpose was ornamentation; they were made of tiny terra cotta cones. This art style was first employed by the Greeks and Romans, who used colored stones called tesserae and glass to produce a shimmering appearance. Most often, the mosaics were used to create rigid, geometric designs. Afterward, images of people, animals, and other more organic shapes were also depicted through this technique. (Lee, 2023).

The Byzantines were drawn to this method. They incorporated a new type of tesserae, called smalti. This type of mosaic was made in Ravenna from colored glass opaque. Gold and silver plates were inserted between two glass elements to reflect light. Besides smalti, other new materials were integrated into the mosaic such as marble, gemstones and mother-of-pearl (p.6, Bovini, 1957). Also, the Byzantines were among the first to use uneven shapes and stone sizes to create unique and round shapes. As a result, human and animal figures were depicted even more realistically (Lee, 2023). Figures 2 and 3 illustrate how the Greek and Byzantine mosaics differ from one another. The Greek mosaic has more space in between the stones and are nearly the same size. In the Byzantine mosaic, the distance is significantly smaller and the size of the pebbles varies more.
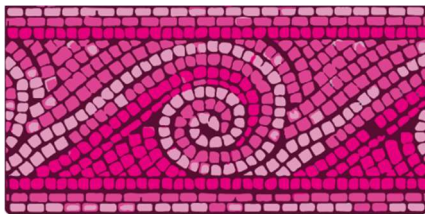

Figure 2. Greek mosaic. Illustration based on an image of RedBubble (n.d).
Own Work [Illustration]*,* by Maaike Salters.

Figure 3. Byzantine mosaic. Illustration based on an image of Etsy (n.d). *Own Work* [Illustration]*,* by Maaike Salters. 2023.

As aforementioned, the Byzantines, as opposed to the Greeks and Romans, utilized mosaics that had a reflective appearance. Only a few windows and other apertures allowed light to enter the churches, making them rather gloomy. This increased the spectacle of light and reflection, highlighting the mosaics even more (Lee, 2023). The mosaics transform spaces and dematerialize architectonic elements. As the natural light changes throughout the day, so does the atmosphere in the spaces (p.6, Bovini, 1957). Bovini (p.6, 1957) also states in his book that an unknown poet once wrote about the light falling on Ravennan mosaics: 'Aut lux nata est aut capta hic libera regnat' ('Either light was born here or, imprisoned here, it reigns supreme').

Ch2. History and background

Many churches lost their early Byzantine mosaics during the eighth century AD. The church declared that depicting icons violated the Ten Commandments (Lee, 2023). A significant amount of knowledge regarding mosaic art was lost. A few churches retained their mosaics and therefore still contain information; provide details about the time's philosophical outlook. This study uses case studies to analyze this research topic, which is to identify the significance of the patterns utilized in Byzantine art. To determine the symbolism and significance of these patterns, six churches from Ravenna are investigated and compared to one another.

To better understand the setting of the church and the mosaic pieces, some background information about the buildings will be provided before going in-depth into the mosaics of the case studies. Every case study will contain historical information about the structure as well as substantial details regarding the mosaics portrayed. The case studies will be treated in chronological order.

Figure 4. Exterior case studies. From top left to right bottom: Galla Placidia, Battistero Neoniano, Capella di Sant Andrea, Battistero degli Ariani, Basilica di Sant'Apollinare in Classe, Basilica San Vitale.
From *Various* [Photograph]*,* see List of Figures

Figure 4 presents the six case studies. The façade of these buildings contrasts sharply with their interior. The buildings' exteriors are shown to be spartan and unadorned, whereas their interiors are lavishly and vibrantly decorated.

Figure 5 shows the locations of the six case studies. The same order is used in the entire research, with 1 Galla Placidia and 6 Sant'Apollinare. Five of the six case studies are located in the old city center of Ravenna (pink shape). Sant'Apollinare is located in Classe, a small village next to the city center of Ravenna.

Figure 5. Map of Ravenna showing the locations of the case studies.
From *Dreamstime* [Illustration], by Ilyas Tukhtarevy. (n.d).

2.1 Galla Placidia

2.1.1 History Galla Placidia

The Mausoleum of Galla Placidia is located in the center of Ravenna. It is uncertain whether this is Ravenna's oldest surviving mosaic building (p7, Bovini, 1957). Furthermore, it is unknown what the exact purpose of this chapel was. According to the legend, it was built as a final resting place for Aelia Galla Placidia and her family (Sparks, 2022.). Her father was Emperor Theodosius I and Galla (his second wife). Her stepbrothers were Arcadius and Emperor Honorius (Sparks, 2022.). After the death of her husband, General Constantius lll, she became ruler of the Western Roman Empire. She was responsible for many important works of art and architecture, including the Santa Croce in Ravenna. As a result, it is claimed that this chapel was built during her reign, however, she and her family were buried in Rome in the imperial mausoleum of the Theodosius family. (p.8, Bovini, 1957).

The mausoleum was formerly attached and part of a larger church, Santa Croce (p.8, Bovini, 1957). It has a brick structure and is built on a central plan in the shape of a Greek cross, with four equal arms and a rectangular tower forming a dome at the center of the cross.

2.1.2 Mosaic Galla Placidia

Unlike other mosaics in Ravenna, this church contains rather dark mosaics. This was done on purpose to emphasize the images' light colors and the significance of the subject matter. The center cross has a remarkable motif of stars against a dark blue background (figure 6), this motif will be further elaborated on in Chapters 3 and 4. A Latin cross is depicted in the center of the dome, with one of the four evangelists in each corner (Bovini, 1957). The cross symbolizes resurrection, while the four evangelists symbolize the four seasons (Donati, 2016).

Figure 6. The golden star motif mosaic against an blue background. From *Mausoleum of Galla Placidia* [Photograph], by Opera Di Religione Della Diocesi di Ravenna. 2023.

Figure 7. An overview of the mosaic of Galla Placidia. From *Mausoleum of Galla Placidia* [Photograph], by ItalyReview. 2022.

Each of the lunettes contain mosaics depicting biblical scenes, see Figure 8. Right from the entrance a mosaic depicting Christ as the Good Shepherd (Lomme, 2014). Jesus is shown surrounded by sheep. The sheep symbolize the faithful members of the Christian community (Simmonds, 2022). Jesus is also holding a cross in this particular scene which is symbolic of his sacrifice for humanity (Cusumano, 2019). Facing the entrance, a depiction of the martyrdom of St. Lawrence is shown (Websoot, 2020).

Figure 8: Lunettes depicting biblical scenes.
From *Mausoleum of Galla Placidia* [Photograph], by Opera Di Religione Della Diocesi Di Ravenna. 2023.

The vaulted ceilings of the four equal arms are covered in roundels against a deep rich blue background. The roundels depict the heavens (Websoot, 2020). Which is enhanced by the use of bright colors against a dark background. The overarching theme in this chapel is the victory of life over death. (Donati, 2016). It also stresses the significance of Christ's protecting his followers from the evils of the wild and savage world. (Simmonds, 2022)

2.2 Battistero Neoniano

2.2.1 History Battistero Neoniano

Baptistry of Neon (English) is part of the Cathedral of Ravenna. The structure is named after Bishop Neon, who was assumably in charge of the baptistry's decoration. Because the construction date and Bishop Neon's period vary considerably, it is debatable whether he was actually in charge of the building's decoration. Andreas Agnellus (Ravenna's chronicler and author of the Liber pontificalis ecclesiae Ravennatis) claims that Bishop Neon was responsible for the building's decoration, while scholars claim that the style of the mosaics can be dated back to Bishop Orso's reign. After all, he was also in charge of the church's construction. This would mean that the oldest mosaics in Ravenna are housed in this baptistery (p.15, Bovini, 1957).

The Baptistry has an octagonal plan and is covered with a dome (p.15, Bovini, 1957). The octagonal shape of the building represents the biblical meaning of shaping the world in seven days (ItalyThisWay, n.d.). It is related to regeneration, rebirth and represents eternal life (Marchal, n.d.). The building materials are mainly brick and marble.

2.2.2 Mosaic Battistero Neoniano

The artistic element of this church is connected to the architectural framework that structural elements almost seem to lose their function. Although the structural elements are indeed adorned to such an extent that they are barely noticeable, a conscientious decision was made to put visible emphasis on the building's structural qualities through the double layer of arches, which facilitate the height of the dome (Bovini, p.16, 1957).

Unlike the mausoleum of Galla Placidia, the Battistero Neoniano is known for its rich colors and great light. The mosaics depict meaningful images and religious symbolism. As they contain the most intriguing content mosaics, only the dome's mosaics are taken into consideration for this study. The circular-shaped church allows the mosaic to be divided into sub-circles. The perpetual rotation of the "eternal wheels," as Dante referred to the dome of heaven, is also symbolized by these circles (Bovini, p16, 1957). The mosaics in the dome can be divided into three parts, see Figure 9.
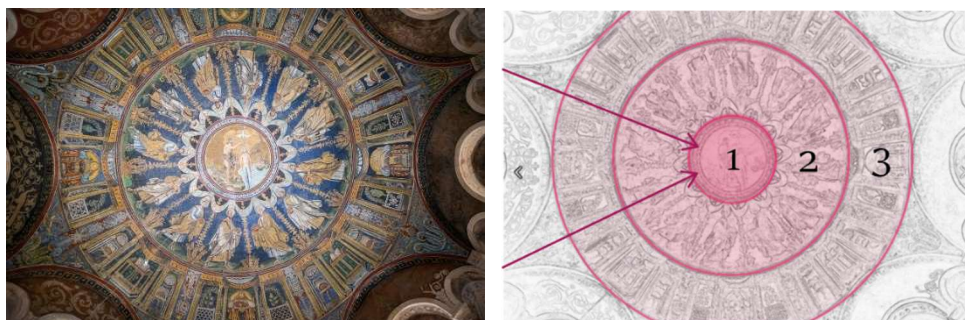

Figure 9. Dome Battistero Neoniano is divided into three parts. Including analysis on the right.
From *Battistero Neoniano (o degli Ortodossi)* [Photograph], by Ravenna Tourism. (n.d.).

The center circle shows the baptism of Jesus in the River Jordan. Jesus is standing in the river while John pours water over his head. Descending from heaven the Holy Spirit looks down on them (Simmonds, 2022). In the circle below, the twelve apostles are shown against a blue background. They alternately wear white or gold robes (WineAndTravel, n.d.). They show the procession led by Saint Peter and Saint Paul (Bovini, p.17, 1957). In the lowest circle, exotic plants grow from a group of acanthus leaves. They emphasize the vertical rhythm of the eight columns, see Figures 10 and 11.

Figure 10. Mosaic on lowest arches. From *Battistero degli Ortodossi* [Photograph], by FrWiki. (n.d.)

Figure 11. Apostles are depicted in between vine motifs. From *Ravenna Baptistère des Orthodoxes ou Néonien* [Photograph], by Maquetland. n.d.

The overarching theme of these mosaics is birth. This can be both in human life but also in nature. Much symbolism in patterns and images can be traced to organic and natural shapes, this can also be interpreted as depicting animals and plants. Many natural and floral patterns are featured. This emphasizes the birth and life of Jesus.

2.3 Capella di Sant Andrea

2.3.1 History Capella di Sant Andrea

Capella di Sant Andrea also known as The Archiepiscopal Chapel is based on the first floor of the bishop's palace in Ravenna (RavennaInfo, n.d.). This chapel was intended exclusively to be used by bishops of Ravenna (p20, Bovini, 1957). The chapel was built under the direction of Archbishop Peter ll in 495, dedicated to former Archbishop St. Peter Chrysologus from 433-450. The chapel was used to hold important relics but was also used to administer the sacrament of penance by bishops as a result (p20, Bovini, 1957). The chapel has a cruciform floor plan. The lower part of the walls is covered with marble, while the upper part is decorated with mosaics (Renato Prosciutto in Italy, n.d.).

2.3.2 Mosaic Capella di Sant Andrea

The small cruciform chapel is reached by a narrow barrel vault (figure 12). The corridor leads into the chapel where the monogram of Christ is given great prominence in the center of the dome. The monogram is emphasized by four angels who appear to carry the symbol, see Figure 13. Above the entrance, connected to the vault, a scene of Christ carrying a cross is depicted. According to legend, the cross-bearing image of Christ represents a protest against heresy in general and Theodoric's authority in particular. The martyr relics, on the other hand, are proof of the Orthodox faith (RenatoProsciuttoInItaly, n.d.).
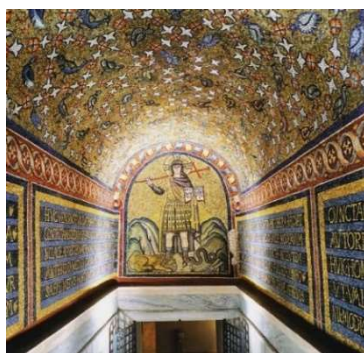

Figure 12. Barrel vault depicting bird motif. From St. Andrew Chapel and Archiepiscopal Museum [Photograph], by Opera Di Religione Della Diocesi Di Ravenna. 2021.

Figure 13. Dome Capella di Sant Andrea. From St. Andrew Chapel [Photograph], by Opera Di Religione Della Diocesi Di Ravenna. 2021.

Given that the Aryans did not practice saint worship, this Catholic monument further highlights the sacellum's orthodox Catholicism. Hence, in contrast to the Aryan belief, the entire decorative program of the chapel is centered on the glorification of Christ Redeemer and the recognition of the equality between Father and Son (RavennaMosaici, n.d.) The overarching theme of this chapel is characterized by the oscillation between naturalistic dimensions and the more visionary, dreamlike dimension (Ravenna Mosaici, n.d.)

2.4 Battistero degli Ariani

2.4.1 History Battistero degli Arian

The Baptistery was built under the direction of King Theodoric in the late fifth century and dates back approximately to 490. At that time, Arianism was still the official religion of the state (RavennaTourism, n.d.). The Arians believed that Jesus was created by the Father and that He is not of the same substance or nature as the Father (Roat, 2021). They did not believe he was coequal nor that he was the Son of God. Instead, they believed that Jesus Christ was subordinate to God (Rath, 1997). In the middle of the sixth century, the Baptistery was rededicated to Orthodox worship by order of Justinian and became an oratory dedicated to the Virgin Mary (RavennaTourism, n.d.). The Battistero degli Ariani is the only building known to have been built for the Arian community (Raffaella, 2019).

Given the parallels in both the building and the mosaics, it is likely that the architect was inspired by Battistero Neoniano. Due to the baptistery's sole use of brick as a building material, it was not possible to complete it as high as the Battistero Neoniano. As a result, a second ornamental band could not fit. The image of the twelve apostles surrounding the medallion in white robes is identical, however. The medallion also shows Christ being baptized, albeit it was done in a slightly unique way. (p.24, Bovini, 1957).

2.4.2 Mosaic Battistero degli Ariani

In contrast to Battistero Neoniano, this structure consists of only a mosaic dome. The remaining walls share the exterior's brick appearance. The Battistero degli Ariani, seen in Figure 14, only has two rings with mosaic imagery since it was more difficult to construct.

Figure 14. Dome Baptistery Arian divided into three parts. Including analysis on the right.
From *Ravenna Tourism* [Photograph]*,* by Pecoraro. 2023.

The mosaic's concept and theme are similar to the ones found in the Battistero Neoniano. The twelve apostles are arranged around the central medallion, which depicts the baptism of Christ. However, there are no curtains connecting the apostles to the medallion; instead, a natural foliate pattern has been used to divide the pictures, see Figure 15.

Figure 15. Mosaic Baptistery Arian. Medallion depicting baptism Jesus.
From *Ravenna Tourism* [Photograph]*,* by Pecoraro. 2023.

2.5 Basilica of San Vitale

2.5.1 History Basilica of San Vitale

The basilica was built by the commission of Bishop Ecclesius (525-526). The bishop appointed Julianus Argentarius to lead the construction. The basilica was completed during the reign of Justinian and financed with 26000 gold coins allocated by Giuliano Argentario (RavennaTourism, n.d.). The site for this church was chosen very thoughtfully. The location was reportedly the site of the discovery of a sacellum containing St. Vitale's remains. As a tribute to his martyrdom, the sacellum was constructed (Ravenna Tourism, n.d.).

The church has a central plan and is octagonal in shape (p39, Bovini, 1957). The structure is supported by large marble columns and is topped by a tall terra-cotta dome (Britannica, n.d.). Out of the six case studies reviewed, it is the largest church. The apse, shown in Figure 17, was the focus of our pattern research.

2.5.2 Mosaic Basilica of San Vitale

In addition to the imperial couple Justinian and Theodora, who are depicted in regal imperial attire, the mosaics also feature a number of biblical figures like Moses, Abraham, and Isaac. See Figures 16 and 17 for an overview of the mosaic in San Vitale. This church fits the definition of a horror vacuii, as was previously mentioned in Chapter 1, with nary a wall remaining bare.
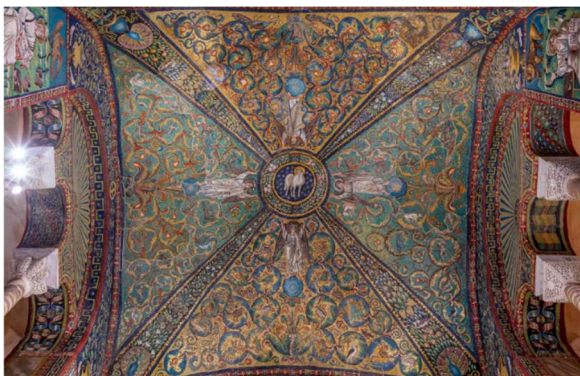

Figure 16. Mosaic dome Basilica of San Vitale.
From *Smarthistory* [Photograph]*,* by Dr. Allen Farber. 2022.

Figure 17. Mosaic apsis Basilica of San Vitale.
From *Smarthistory* [Photograph]*,* by Dr. Allen Farber. 2022.

Christ is seated atop a globe that symbolizes the cosmos (figure 18). Like the archangels next to him, he is dressed in a toga with two vertical stripes. In reference to Revelation 5, where only "the Lamb" is deemed worthy to open the "book written within and without, sealed with seven seals," he is holding a scroll with seven seals in his left hand. The verse in Revelation 5:12 that reads, "The Lamb that was slaughtered is qualified to receive power, and divinity, and knowledge, and strength, and honor, and glory, and blessing," is very pertinent to this mosaic. Of course, the "Lamb" is Christ, but a martyr also takes part in his sacrifice and is similarly deserving. Christ thus presents St. Vitalis with a martyr's crown in his other hand (Faber, 2023).

In the Justinian mosaic, Justinian is having the same gesture (figure 19). Hence, Justinian is Christ's vice-regent on earth, and the Chi-Rho symbol on his shield denotes that his army is truly Christ's army (Faber, 2023).

Figure 18. Apse with Jesus Christ and St. Vitale at center
From *Smarthistory* [Photograph]*,* by Dr. Steven Zucker. 2015.

Figure 19. Justinian mosaic 547.
From *Smarthistory* [Photograph]*,* by Dr. Steven Zucker. 2015.

2.6 Basilica di Sant'Apollinare in Classe

2.6.1 History Basilica di Sant'Apollonare in Classe

Bishop Ursicinus initiated the construction of this structure, which is situated just outside Ravenna's city walls (Biguzzi, n.d.). The Church of Sant'Apollinare in Classe, which is located in Ravenna's harbor and served as a transit for travelers along the Adriatic coast. Saint Apollinaris, a Christian at the time, arrived in this harbor via ship from Antioch. He founded Ravenna's first Christian community, rose to become the city's first bishop, was crucified, and died there. He was then buried in the cemetery outside the city's walls. The Archbishop of Ravenna, Ursicino, commissioned the construction of a magnificent basilica over his tomb in the year 536, thanks to a gift from the banker Giuliano Argentario. Church dedication in 549 by Archbishop Massimiano (Mamalygo, 2016).

Figure 20. Interior Basilica of Sant'Apollinare in Classe.
From *Flickr* [Photograph], by Michael J. Woerner. 2018.

The walls of the three-nave structure are supported by marble columns, with Acanthus capitals. Except for the area around the apse, which is decorated in mosaics, the walls are empty (BasilicaOfSant'Apollinare, z.d.) The interior is drenched in sunlight that pours in through the windows, illuminating the enormous arches that connect the great nave with the small aisles. Due to the massive capitals and pedestals, the columns made of Proconnesus' polished marble appear thinner and lighter. The arches' undulating rhythm is echoed in the columns' natural veining (Mamalygo, 2016).

2.6.2 Mosaic Basilica di Sant'Apollonare in Classe

Mosaics from several historical eras, from the sixth to the eleventh centuries, adorn the Basilica's enormous apse and triumphal arch. The cross is depicted as the Savior in the remarkable sixth-century allegorical "The Transfiguration of Jesus on Mount Tabor," which is found in the apse's vault, see Figure 21 (Mamalygo, 2016).

Figure 21. Sixth-century apsidal semi-dome mosaic, Basilica di Sant'Apollinare in Classe.
From *Flickr* [Photograph], by Steven Zucker. 2008.

The figures of Moses and Elijah emerging from a cloud depict the Transfiguration, which is represented in the basin. God the Father is symbolized by a nimbate hand, while Christ is portrayed by a diamond cross. The apostles James, Peter, and John are represented by three lambs. The first bishop of Ravenna, S. Apollinare, is depicted on the lower level (BasilicaOfSant'Apollinare, z.d.).

Ch.3. Patterns discovered and explained

In this chapter, the previously investigated mosaics are discussed in more detail. From the discovered mosaics, specific patterns are taken out and examined for variables. The previously found information from Chapter 2 serves to support and possibly explain certain issues about the patterns.

From the mosaics, ten different patterns were selected for this research. This might be due to the pattern becoming particularly recognizable for the Byzantine period in Ravenna or as a result of the patterns appearing in other case studies. The significance of the patterns is supported by the fact that they have appeared regularly across several locations in Ravenna.

The purpose of Chapter 3 will be informational. Three factors for each pattern will be discussed: the location (function), the symbolism and meaning, and the technical construction of the pattern. Variations will be explained if required when they are essential for understanding all three aspects mentioned above. Variations that solely confirm the significance of the patterns will be shown in Chapter 4.

As previously stated, this chapter will examine the technical details of the pattern. The shapes that define the pattern's rhythm will be examined in this. Additionally, it will be looked at how this element repeats itself and whether there are any additional repeating elements. For this purpose, a distinction is made between the three categories shown in Figure 22.

- A: one repetitive shape
- B: multiple repetitive shapes
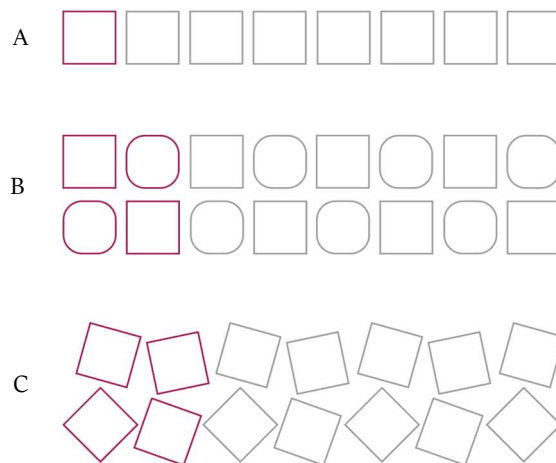- C: one repetitive shape, but mirrored or rotated

Figure 22. Classification pattern type. *Own Work* [Illustration]*,* by Maaike Salters. 2023.

3.1 SCROLL WAVE PATTERN
Galla Placidia, Battistero Neoniano, Capella di Sant Andrea

This pattern has been commonly used in the mosaics of Ravenna. The pattern is mostly recognizable by its organic and fluid form. The pattern is mostly used to outline illustrations. The design was utilized frequently in a continuous strip. As a result, this made it more challenging to apply the pattern, for instance, to garments or elsewhere. Moreover, it demonstrates how proficient the skills were to use the little stones to create such rounded designs.
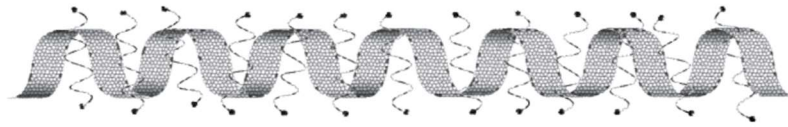
Figure 23. Sketch illustration of scroll wave pattern.
Own Work [Illustration]*,* by Maaike Salters. 2023.

The pattern consists of a repetitive organic form. There is just one shape left after the pattern is reduced to its repeating component. The shape is mirrored creating the completion of the repeating element. The repeating element is completed by mirroring the shape. The individual components are given depth, giving the impression that it is curling like a sheet of paper: scroll. Then an additional demented effect is provided to the repetitive rhythm through the use of colors. The scroll is exhibited against a red background and alternately uses blue, yellow, and green tones. The use of colors in the gemstone design (3.8), is likely what inspired the colors red, green, and blue. The colors represent the jewels sapphire and emerald.
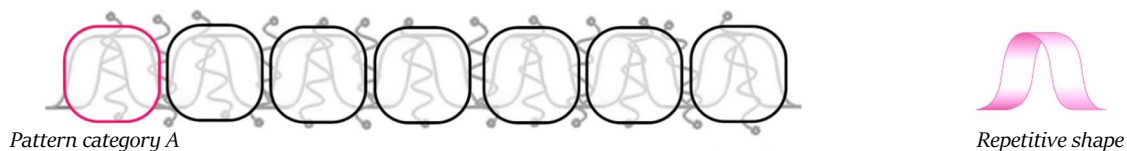

Pattern category A

Repetitive shape

Figure 24. Analytical breakdown of scroll wave pattern.
Own Work [Illustration]*,* by Maaike Salters. 2023.

The meandering and continuous paper roll symbolizes infinity and the infinite idea of time. There is no beginning and no end, which carries the meaning of the celestial body (Lesso, 2020). A theory can also be hypothesized that the scroll pattern emphasizes the origin of the material. Trees symbolize the cycle of life (Lesso, 2020). Rooted in nature, visible layers of life in the trunk and as a result of spreading seeds, new cycles of life can emerge when the other ends. This can be an explanation for the pattern to be depicted mostly vertically or horizontally representing branches.

3.2 GRAPEVINE
Galla Placidia, Battistero Neoniano, Basilica di Sant'Apollinare, Basilica San Vitale

The pattern can be observed in several case studies. The pattern can be used as a lenticular pattern but has also been applied decoratively to infill large curved or planar surfaces. Because of the natural and realistic appearance of the pattern, it often becomes part of the image. When it is placed as a rectilinear pattern on structural parts it merely serves as a separation between two distinct pictures, but loses its significance.

Figure 25. Sketch illustration of grape vine pattern.
Own Work [Illustration]*,* by Maaike Salters. 2023.

The pattern made its greatest impact in the mausoleum Galla Placidia. As mentioned earlier in Chapter 3, in this mausoleum three lunettes are richly decorated with mosaics. Two lunettes depict a biblical scene, however, the third contains rather a decorative and less story-telling scene. In this lunette, two drinking deer are depicted under a window, representing the light that fulfills the thirst of the devoted (Liew, 2017).

Depicted in images 26 and 27, it is evident that a pattern is created by the grapevine's repetitive shape and fills a large surface area rather than a rectangular band. The organic nature-inspired repetition becomes a part of the image as it wraps around the two main parts of the image. The motif is no longer a decorative element in the background or border of the image.

Figure 26. Lunette depicts drinking deers intertwined in grape vines. *From The Observant Epicurean.* [Photograph], by Julian Liew. 2017.

Figure 27. Close up of drinking deer. *From Late Antiquity to the Fifteenth Century, pp. 145 - 465* [Photograph], by Cambridge

It also depicts the grape pattern on one of the arches' flat areas. The monogram of Christ with an A and omega is additionally included (figure 28). This combination emphasizes that Christ is the beginning and the end of all things (Bovini, p.27, 1957). Including grapes decoratively in a pattern most likely comes as a result of the passage from the Gospel of St. John "I am the true vine (Ego sum vitis vera)" (Bovini, p.27, 1957).
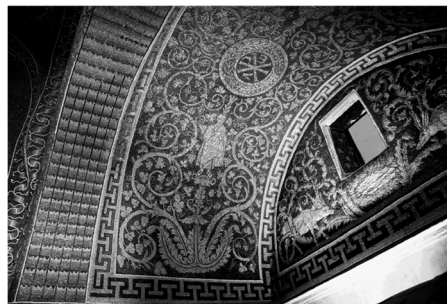
Figure 28. Flat arch depicting intricate vine motif.
From Late Antiquity to the Fifteenth Century, pp. 145 - 465 [Photograph], by Cambridge University Press. 2017.

Pattern category A

Repetitive shape

Figure 29. Analytical breakdown of grape vine pattern.
Own Work [Illustration], by Maaike Salters. 2023.

Remarkably, the motif is mirrored on both surfaces, which ensures repetition and simultaneously emphasizes the calmness and order of the entirety. See Figure 29 for the analytical breakdown.
The linear pattern can be subdivided into pattern A, with one particular shape and frequently one singular color tone. Nevertheless, the repeating parts are sometimes mirrored or rotated creating the illusion of an irregular pattern.

Pattern category C   *Repetitive shape*

Figure 30. Sketch illustration of grapevine pattern combined with acanthus leave plant.
Own Work [Illustration]*,* by Maaike Salters. 2023.

Figure 31. Analytical breakdown of grapevine pattern combined with acanthus leave plant.
Own Work [Illustration]*,* by Maaike Salters. 2023.

The second variation of this pattern, as shown in figures 30 and 31, which frequently fills larger areas, applies to subcategory C. The pattern includes a repeating shape, but it is rotated on occasion, furthermore, leaves and grape bunches are connected to the configuration in random order.

3.3 STAR PATTERN
Galla Placidia, Capella di Sant Andrea

The star pattern is only applied on large surfaces. The pattern forms a motif that was commonly used in dome vaults (Figures 32 and 33) but was unlikely to be used on bands. As a result, the pattern fills large empty spaces and is barely used for attempting to conceal functionality from the aesthetic.
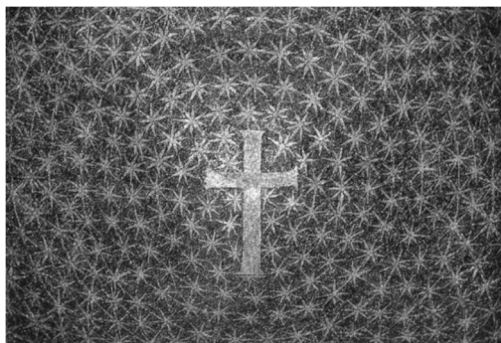
Figure 32. Star pattern covering dome of Galla Placidia.
From *Not about the miles* [Photograph]*,* by Dhara. 2022.

Figure 33. Star pattern covering apse of Chapel of San Andrea.
From *Italy This Way* [Photograph]. N.d.

At the time, the star held great symbolic significance. When a star was depicted, it was usually about the sky and all that was imaginary above us that we could only fantasize about. A star pattern also frequently represented the divine arrangement of the cosmos that God created for us (Henry, n.d.).

All that was imaginable to the faithful was tied to the theological heavenly world when this pattern is paired with a representation of Christ, the monogram of Christ. Reassuring the faithful that trust in Jesus would lead to heaven (Morales, E.M., Norris, M.B., 2001).
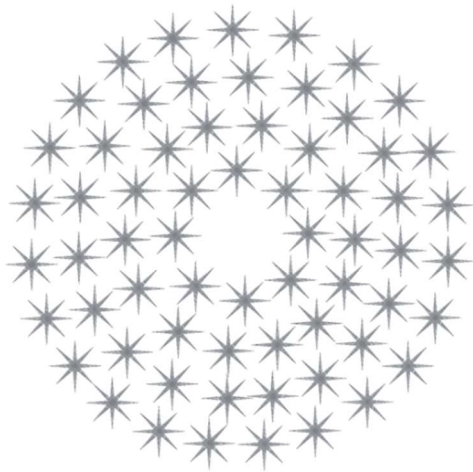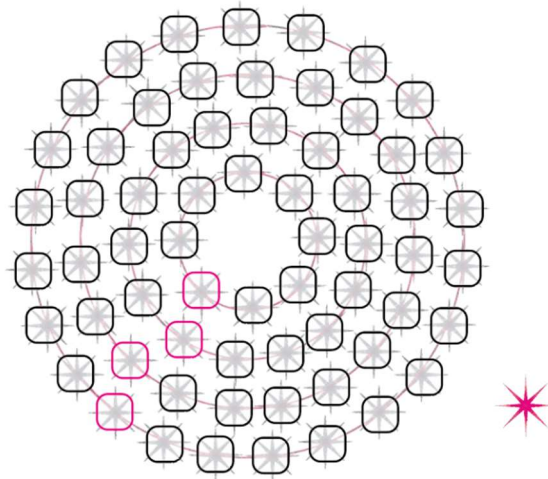
Pattern category A   *Repetitive shape*

Figure 34. Sketch illustration of star pattern.
Own Work [Illustration], by Maaike Salters. 2023.

Figure 35. Analytical breakdown of star pattern.
Own Work [Illustration], by Maaike Salters. 2023.

The motif consists of only one repeated shape: the star. However, sometimes artists alternated with the size of the star-shape or arranged it in a particular order to create depth. This depth emphasizes the boundary between reality and the heavenly world. Even though it is a round shape, it can be classified as category A.

3.4 CIRCLE SHAPES PATTERN
    Galla Placidia
From these six case studies, this pattern can only be observed in the Galla Placidia. However, it has become a tremendously distinctive pattern for this time and is therefore included in this research. The vaulting arms of this chapel were not suitable for depicting a storytelling scene. Therefore, instead of depicting a realistic scene, the choice was made to depict a decorative yet very meaningful pattern.

Figure 36. Mosaic Garden van Eden, on barrel vault.
From Rodon [Photograph], by Daniel Andreyev. 2011.
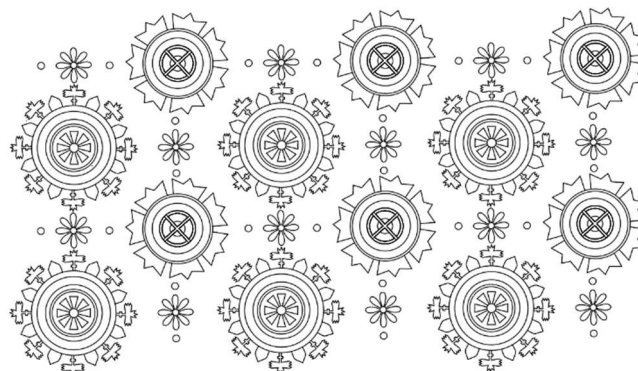
Figure 37. Sketch illustration of circle shape pattern.
Own Work [Illustration], by Maaike Salters. 2023.

The pattern is also referred to as the Garden of Eden and that refers to paradise, eternity, and immortality. The star-studded concentric circles in the center vault depict the celestial paradise. The four vaults draped in vines and flowers represent the four rivers that flowed into Eden, the prehistoric paradise (Liew, 2017). The pattern seems irregular but applies to pattern B. Where between forms 1 and 2 there is the same element occurring repeatedly.
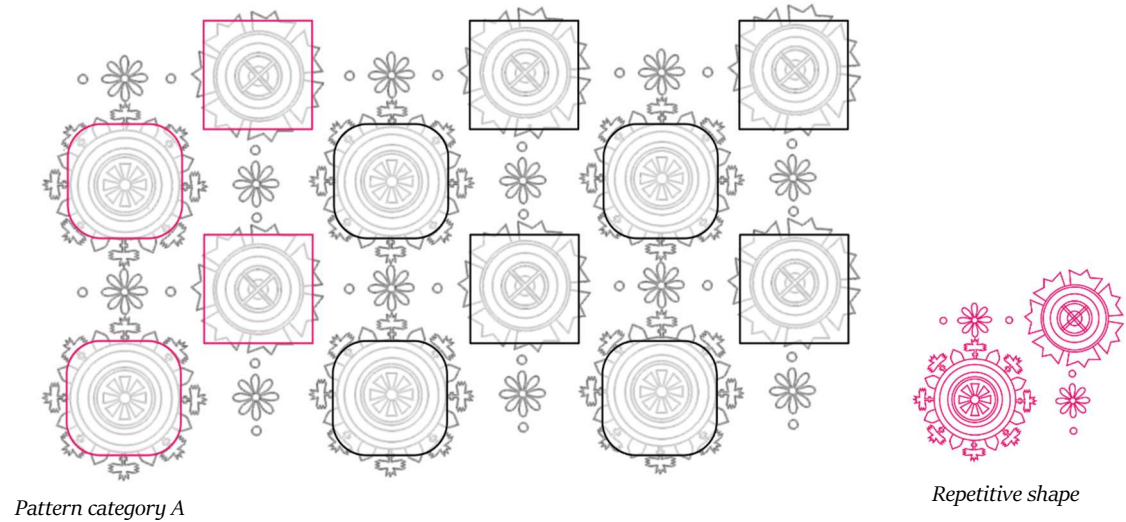

Pattern category A

Repetitive shape

Figure 38. Analytical breakdown of circle shape pattern.
Own Work [Illustration], by Maaike Salters. 2023.

3.5 CURTAIN PATTERN

Battistero Neoniano

This pattern supposably illustrates the illusion of curtains opening. The pattern complements the robes depicted below the medallion. The apostles are portrayed around the medallion, as was previously mentioned in Chapter 2. The robes that the apostles are wearing provide a direct connection to the medallion. This connects the image to the broader scene. The implementation of the curtain design and its repetition emphasizes the significance of the apostles.

Figure 39. Battistero Neoniano, Ravenna.
From Flickr [Photograph], by Dan. 2022.

Rarely does a pattern obtain a meaning that is directly related to the image it is surrounded by. By contrasting these mosaics with the similarly designed mosaic work of Baptistery Arian, it becomes clear that in those mosaics, it was explicitly decided not to connect the apostles with rugs to the medallion. This is likely why the curtain pattern surrounding the medallion was also not chosen in that case. This confirms the deliberate choice of the repeating curtain pattern inspired by the rugs surrounding the apostles in Battistero Neoniano.

Figure 40. Sketch illustration of curtain pattern.
Own Work [Illustration], by Maaike Salters. 2023.

Repetitive shape

Figure 41. Analytical breakdown of curtain pattern.
Own Work [Illustration], by Maaike Salters. 2023.

The pattern consists of a recurring shape with both straight lines and an organic design. This pattern fits into category A in each case study in which it is discovered. This entails numerous iterations of a single shape; see picture 41.
As stated previously, the design in Battistero Neoniano's mosaic is distinguishable as a curtain pattern. Although the pattern has never been discovered elsewhere, it appeared in an abstract form in San Vitale. As shown in Figure 42, the abstracted pattern may resemble a curtain being pulled up above the mosaic of Justin in San Vitale. To give the illusion that the image is being opened and exhibited to the viewer.

Figure 42. Justinian mosaic, San Vitale, consecrated 547, Ravenna.
From *Smarthistory* [Photograph], by Steven Zucker. 2022.

3.6 BIRD PATTERN
Capella di Sant Andrea
The bird pattern has become a tremendously famous motif within Byzantine art. The pattern is found only in Capella di Sant Andrea. The design is very symbolic in addition to just being aesthetic. Various species of birds are depicted on the barrel vault (figure 43). With lilies and discs that resemble sacred hosts, the animals are set against a golden sky (Messala, 2022).

Figure 43. Bird motif, Capella di Sant Andrea.
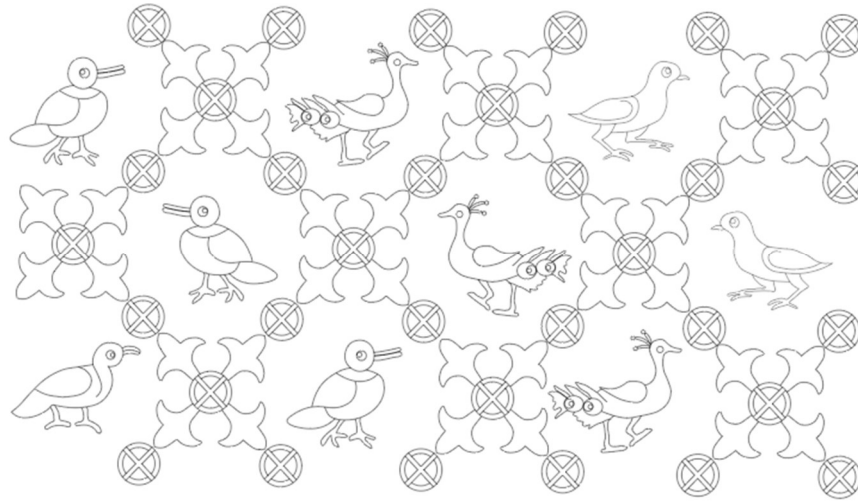From *Not about the miles* [Photograph], by Dhara. 2022.

Figure 44. Sketch illustration of bird pattern.
Own Work [Illustration]*, by Maaike Salters. 2023.

Between the lilies and discs, eleven guinea and eight starling birds are depicted. The presence of these birds among the numerous species is significant because they are infrequently represented (Ravenna Tourismo, n.d.). It is understood that there are plenty of herons, pheasants, and peacocks. The golden dome suggests heavenly delight and adoration for the splendor of Creation by being decorated with flowers and colorful birds (RavennaTourismo, n.d.). Even though guinea fowls are not specifically referenced in the Bible, all birds and fowls in general are portrayed as symbols of fertility, prosperity, balance, and the bounties of nature (American Tarantula & Animals, n.d.). The starling is sometimes interpreted as a symbol of resurrection in Christian symbolism. The starling is a representation of hope and fresh starts (Awakening State, 2022).

Pattern category A

Repetitive shape
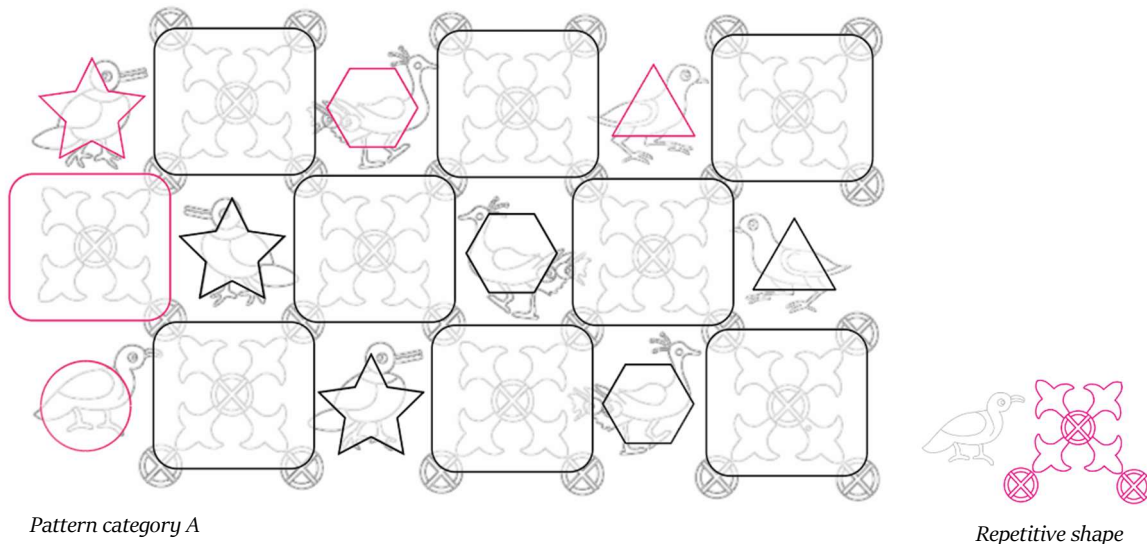
Figure 45. Analytical breakdown of bird pattern.
Own Work [Illustration]*, by Maaike Salters. 2023.

The design is characterized as a pattern by the repetition of standard elements with an alternation of distinct species of birds (Figure 45). The standard repetition consists of the lilies and discs, whereas the birds appear to be placed almost randomly, resulting in an irregular appearance initially. The motif gives the impression of turmoil and chaos, but upon closer examination, one will notice that there is more regularity in it compared to how it first makes it appear.

The pattern can be classified as a mix of A and C. The lilies and discs in the rectangular shape provide the pattern's regularity. In between, a type of bird is repeated in diagonal arrays, however, these birds are mirrored from one another, giving an irregular appearance.

3.7 LEAVE PATTERN

Battistero Neoniano, Battistero degli Ariani

The foliage pattern is primarily utilized in image framing. This can be on a planar surface to enhance the image's subject matter or on a structural element to be purely decorative and serve to soften the boundary between functionality and aesthetics.

The leaf pattern can have several interpretations. The pattern was most likely inspired by the acanthus plant's flowering. This plant is frequently seen in mosaics in Ravenna and is rich in symbolism. The plant has long been associated with the concept of rebirth. It symbolizes immortality and rebirth (MHSMW, n.d.).

Figure 46. Sketch illustration of leave pattern.
Own Work [Illustration]*,* by Maaike Salters. 2023.

The pattern is constructed up of a few similar leaf shapes that have been repeated. The most generic form of the leaf pattern in mosaics is a recurring element made up of three bigger leaves and two smaller leaves, which can be seen in the pink rectangle in Figure 47. In order to convey depth and movement, these typically include a color transition, as seen in Figure 46.
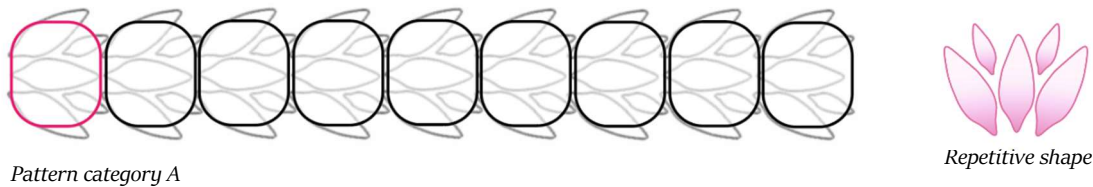
Pattern category A

Repetitive shape

Figure 47. Analytical breakdown of leave pattern.
Own Work [Illustration]*,* by Maaike Salters. 2023.

3.8 GEMSTONE PATTERN

Galla Placidia, Battistero Neoniano, Capella di Sant Andrea, Battistero degli Ariani, Basilica di Sant'Apollinare, Basilica San Vitale

One of the designs that appear most frequently in the case studies is the gemstone pattern (see Figure 48). The pattern serves numerous functions, unlike many other patterns. Mostly, the pattern is used to frame and border illustrations. In some instances, the pattern is depicted in the image or representation itself, such as a decorative element on clothing, illustrated objects, or shown on structures.

Figure 48. Close up of gemstone pattern.
From *Smarthistory* [Photograph]*,* by Dr. Allen Farber. 2023.

The pattern's purpose is difficult to deduce from literature searches. Given that sapphires, emeralds, and pearls, according to Langantiques (2001), indicate power, it is obvious that the pattern aims to imitate gemstones or jewels. This is supported by the fact that only the emperor is permitted to wear these jewels; subsequently, any other man is free to wear gold. This makes it evident that showing this pattern is a symbol of authority as well.
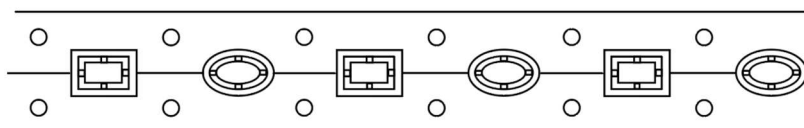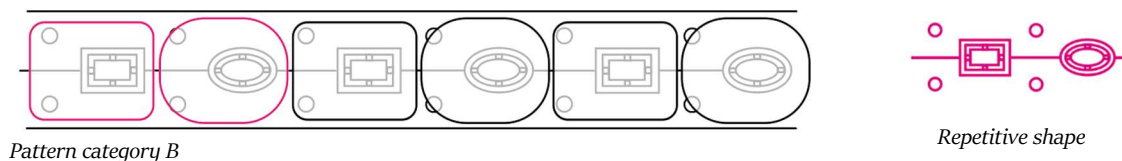

Figure 49. Analytical breakdown of gemstone pattern.
Own Work [Illustration]*,* by Maaike Salters. 2023.

Figure 50. Jesus sitting on throne decorated with jewels. From *Internet Archive* [Photograph], by Bovini, G. 1956.

Figure 51. Theodora covered in Jewels. From *Internet Archive* [Photograph], by Bovini, G. 1956.

Figure 52. Jewels on shield. Justinian Mosaic. From *Khan Academy* [Photograph], by Dr. Allen Farber. 2023.

In addition, it is believed that wearing these stones also contributes to healing and protection (GemSociety, n.d.). This could be an additional reason why Christians often used these stones in their patterns. Furthermore, the pattern is frequently employed in clothes, as embellishments on Christian icons, as well as to decorate structures in mosaic, as shown in figures 50, 51 and 52.

The pattern has a simple layout, most commonly illustrated with two pearls between each jewel. The square jewel is most often emerald green whereas the round jewel usually illustrates sapphire blue. The most common structure of the pattern is depicted in Figure 53. Noticeably, this pattern falls into category B and is mostly used as a linear pattern. Multiple variations are shown in Chapter 4.

Pattern category B

Repetitive shape

Figure 53. Analytical breakdown of gemstone pattern. *Own Work* [Illustration], by Maaike Salters. 2023.

3.9 GREEK KEY PATTERN

Galla Placidia, Battistero Neoniano, Basilica San Vitale

When the mosaics in the Ravenna case studies were examined, numerous geometrical patterns were discovered. The pattern originated in Greece and is particularly identifiable in Greek pottery and ceramics, see Figure 55 (Invaluable, 2021). Figure 54 shows the most prevalent fundamental design, from which numerous modifications are derived. Throughout this period, the pattern was mostly used as delineating pictures. Because of the huge surface area, geometric mosaics were more frequently used for paving floor mosaics, moreover, they were also occasionally used as entire grid representations (AngelsFerrerBallester, 2021).

Figure 54. Sketch illustration of basic pattern Greek key pattern. *Own Work* [Illustration], by Maaike Salters. 2023.

Figure 55. An Attic Black-figured Column-krater. *New York, NY* [Photograph], by Christie's. 2013.

Figure 56. Sketch illustration of discovered basic Greek key pattern.
Own Work [Illustration], by Maaike Salters. 2023.

Geometric patterns often consist of a repetition of straight lines or shapes. These include squares, rectangles, triangles and diamonds. Shapes with right angles and straight lines reflect structure and order, while organic shapes are softer and represent community and connection (WhiteRiverDesign, n.d.). However, the patterns are also known as meander patterns and Greek key patterns, giving various other explanations for its name (Invaluable, 2021). Figures 57 and 58 illustrate the debate over whether it was inspired by a river's meandering or by the actual shape of a key. Another idea holds that it was influenced by the handgrip used by Greek gymnasts; this is seen in Figure 59 (Invaluable, 2021).

Figure 57. Theory inspiration key pattern. *Invaluable* [Illustration], 2021.

Figure 58. Meander river. *Invaluable* [Illustration], 2021.

Figure 59. Hand grip employed in Greek gymnastics. *Invaluable* [Illustration], 2021.

It is assumed that the Byzantines sought the same symbolic value behind the pattern as the Greeks. The symbolic value behind the symbol varies depending on each adopted theory about the origin of the name. The symbolic value behind the key is unclear. Secondly, meander (or Meandros) was considered by the people of Ancient Greece as a representation of eternities and the undulating flow of human life through reproduction (Invaluable, 2021). Its continuous, interlocking design converted it into a representation of both harmony and infinity, making it one of Ancient Greece's most significant symbols (Invaluable, 2021). Lastly, the handgrip was perceived as a representation of the courage and endurance of the Greek soul, representing their ability to conquer difficulty.

Figure 60. Simplistic geometric key pattern, Galla Placidia.
From *Smarthistory* [Photograph], by Steven Zucker. 2022.

The pattern knows many variations but was reducible to a recognizable shape, shown in Figure 61. It consists only of horizontal and vertical lines, at right angles.

Pattern category A

Repetitive shape

Figure 61. Analytical breakdown of basic Greek key pattern.
Own Work [Illustration], by Maaike Salters. 2023.

Figure 62. Complex geometric key pattern, Galla Placidia. From
Smarthistory [Photograph], by Steven Zucker. 2022.

Aside from the simple basis of the pattern, more complex interlocking patterns have been experimented with over the centuries. In the case studies, both simple and complex variations have been discovered. Figures 61 and 62 show that both patterns belong to category A expressing structure and order. The construction of the complex pattern was more difficult to figure out and thus includes an additional explanation shown in Figure 64.
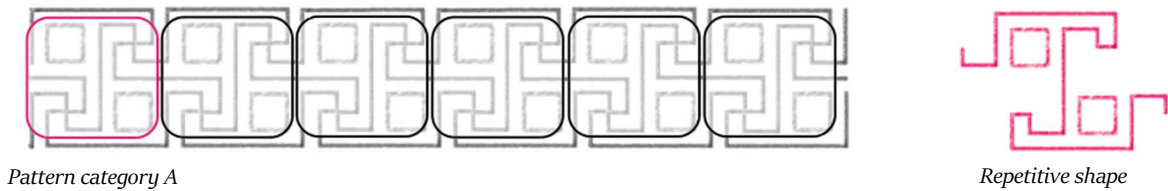
Pattern category A   *Repetitive shape*

Figure 63. Analytical breakdown of complex Greek key pattern.
Own Work [Illustration], by Maaike Salters. 2023.

In this case, there are variations to the pattern's line work, but there is also a significant difference in color from the basic pattern. The basic pattern commonly has gold lines against a blue background, whereas the example below has many colors.
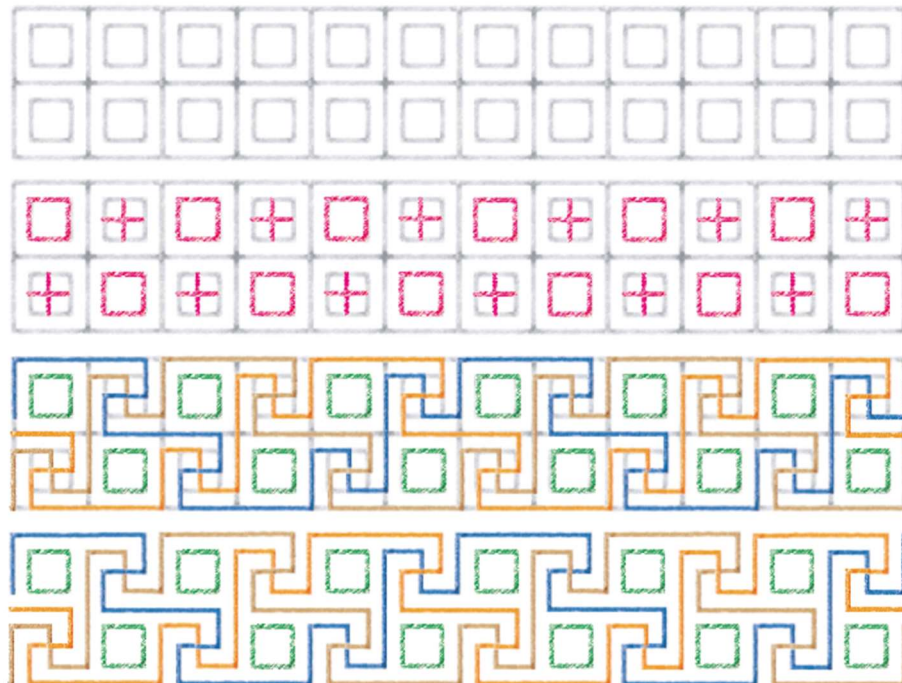
Figure 64. Extensive analytical breakdown of complex Greek
key pattern.
Own Work [Illustration], by Maaike Salters. 2023.

3.10 SPHERE PATTERN

Basilica di Sant'Apollinare, Basilica San Vitale

For research purposes, this recognizable pattern is called the sphere pattern. In a series of connected spheres, a symbol is represented. Underneath is a red strip containing a simplified version of the symbol. Figures 65 and 66 show two variations of this pattern.

Figure 65. Mosaic sphere pattern border, Basilica San Vitale. From *Smarthistory* [Photograph], by Dr. Allen Farber. 2023.

Figure 66. Mosaic sphere pattern border, Basilica di Sant'Apollinare. From *Orthodoxarts Journal* [Photograph], by Aidan Hart. 2017.

What the pattern exactly conveys is not clear. However, the symbol in the curvilinear forms is common in Byzantine art, see Figures 67, 68 and 69. From this, it is clear that the pattern does have symbolism and was applied for a specific reason. The meaning behind the symbol is unknown; will be investigated further in another study. It often consists of a central circle surrounded by four hearts. The symbol is often on its side and therefore it is suspected that it does not illustrate a cross.

Figure 67. Biblical figure wearing scarf with cross hearted symbol. From *Internet Archive* [Photograph], by Bovini, G. 1956.

Figure 68. Biblical figures holding book with cross hearted symbol. From *Internet Archive* [Photograph], by Bovini, G. 1956.

Figure 69. Biblical scene with curtain showing cross hearted symbol. From *Internet Archive* [Photograph], by Bovini, G. 1956.

The pattern itself can also be simplified into a repeating circle shape. A circle has much symbolic value. Circular forms, however, frequently convey a soothing, protective emotional message. The circle is frequently used as a symbol of community, love, devotion, and unity. As circles have no start or finish, they symbolize life and the lifecycle. It feels free to move in circles. The movement of circles is unrestrained (WhiteRiverDesign, n.d.).
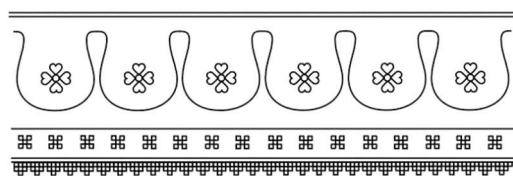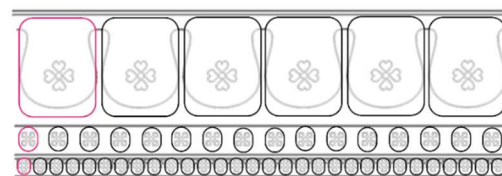

Figure 70. Sketch illustration of spherical shape pattern. *Own Work* [Illustration], by Maaike Salters. 2023.

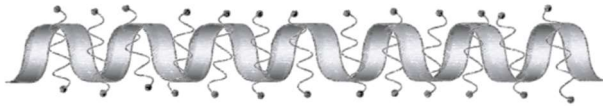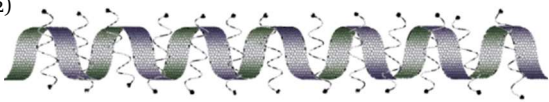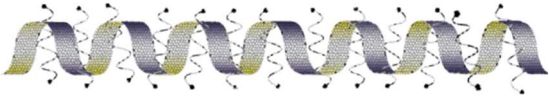Pattern category A   Repetitive shape

Figure 71. Analytical breakdown of spherical shape pattern. *Own Work* [Illustration], by Maaike Salters. 2023.
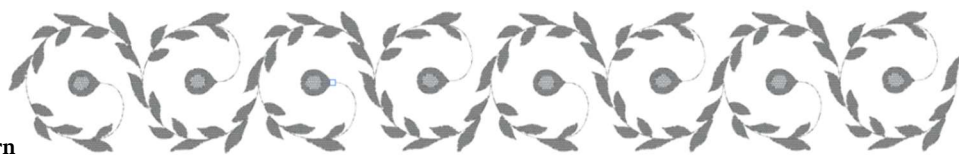
Ch4. Overview used patterns

The data from the previous chapters are compiled in a table in this chapter. With the illustrated patterns in Chapter 3, it can be concluded that the patterns have a lot of symbolic value, emphasizing their significance. However, additional research is needed as to whether there is more to the patterns concerning various factors. This chapter investigates and categorizes patterns on the following (additional) research topics: function building, function pattern, color use, symbolic meaning, shape pattern, and variations. Table 2 provides a brief overview of the options available for each category. Table 3 shows the entire table.

Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
	- Galla Placidia	- Mausoleum	- Borders	-	-	- Linear	- Color
	- Battistero Neoniano	- Baptistery	- Hiding constructive elements			- Rectangular (large surface)	- Shape
	- Capella di Sant Andrea	- Chapel	- Part of the image			- Circular (dome)	- Size
	- Battistero degli Ariani	- Baptistery	- Decorative				- Realism
	- Basilica di Sant'Apollina re	- Basilica					
	- Basilica San Vitale	- Basilica					

Table 2. Overview options per category
Own Work [Illustration], by Maaike Salters. 2023.

Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.1 Scroll wave pattern	Galla Placidia Battistero Neoniano Capella di Sant Andrea Basilica San Vitale	- Mausoleum - Baptistery - Chapel - Basilica	Borders ; separation images Constructive elements ; depicted on dome arches	1a) Red, blue, yellow 1b) Red, blue, green	Infinity ; never-ending spiritual life	Linear	1) Color 2) Shape Elements in between scrolls

Basic pattern

Color (2)

1a)

1b)

Shape (2)
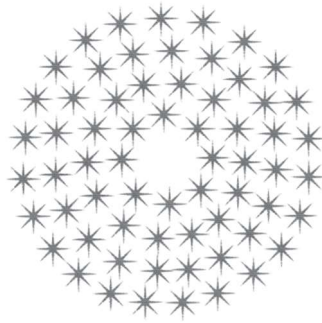
2a)

2b)

Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.2 Grapevine pattern	Galla Placidia Battistero Neoniano Basilica di Sant'Apollinare Basilica San Vitale	- Mausoleum - Baptistery - Basilica - Basilica	Borders ; separation images Constructive ; Vault arches, columns Part of image: realistic grapevine Decorative	1) Realistic colors ; Green, yellow, beige	Beginning and ending of things	Linear Rectangular ; Large surface	2) Size + Shape

Basic pattern

Color (1)

Shape (2)

1

2a)

2b)

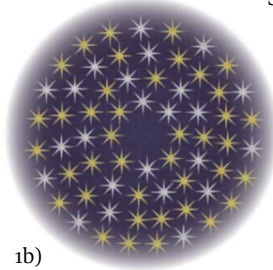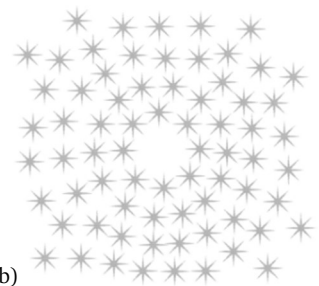| Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.3 Star motif	Galla Placidia Capella di Sant Andrea	- Mausoleum - Chapel	Constructive; Covering dome vaults Decorative	1a) Blue background, yellow stars 1b) Blue background, yellow and white stars	Heaven	Circular ; Dome	1) Color 2) Shape ; Distance between shapes

Basic pattern

Color (2)

Shape (2)

1a   1b)   2a)   2b)
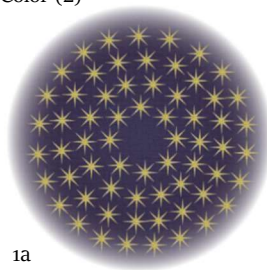
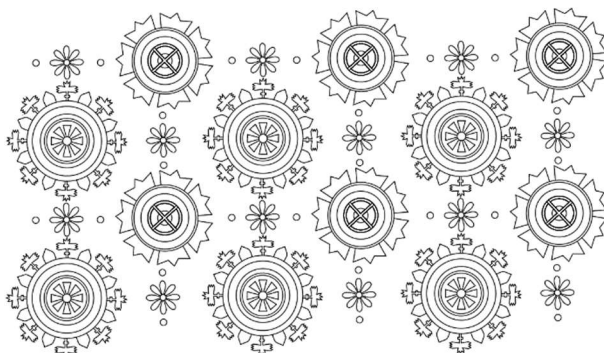| Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.4 Circular heaven motif	Galla Placidia	- Mausoleum	Constructive: Covering vault arches	1) Blue background ; red, yellow, green, orange, blue	Boundary between heaven and earth The Garden of Eden	Rectangular: Barrel vault	-

Basic pattern

Color (1)

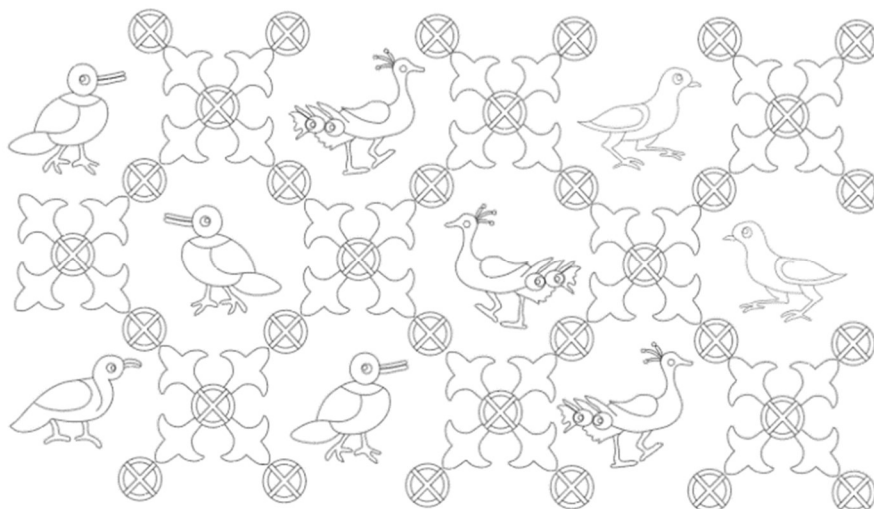| Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.5 Curtain pattern	Battistero Neoniano Basilica San Vitale	- Baptistery - Basilica	Borders ; separation images Part of image Decorative	1a) Blue, white 1b) Green, black, white	Drama, mystery	Linear	2a) Realistic 2b) Abstract

Basic pattern

Color (2) + Realism (2)

1a)
2a)

1a)

2b)

Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.6 Bird motif	Capella di Sant Andrea	- Chapel	Constructive: Covering vault arches	Red, orange, white lilies Birds in realistic colors	Fertility, prosperity, resurrection	Rectangular ; Barrel vault	-

Basic pattern

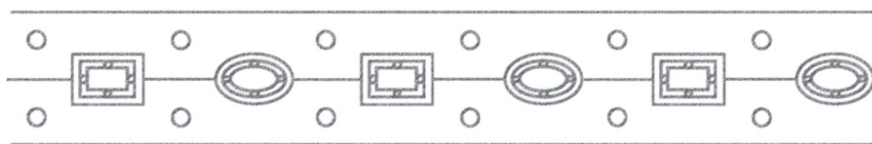| Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.7 Leave pattern	Battistero Neoniano Battistero degli Ariani	- Baptistery - Baptistery	Borders ; separation images Constructive ; Vault arches Columns Arches Decorative	1a) Green 1b) Orange/ Yellow	Immortality and rebirth	Linear	2a) Shape; Number of leaves 2b) Shape; Leaves with fruit

Basic pattern

Color (2) + Shape (3)   Shape

1a)   1b)   2a)   2b)

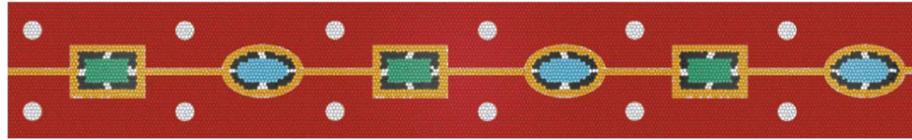| Pattern:	Case study:	Function building:	Function pattern:	Color use:	Symbolic meaning:	Shape pattern:	Variation design:
3.8 Gemstone pattern	Galla Placidia Battistero Neoniano Capella di Sant Andrea Battistero degli Ariani Basilica di Sant'Apollinare Basilica San Vitale	- Mausoleum - Baptistery - Chapel - Baptistery - Basilica - Basilica	Borders ; separation images Constructive ; Dome arches Flat Arches Columns Part of the image ; realistic jewels, applied to clothing Decorative	1) Red background + Blue sapphire + Green emerald	Power and wealth Healing and protection	Linear	2) Shape Number of gems, pearls

Basic pattern

Color (1)							
Shape (3+)							
2a)							
2b)							
2c)							
3.9 Greek key pattern	Galla Placidia Battistero Neoniano Basilica San Vitale	- Mausoleum - Baptistery - Basilica	Borders ; separation images	1a) Yellow, blue 1b) Multicolor	Harmony and infinity Purpose, commitment, endurance	Linear	1) Color 2) Shape
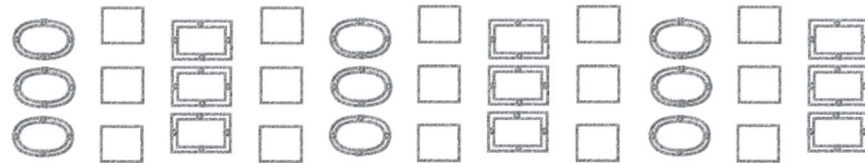
Basic pattern

Color (2)

1a)

Shape (3)

2a)

2b)

1b)
2d)

3.10 Sphere pattern	Basilica di Sant'Apollina re	- Basilica	Borders ; separation images	1a) Black, white, red	Community, love, devotion, and unity	Linear	1) Color
							2) Shape
	Basilica San Vitale	- Basilica	Constructive; Arches	1b) Blue, green, red, white			

Basic pattern

Color (2) + Shape (2)

1a)

2a)

1b)

2b)

Table 3. Overview options per category
Own Work [Illustration]*,* by Maaike Salters. 2023.

From the six case studies in Table 3, ten distinctive patterns were examined. Multiple variations were discovered in eight of the ten patterns. This shows the significance of the patterns. It is conceivable that the remaining two motifs were not copied because they are too recognizable and peculiar to the building in which they were found. When attempting to explain a certain pattern, it can be argued that 3.4 (Circular Heaven Motif) relates to the function of the structure. The pattern reduces the boundary between heaven and earth. The revered individual buried in the mausoleum (a memorial) is prayed to from earth to heaven. Similar to this method, an explanation for the bird pattern (3.6) has been sought, however, it does not become entirely evident from the literature. The hypothesis remains that it serves to offer fertility, prosperity and resurrection to those who come to pray.

The aforementioned patterns were applied to a sizable area. A large area has also been covered with pattern 3.3 (the star pattern), but in a dome rather than a vault. Given that the pattern is easily identifiable in mausoleums and chapels, where commemorating a departed person or saint is pivotal, the decision to depict a celestial design was presumably chosen for this reason.

The eight patterns, variations of which were found in several case studies in Ravenna, can each be traced to a basic element. The basic component was then altered in terms of color, form, realism, or size. Occasionally, adjustments were also applied to various variables including color and shape.

When examining the use of color, primary colors and green were primarily used. When it comes to heavily imaginary patterns, the choice is frequently made to use gold and dark blue rather than the more realistic colors found in nature-inspired patterns.

The majority of linear patterns are classified to pattern category A; were used to frame illustrations. They had no further relation to the image's content. In the case of the curtain pattern, this served as support for the illustration and there was a clear correlation. The grapevine frequently merged with the depiction and took on its literal meaning while maintaining its symbolic meaning. The gemstone pattern was applied for a wide variety of purposes. It was often applied as delineation but is also widely used as decoration of various elements in images. This highlights the deliberate choice to use it also as a pattern in mosaics. A notable phenomenon is that most patterns were applied to constructive elements. Due to the difficulty of depicting a part of an image on these elements, but also hypothetically to make the boundary between functional and aesthetic purposes smaller; to hide the constructive elements.

Ch5. Conclusion

This study investigated the meaning, symbolism and added value of characteristic patterns in Ravenna using a literature review. Ravenna was an essential city during the Byzantine era, which explains why it is home to many important works of art.

The Byzantine era began after the fall of the Roman Empire. After many attempts and raids on the capital of that period, Emperor Honorius decided to move the capital from Milan to Ravenna. As a result of this relocation, many rulers and important priests left their mark here. Through great works of art such as frescoes and mosaics, their power is still evident in various buildings in the city. Six case studies with distinctive mosaics of early Byzantine art have been studied for this research.

During this time, almost no parts of the church remained empty, which was also known as horror vacuii, or "the fear of emptiness." Many surfaces were filled with patterns because they were unsuitable for depicting biblical, imaginary, or realistic scenes. However, patterns not only served to fill the space but could be part of the image; support the subject matter, be applied decoratively, hide constructive elements or make the mosaic more visually appealing. The intricate and complex patterns gave the overall composition a sense of depth and nuance, enhancing its visual impact and greatness.

Distinctive and characteristic patterns from Ravenna have been mapped. As previously stated, it is interesting to investigate how the artists dealt with pattern duplicating. Copying patterns indicate the importance of a pattern and confirm the hypothetically contained symbolic value. An extensive survey was conducted to identify the symbolic value of the most common and some outstanding patterns. Most patterns symbolize all that god has to offer and are therefore often supportive of the religious message of the image. The patterns consist of concatenated elements that express the idea of infinity and never-ending life, such as the geometric Greek key pattern and the scroll pattern. Heaven is also shown in several ways using motifs rather than patterns. In the star motif, the sky is shown simplistically and realistically, through how we see the atmosphere at night. The Garden of Eden motif also purports to show heaven but in a decorative impressionistic way. Furthermore, natural floral patterns are displayed symbolizing the beginning and end of life on earth, such as the grapevine pattern and the leave pattern. A more remarkable pattern, however the most commonly used pattern, is the gemstone pattern. This pattern is found in every case study. The symbol represents power. The jewelry was only allowed to be used by the rulers of the time. It creates a barrier between the people and the rulers. It shows the power of the rulers and priests being able to build such an expensive building with the most beautiful works of art and the people must worship it. In addition to the symbolic content the patterns carried, most patterns also had a functional purpose. Most of the patterns served to delineate important content images. These provided a sense of structure and organization to the overall composition as well as contributing to defining the mosaic's boundaries.

Overall, Byzantine mosaic art in Ravenna employed a comprehensive strategy to use patterns as the boundaries of mosaic images, combining aesthetic, symbolic, and practical reasons. The intricate and complicated patterns brought visual complexity and richness, communicated symbolic meanings, and supported the composition's general structure and organization.

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Figure 53: Analytical breakdown of gemstone pattern.
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Figure 54: Sketch illustration of basic pattern Greek key pattern.
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Figure 56: Sketch illustration of discovered basic Greek key pattern.
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Figure 57: Theory inspiration key pattern.
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Figure 58: Meander river.
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Figure 59: Hand grip employed in Greek gymnastics.
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Figure 60: Simplistic geometric key pattern, Galla Placidia.
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Figure 61: Analytical breakdown of basic Greek key pattern.
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Figure 62: Complex geometric key pattern, Galla Placidia.
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Figure 63: Analytical breakdown of complex Greek key pattern.
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Figure 64: Extensive analytical breakdown of complex Greek key pattern.
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Figure 65: Mosaic sphere pattern border, Basilica San Vitale.
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Figure 66: Mosaic sphere pattern border, Basilica di Sant'Apollinare.
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Figure 67: Biblical figure wearing a scarf with a cross-hearted symbol.
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Figure 68: Biblical figures holding a book with the cross-hearted symbol
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Figure 69: Biblical scene with curtain showing the cross-hearted symbol
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Figure 70: Sketch illustration of spherical shape pattern.
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Figure 71: Analytical breakdown of spherical shape pattern.
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