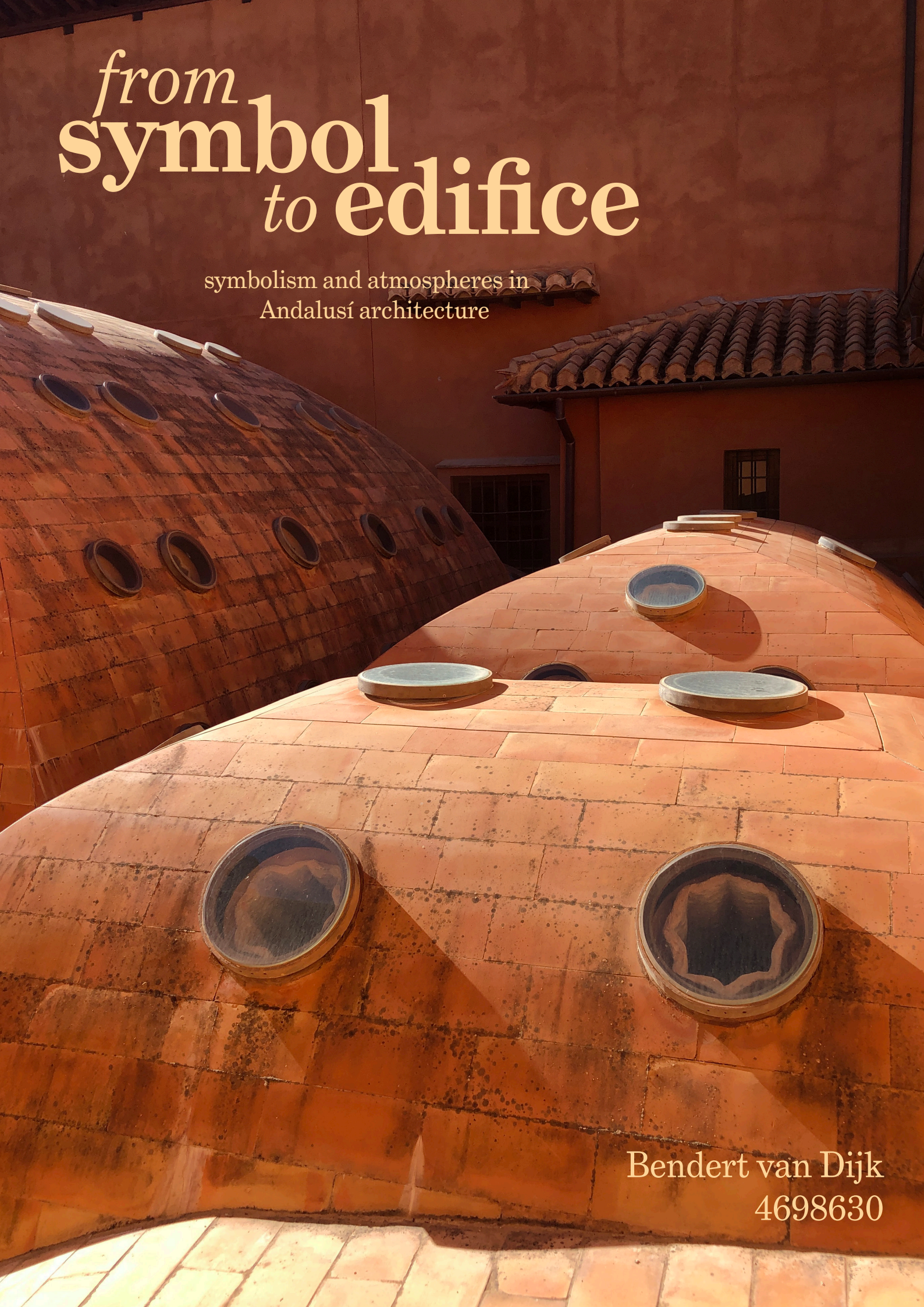

from symbol *to* edifice

symbolism and atmospheres in Andalusí architecture

Bendert van Dijk
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Cover page: domed baths of the Nasrid palaces in the Alhambra, Granada. Image by author (2023)

From symbol to edifice: symbolism and atmospheres in Andalusí architecture.

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Keywords

Andalusí architecture, symbolism, atmospheres, water, phenomenology, perception.

Abstract

Despite the rich Islamic history of Madrid, remnants of its Islamic past are hardly visible anymore. Contemporary architecture both in and outside of Madrid is centred around pragmatism, in contrast to the rich tradition of Andalusí architecture and the extensive degrees of symbolism interwoven with its characteristic buildings. It is impossible to copy the form language of Islamic architecture without acknowledging the underlying cultural and religious symbolism. This research paper will therefore focus on the way in which different forms of symbolism are translated into edifice within the tradition of Andalusí architecture, and on the role atmospheres play in this translation. This is done through literature review, case studies, and experimental design research. Following the historical importance of water within both the city of Madrid and Islamic architecture, a particular focus is placed on water as a bearer of symbolism and the phenomenological qualities of water are elaborated upon. Finally, the analysis of Therme Vals by Peter Zumthor will provide insights into the atmospheric-architectural design methodology, which is combined with the findings of the literature review to be applied to a contemporary design project

Research questions

This research paper aims to shed light on the way symbolism informs Andalusí architecture through the creation of atmospheres. Thus, the main questions of this research are as follows:

How are Islamic notions of Islamic symbolism translated into atmospheres in Andalusí architecture?

How can the Andalusí translation of symbolism into atmosphere be applied to contemporary architecture?

To answer the main research questions, a number of sub-questions is formulated. These sub-questions are subdivided into three domains: symbol, form, and atmosphere.

Symbol

Which notions of symbolism exist within Islamic architecture?

What are the seven principles of Islamic architecture?

Which role does water play in the symbolism of Andalusí architecture?

Form

How is symbolism translated into form within Andalusí architecture?

How are notions of symbolism visible within the great mosque of Córdoba and the Alhambra in Granada?

What are the modes of translation?

Atmopshere

How is symbolism manifested into atmospheres within Andalusí architecture?

What role is given to the phenomenological qualities of water in the creation of atmospheres in Andalusí architecture?

Argumentation & structure

Symbolism in Islam

Andalusí architecture is a sub-style of Islamic architecture and therefore both stem from the same religious principles.

There are seven principles of Islamic architecture:

- **Unity (Tawhid)**
- Respect (Ihtiram)
- Sincerity (Ikhlas)
- Knowledge (Ilm)
- Balance (Iqtisad)
- Modesty (Haya')
- Remembrance (Dhikr)

There are four modes of translation:

- Descriptive
- Prescriptive
- Manifestative
- Arithmetical

The descriptive and arithmetical modes of translation can be used as an aid for integrating symbolism into secular architecture.

How are notions of symbolism translated into atmospheres in Andalusí architecture?

Argumentation & structure diagram.
Image by author (2024)

Mayra - the giver of life

Madrid has a rich Islamic history. Water plays a large role in its heritage.

Madrid's Islamic heritage is hardly visible anymore.
+
Contemporary architecture is devoid of symbolism.

The integration of nature and the use of water are an integral part of Islamic architecture.

Water is used as a symbolic device, conveying religious symbolism in Andalusí architecture.

Water can be used in a contemporary architectural context to create atmosphere and convey symbolism.

Atmospheric design

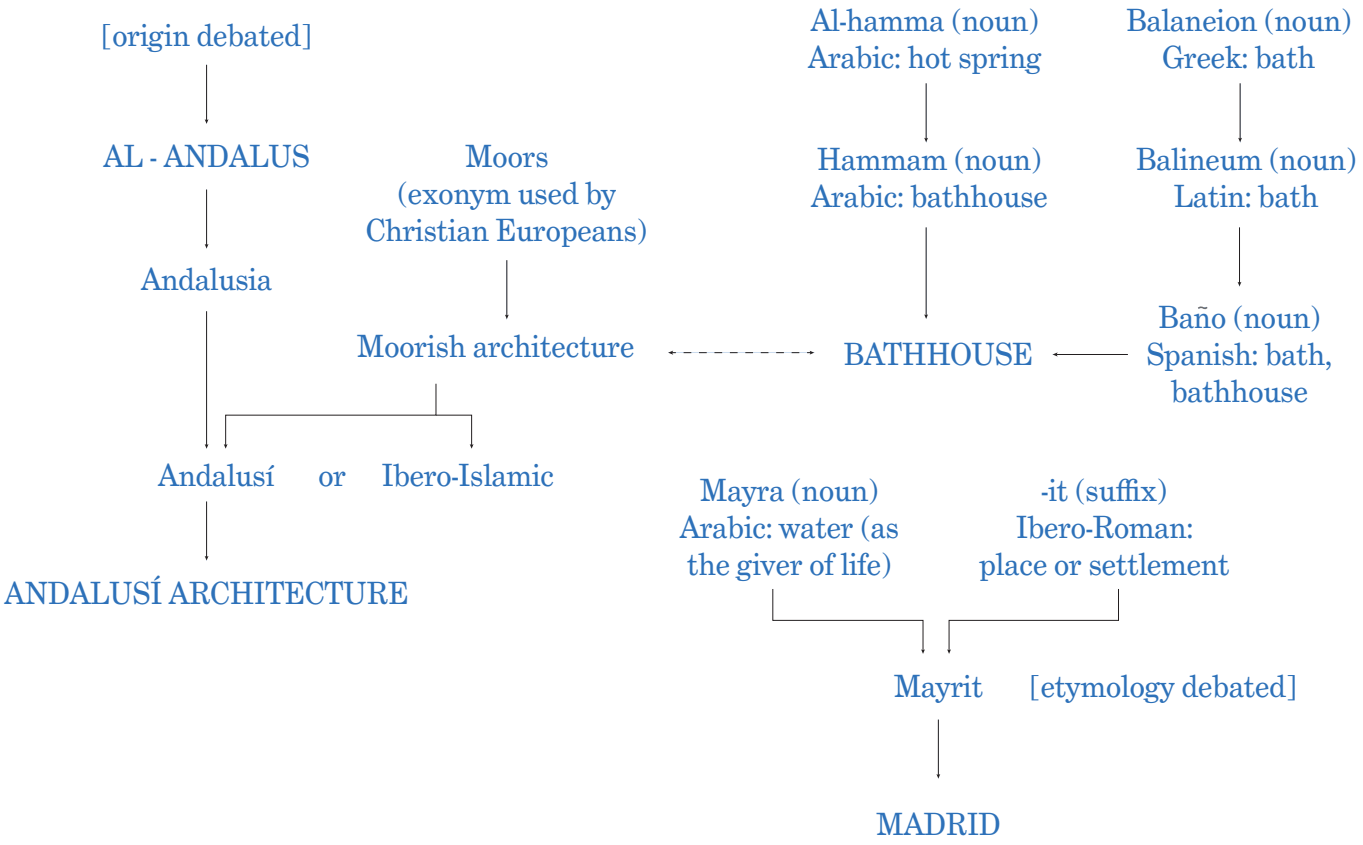
The mystical qualities of Andalusí architecture can be understood through its use of atmospheres, both in Andalusí architecture and contemporary secular architecture.

How can the Andalusí translation of symbolism into atmosphere be applied to contemporary architecture?

Through the use of an atmospheric-architectural design methodology.

Definitions

Some key terms used in this research have been mapped out in the figure depicted below, with their respective etymologies, connotations and translations, if applicable. Note the alternative terms *Andalusí* and *Ibero-Islamic* for *Moorish architecture*, a term which will not be used in this paper (see *Biases and ethics*.) Relating to the architectural graduation project, the etymologies of both Roman and Arabic bathhouses have been included as well.



The terms *Andalusí architecture* and *Islamic architecture* will both be used throughout this paper. Andalusí architecture refers to the architectural style that was developed in Andalusia during and after the Muslim conquest of the Iberian Peninsula. The Alhambra and the mosque of Córdoba are exemplary of this style. The aim of this research paper is to investigate the way that symbolism is manifested in Andalusí architecture and therefore the two aforementioned complexes are used as case studies. However, for the purpose of the literature research, the symbolism in Islamic architecture – which encompasses all architectural styles that originated from the Islamic world – is regarded as identical to the symbolism that is present in Andalusí architecture, as one is sub-style of the other and both stem from the same religious principles.

Islamic architecture and religion

When considering Islamic architecture, one may naturally think of mosques, religious monuments and the numerous holy sites throughout the Middle East. While these examples are certainly emblematic of the architectural style, the term Islamic architecture includes the far greater range of buildings without holy status or any religious significance that are designed through the principles of Islamic design. In fact, as Nisreen Moustafa writes in her insightful book Divine Inspiration: seven principles of Islamic architecture: *"There is no essential difference between sacred and secular art in Islam."* (Moustafa, 2008a, p. 27). Islamic religion permeates deeply into daily life and the values, traditions and art can therefore be found both inside and outside of religious institutions. This point will prove to be of great importance to this research paper, as the argumentation and conclusions will quickly veer away from religious architecture and the symbolism that is presented in literal connection to Islam. As will be elaborated upon in the first chapter of this research paper, however, all symbolism in Islamic architecture – and, indeed, Andalusí architecture – can be and should be explained through the Qur'an and the religion of Islam.

Facing page: Terminology & definitions diagram. Image by author (2024)

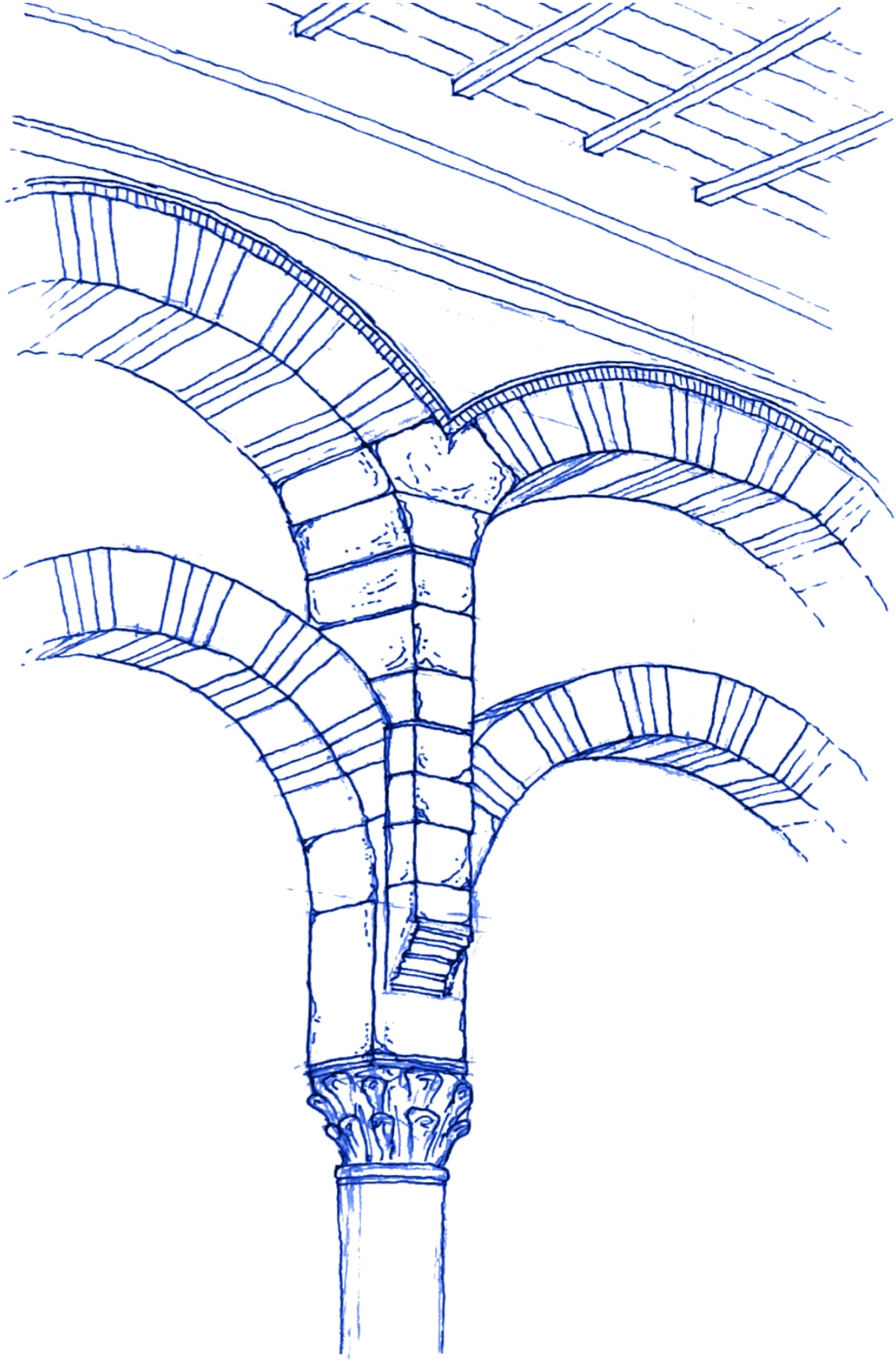
Biases & ethics

Studying facets of another culture – be it architecture, visual art or religious practices – will inevitably bring about biases when the scholar is not part of the culture they study. Not being Muslim myself, I am aware of these biases and try my best to mitigate them in my research into Islamic culture, history and architecture. Being wary of contested terminology is one aspect of this effort. For example, I will avoid Eurocentric terms such as *Moors* or *Moorish architecture*, being exonyms used by Christian Europeans to describe a multitude of different ethnic and religious Ibero-Islamic groups. Instead, I will try to remain critical of scholars with a non-Islamic background and will continue to do so throughout my research and writing.

It has to be acknowledged though, that an objective view is impossible and certain biases remain unavoidable. Therefore I ask the reader to retain a certain level of criticism towards the writings and findings of this research, like I will remain critical of the books and papers upon which the literature review part of this research will be conducted.

The core topic of this research – studying and ultimately reassimilating the way Andalusí architecture translates symbol into edifice – is one of many cultural complexities and whether or not this is desirable or even ethical is an important question to ask, and certainly one I have asked myself. It should be emphasised that appropriating elements of the western Islamic architectural tradition or elements from its culture is not the intention of this research. I acknowledge the importance of religious and cultural context and I am aware that removing it rids the distinct architectural elements of their meaning. Similarly to the architecture of Al-Andalus itself building greatly upon elements taken from other cultures and ethnical regions – as Violet Moller highlights in her book The map of Knowledge (Moller, 2019) – the goal of this research is to learn lessons from and draw conclusions on the Islamic way of interpreting symbolism as built forms and the use of atmospheres in doing so. By learning from these practices in Islamic architecture I aim to render them tangible to be used in contemporary architecture. The concept of enriching an architectural design by drawing from practices and values of other cultures is how Khaled al-Sultani defines *intertextuality* (al-Sultani, 2012) and it is precisely this interpretation of the word that best describes my intentions of this research and graduation project.

Facing page: Sketch of the stacked arches in the Mezquita, Córdoba. Image by author (2023)



Introduction

I have always had a certain fascination for the art and architecture of the Islamic world. During my travels through Anatolia, this fascination expressed itself in many visits to mosques and tapestry shops and booklets full of pen drawings and sketches. The enormous surge of knowledge that emerged from the Islamic civilisations in the middle ages encompasses not only my architectural interests, but also those in mathematics, geometry and the visual arts. The awe-inspiring buildings that came out of the Islamic enlightenment and out of its heritage have impressed me greatly and continue to do so whenever I have the pleasure of setting foot inside these spaces. The question arises: what is it about this architecture that makes it so impressive? How come I perceive these awe-inspiring buildings in the ways I do? It is not only the religious architecture that has such a profound effect on me as a visitor: palaces, gardens and bathhouses possess these same mysterious qualities. Might it be the history that is embedded in these medieval places? Or is there something else that sets Islamic architecture aside from its contemporaries?

The answer might lie in the either monumentally large or intimately small spaces and the mastery of scale and proportion that lies therein; it might be found in the intricate decoration that stretches out across floors, walls and facades; it might be the contemplative use of light and shadow in between the thick stone walls or maybe it lies in the knowledge of the fine arts and sciences that is embedded within the architecture.

This research paper not only satisfies a personal fascination: it also aims to address and respond to the growing tendency of contemporary architecture being centred around pragmatism. Buildings are seen as performative objects – boxes that are optimised for the most efficient lay-outs. The principles of atmospheric design and the use of light, contrast, colour and proportion seem to have been all but forgotten. Through studying the Islamic culture – one so well-versed in creating atmospheres and infusing architecture with symbolism – many lessons on atmospheric design can be learned and be reapplied in the practice of contemporary architecture, using modern-day notions of symbolism.

The city of Madrid – the project location for the architectural graduation project – takes up an interesting position within the cultural-religious history of Islamic architecture. Despite the city being the only European capitol to have been founded under Muslim rule, the architectural remnants have been destroyed during the Reconquista, rendering its Islamic heritage hardly visible in the contemporary urban fabric. To summarise: this research aims to reassimilate the Andalusí ways of creating atmosphere in light of modern-day notions of symbolism on the one hand, as well as respond to the loss of Islamic heritage within the city of Madrid, on the other.

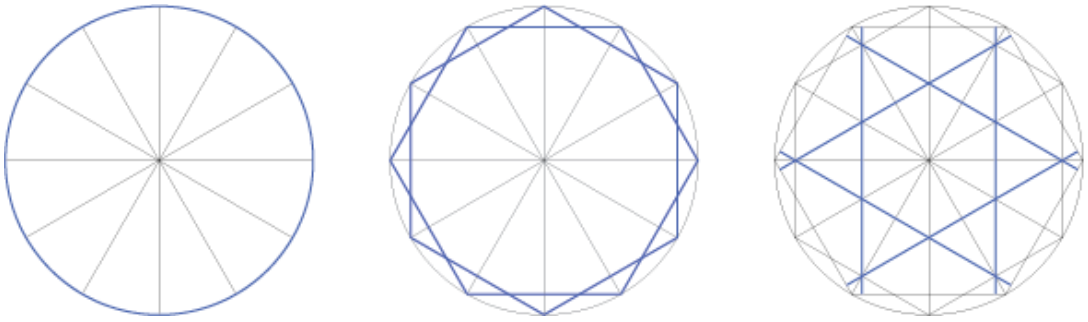
Part one: Symbolism in Islam

"Architecture is like a geometrical formulation of the truths inherent in the religion from which it derives. [...] Through the geometric construct of a single tile are the hidden dimensions for the ground plan of an entire building."

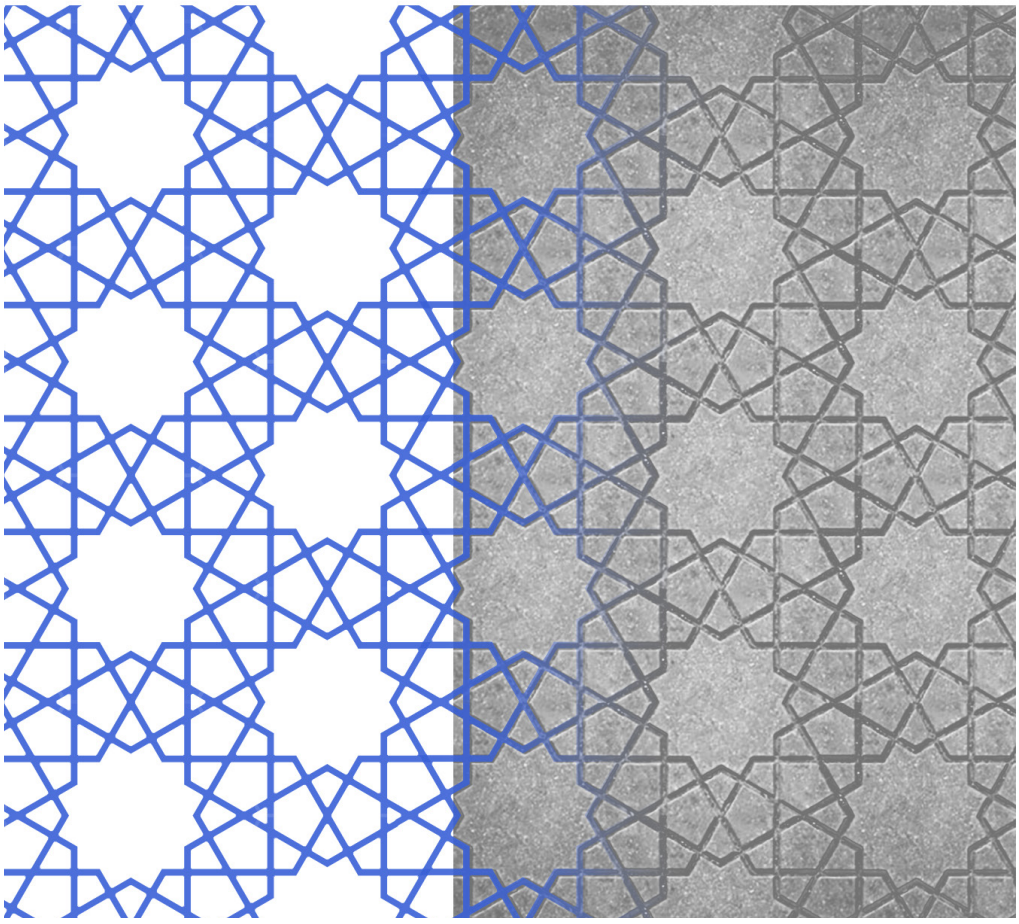
(Nisreen Moustafa, 2008a, p. 36-37)

In this first part of this research paper, the different symbols within Islam will be discerned. Firstly, however, an important clarification should be made. Jonathan Bloom takes a critical stance on his academic precedents in his recent publication Architecture of the Islamic west: 700 – 1800 (2020), in which he calls out the *"intellectual legerdemain"* of *"interpreting everything in iconographic or symbolic terms."* (Bloom, 2020, p. 10) Bloom addresses the laxity with which scholars have interpreted similarities among contemporaries to be evidence of a shared common building style, rather than them being merely coincidental. As he puts it: *"[...] in order to justify the iconographic interpretation, one must first demonstrate that the people in question knew of the referent, not just that it existed somewhere."* (Bloom, 2020, p. 10) The author is wary of the lurking dangers of such apophenic biases. It is argued, however, that conclusions on overarching and omnipresent symbols are justified in the case of this research, given the fact that these symbols all have their roots within the texts and history of Islam, which are the basis of all Islamic culture – and therefore all Islamic architecture.

Another important point to be made is that of the striking coherence of art and architecture throughout the Islamic world, seemingly regardless of time. For example, the dodecagonal pattern shown below can be found in many different regions of the Islamic world. In the bottom image the pattern is shown as it appears in the Itimad ud-Daulah tomb in Agra, India (early 17th century); the Alhambra in Granada, Spain (early 13th century); and in Marrakesh, Morocco (14th or 15th century). Even though it's worth pointing out the distinctness of Andalusí architecture and to be treating it *"not as*



Right: construction of the base tile of a dodecagonal geometric pattern. Image by author (2024)



Right: similaritites of geometric patterns throughout the Islamic world. Images by TedED (2016)

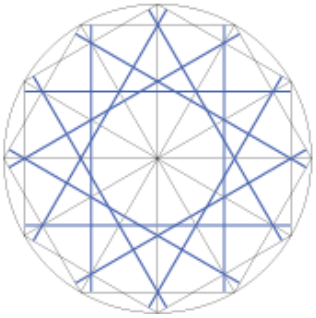
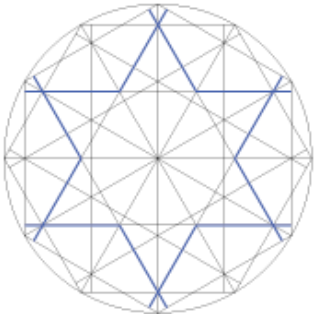
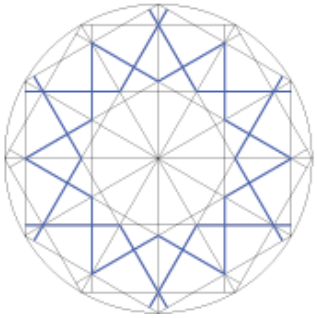
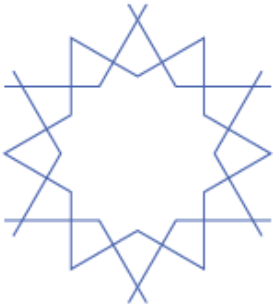
From right to left:

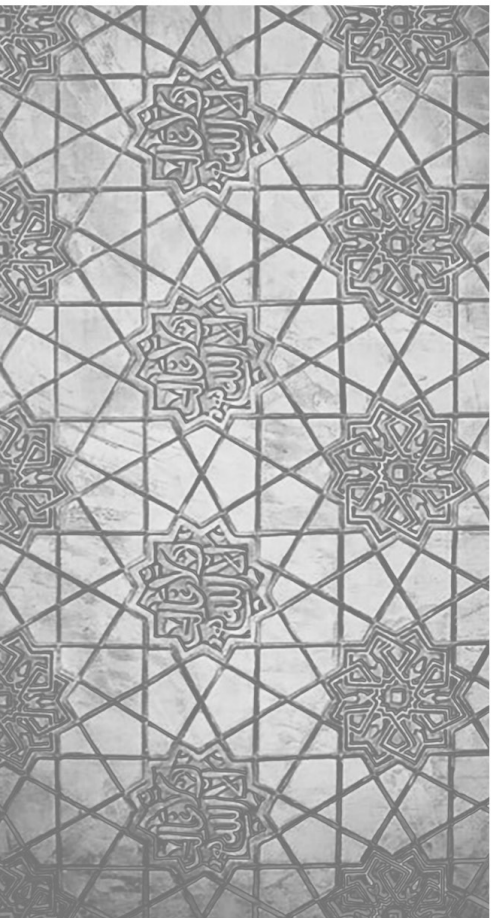
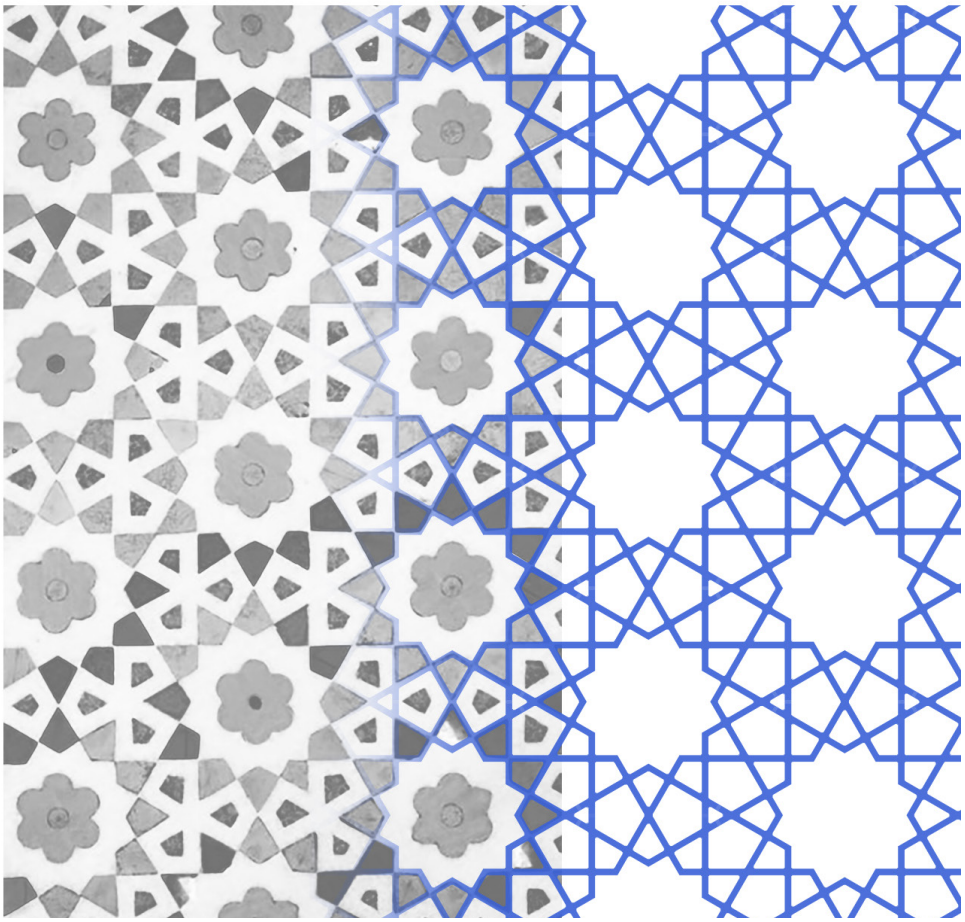
Mosaics in the Itimad ud-Daulah tomb in Agra, India (early 17th century)

Nasrid motifs and calligraphic inscriptions in the Alhambra, Granada, Spain (early 13th century)

Geometric paving in Marrakesh, Morocco (14th or 15th century)

a provincial offshoot but as a distinct tradition of its own" (Bloom, 2020, p. 7), the symbolism that is interwoven with this architectural style stems from the same principles of Islamic culture and religion. Therefore, the following chapter will mainly focus on Islamic architecture as a greater whole and cite authors from an array of different ethnical and cultural backgrounds within the Islamic world. Moreover, this research paper aims to shed light on the way Andalusí builders applied these universal notions of symbolism to their architecture.

Chapter 1
The seven principles of Islamic architecture

British-Malaysian scholar Nisreen Moustafa places Islamic architecture within the context of seven core principles of Islamic religion and culture, to which she attributes its coherent and *"conspicuous aesthetic dimension"* (Moustafa, 2008b). The principles she defines are the following:

1. Unity (Tawhid)
2. Respect (Ihtiram)
3. Sincerity (Ikhlas)
4. Knowledge (Ilm)
5. Balance (Iqtisad)
6. Modesty (Haya')
7. Remembrance (Dhikr)

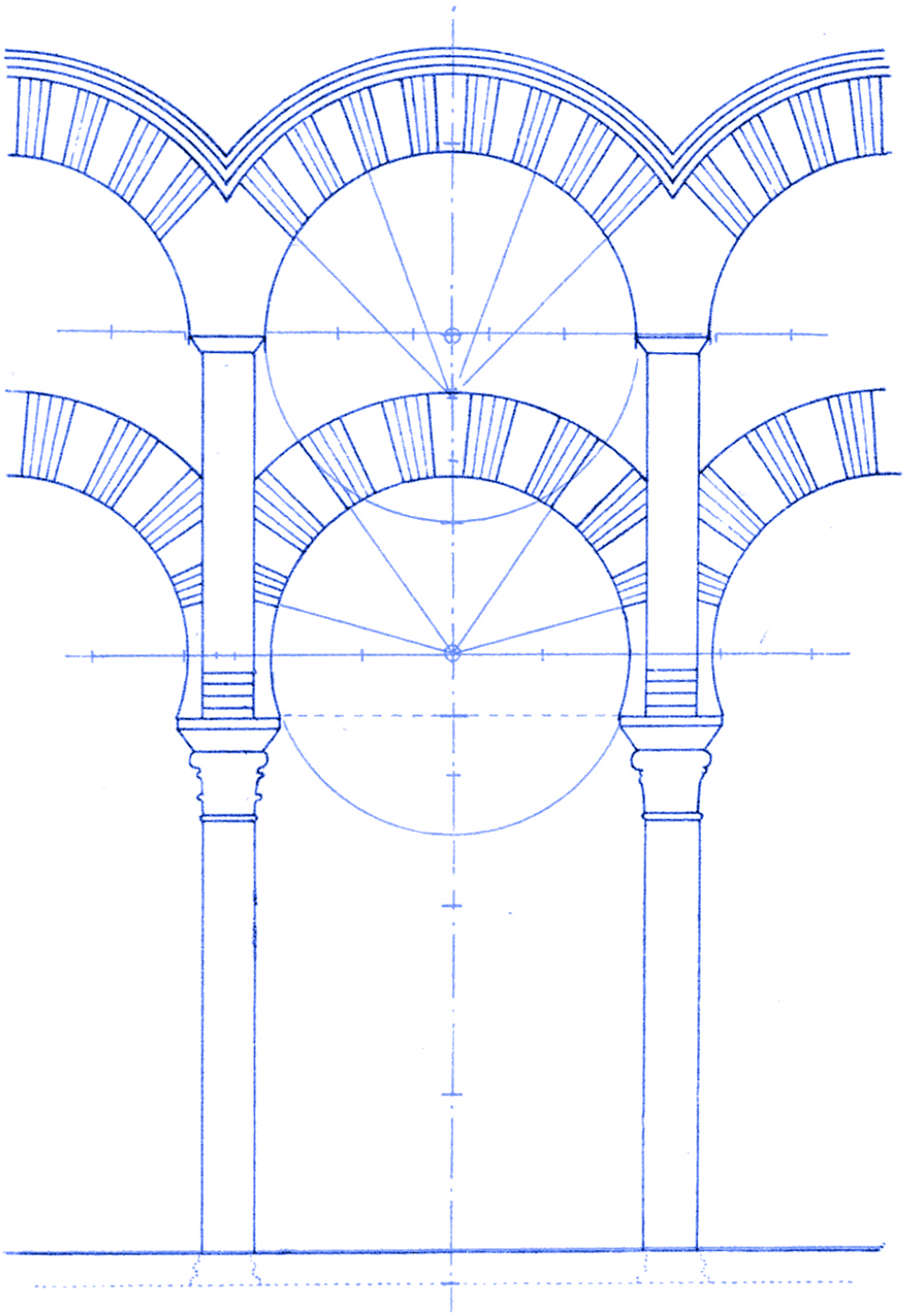
These seven principles are central – but by no means exclusive – to Moustafa's book on Islamic architecture (Moustafa, 2008a) and are mentioned as fundamental to Islamic culture and architecture by many other authors (Nejad et al, 2016; Ribeiro, 2018; Samalavicius, 2022; Von Hantelmann, 2001; Wade & Wichmann, 2017). Aided by these seven core principles, I will lay out the most significant and prevalent symbols of Islamic architecture and by providing examples from Andalusí architecture, I will reveal the relations between Islamic symbolism and its physical manifestations. Finally, four different *modes of translation* are identified in an effort to make these relations more palpable.

Unity (Tawhid)

Tawhid is the first and most important principle of the Islamic religion. It can best be explained by the shahada, or the testimony of faith, through which all Muslims are unified: *'there is no god but God and Muhammad is the Messenger of God.'* The concept of Divine unity permeates the Islamic arts from their coherence to their geometric layouts and the formal hierarchy of its elements. The construction of form and space places man in the divine unity. Striving for Tawhid, and guided by the other six principles, Muslim architects, city planners and craftsmen have favoured the 'perfect' geometries in their designs, with the circle, the square, the spherical dome and the cube forming the basis for Islamic architectural design.
For example, the arches from the Mezquita in Córdoba are

Facing page: geometric construction of the arches in the Mezquita, Córdoba. Image by Emilio Camps Cazorla (1953)

constructed using perfect circles. The Mezquita will be referenced a number of times in this research paper, as it is one of the two case studies that were visited in Andalusia – the other case study being the Alhambra in Granada. Both buildings have been written about extensively and are regarded as the prime examples of Andalusí architecture.



Respect (Ihtiram)

Ihtiram can be understood as a propriety towards God, towards one's fellow man and towards oneself. Its ritual dimension includes the act of ablution: the cleansing of hands, face and feet before prayer. This act of purification dictates the presence of fountains and water features in and around mosques. Purification is of great importance to the Muslim faith and – as Nisreen Moustafa points out – dictates Muslims to enter any house of prayer without shoes on and that the floors of mosques are to be kept ritually clean (Moustafa, 2008a). The Qur'an reads: *"[...] He loves those who keep themselves pure."* (The Qur'an, 2:222, n.d.)

Sincerity (Ikhlas)

Ikhlas is characterised by contemplation and can be understood as the contemplative, spiritual nature of the soul. The contemplative aspects of Islamic architecture can best be understood through the concept of atmospheres, which will be elaborated upon in detail in the following chapters.

Blue is the colour most commonly associated with Ikhlas, as can be found in many instances of religious Islamic architecture (Nejad et al, 2016). For example, the Mihrab of the Mezquita in Córdoba is lined with blue mosaics, containing inscriptions of Qur'an verses.

Knowledge (Ilm)

Ilm is intrinsically tied to the pursuit of knowledge, which is *"incumbent upon every Muslim."* (Moustafa, 2008a, p. 83) As Violet Moller writes about in great detail, Muslim scholars have been the primary driving forces behind the enormous surge of knowledge that took place in the early medieval Islamic world. Through the collection, reprinting and trade of books and religious texts, the fields of astronomy, mathematics, philosophy, theology and poetry all took enormous leaps. (Moller, 2019) This ever-present eagerness for knowledge can be explained through the principle of Ilm and its symbolic representation is generally considered to be that of light. Nejad and his fellow scholars add to this the symbolic meaning of colour, being the refraction and diversity of light, thus representing the diversity of knowledge and having *"a nature of unification and oneness."* (Nejad et al, 2016, p. 1079)

The interplay between light and its absence – and the many architectural manifestations of this duality – has its roots in the principle of Iqtisad: the harmony or balance of all things.

Facing page: blue mosaics around the mihrab of the Mezquita, Córdoba. Image by author (2023)

Balance (Iqtisad)

Iqtisad is the notion of harmony. As Muslims believe, the midway point of all polarities is the most harmonious. As with all Islamic practices, this belief applies to both daily life and religious rituals, and implies both moderation of action and a balance of aesthetic principles. Interwoven with the principle of balance is the symbolic colour of black. It is the colour of the Ka'ba and the main symbol of metaphysical harmony, mirroring the fact that it is built where Muslims believe the cosmic axis intersects the earth (Nejad et al, 2016).

Balance greatly influences the notions of hierarchy, proportion and symmetry within Islamic art and architecture, where the concept of symmetry is symbolically tied into the figure of a balance scale, which makes numerous appearances in the Qur'an (Wade & Wichmann, 2017). Symmetry is important in many religious and profane architectural styles, but none employ its concepts so numerously and consistently as Islamic architecture. The Alhambra in Granada extensively makes use of water to act as a mirror and reflect the buildings that are on either end of the oftentimes elongated rectangular ponds.

Modesty (Haya')

Nisreen Moustafa associates the principle of Haya' with a certain reservedness of everyday life and family values. She quotes the Persian poet Jalal ad-Din Rumi: *"Be like the earth in modesty and humility"* (Moustafa, 2008a, p. 115) Apart from virtuous modesty being interwoven with Muslim life, its manifestations can be clearly seen in Islamic architecture. In the Mezquita in Córdoba, this modesty takes the form of the many screens that line the windows of the mosque. The screens provide a level of seclusion and privacy from the outside. The screens are ornately carved out of wood and contain intricate geometric patterns. Similar screens can be found throughout the Islamic world and often play a part in secluding private courtyards from the public streets.

Remembrance (Dhikr)

Dhikr is characterised by repetition and rhythm. The ritual dimension of Dhikr can be found in the rhythmic chanting of prayers done by Muslims. This seventh principle can be found in the Alhambra, taking form as repeating inscriptions of Qur'an verses along its walls, reminding the believer of their faith and prescribing a virtuous life.

Facing page: water feature creating symmetry in the Alhambra, Granada. Image by author (2023)

Dhikr can be found in the other case study as well: the Mezquita is built from more than 1200 columns than extend the entirety of the mosque, seemingly interweaving with each other and giving the illusion of endless repetition. Walking through the mosque, one feels small and insignificant, surrounded by such an expansive space that exceeds all human proportion. Geometric repetition can not only be found in the layout of the mosque, but also in its details, as can be seen in the intricate geometric patterns of the mosaics. Remembrance is commonly symbolised by the colour green, having associations with the descriptions of paradise (Nejad et al, 2016).

Below: Qur'an verses inscribed in the walls of the Alhambra, Granada. Image by Motaz Writes (2023)

Numerical symbolism

As in all Abrahamic religions, numbers play a large role within Islam (Ayonrinde et. al, 2021). As these numbers are attributed significance by their prevalence in the Qur'an, rather than by their relation to the seven principles mentioned above, the symbolism of numbers in Islam has been separated into its own sub-chapter.

The number 1 is an exception to this observation, as it is often associated with the shahada, being an example of Tawhid. The number 4 is however distinctly present in the Qur'an and is similarly very prominent in the geometry of Islamic art and architecture. An example is the four rivers of paradise, which are mentioned in all Abrahamic religions. In the Qur'an, paradise is described as *"gardens beneath which rivers flow"* (The Qur'an, 9:72, n.d.)

In Islam, the number 5 plays a large role. For example, the five daily prayers of Islam reflect the ritual side of this number and the often used five-pointed star derives its shape from the five pillars of Islam:

- Shahada (testimony of faith);
- Salat (prayer);
- Zakat (alms);
- Sawn (fasting);
- Hajj (pilgrimage).

(Ayonrinde et. al, 2021)

There are numerous sources describing the symbolism of Islam, in varying degrees of detail and accuracy. There are, however, no scholars that have categorised the different ways in which these notions of symbolism are manifested in Islamic architecture. Providing a new angle of incidence, this categorisation is elaborated upon in the next chapter.

Chapter 2
Modes of translation

It is tempting to classify Islamic architecture by looking at its form language. However, within the context of the Islamic religion and its cultures, it makes more sense to make distinctions based on the underlying traditions and symbols. It could therefore be argued that *form language* is somewhat of a meaningless term, as form is derived from the underlying culture and its symbols and traditions. For example: both Roman and Islamic cultures prominently feature mosaics of glazed tilework – indeed, the former is believed to have influenced the latter (Chen, 2008; Moller, 2019) – however to categorise both into one form language would be superficial. Rather, the two distinct art forms should be regarded as parts of their own respective cultural background.

This being said – and recognising the importance of cultural, historical and religious context – the translation of symbol into edifice can only be studied by isolating the physical forms and, following this method, four *modes of translation* are identified.

The many ways in which Islamic architecture makes the transition from symbol to edifice can be summarised in different ways. For example, Behnam Ghasemzadeh (2013) notes the distinction between primary and secondary symbols: primary symbols being the *"direct expression of the subject or object being symbolized"* and secondary symbols being *"intrinsic in meaning and [representing] contradictory states such as life and death, or darkness and light."* (Ghasemzadeh, 2013, p. 66). In this research paper, however, it is concluded that the ways in which symbolism is manifested within Islamic architecture can be distilled down into four distinct modes of translation. The identified modes are as follows:

Prescriptive:	*Invoking a certain ritual or state of being; encouraging a virtue;*
Descriptive:	*Abstracting symbolic notions into intangible spatial qualities;*
Manifestative:	*Representing symbolism into physical objects;*
Arithmetical:	*The numerical or geometrical interpretation of symbols.*

The prescriptive mode is arguably the most important, because it is one of the main ways in which the Islamic religion bestows its values and virtues upon its believers. An example of the prescriptive mode of translation is the calligraphic inscriptions of Qur'an verses on the walls of the Alhambra complex in Granada. The inscriptions are a manifestation of Dhikr (remembrance) and remind the reader of the commandments of the Qur'an. Another example ties into the symbolism of water and its uses within Islamic religion and culture, namely the typology of bathhouses, fountains and hammams. The symbol of purity is prescribed in Islam by the ritual of ablution: cleansing before prayer. Form derives from symbol through the prescription of the ritual of cleaning oneself.

The descriptive mode of translation involves intangible qualities of space being used to convey certain symbols. For example, light and colour are often used to symbolise knowledge and wisdom. The contrast between daylight and its absence is made use of extensively in Islamic architecture as well, symbolising the principle of Iqtisad

Facing page: entrance gate of the Alhambra, Granada. Image by author (2023)

(balance). The omnipresent use of symmetry as a spatial quality in Islamic buildings can also be understood from the descriptive mode of translation.

The manifestative mode is the most literal means of translating symbolism into edifice, namely one where symbolic entities are manifested into physical objects. An example of this mode of translation is the lush gardens that can be found in courtyards throughout the Islamic world: they are the physical representation of the gardens mentioned in the descriptions of paradise within the Qur'an.

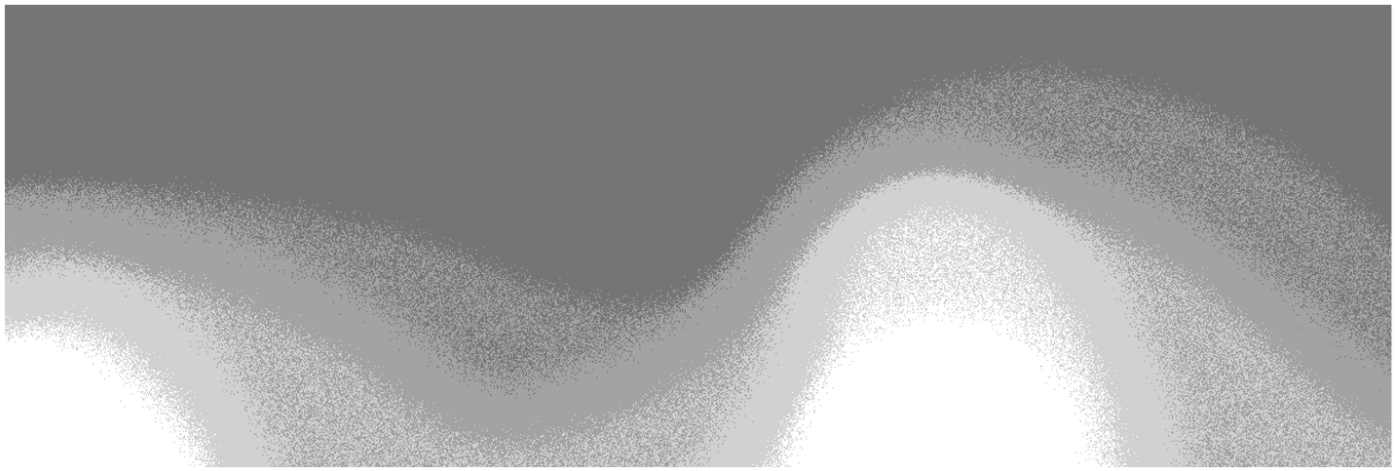
Finally, the arithmetical mode consists of numerical or geometrical interpretations of symbols. Examples of this mode are the 'divine' proportions that can be found in plans of religious buildings (the Ka'ba of course being the prime example), symbolising unity and divinity; or the intricate repeating geometric patterns that are found in space-dividing screens and in the traditional Andalusí Zellij mosaics, representing the infinity and divinity of God.

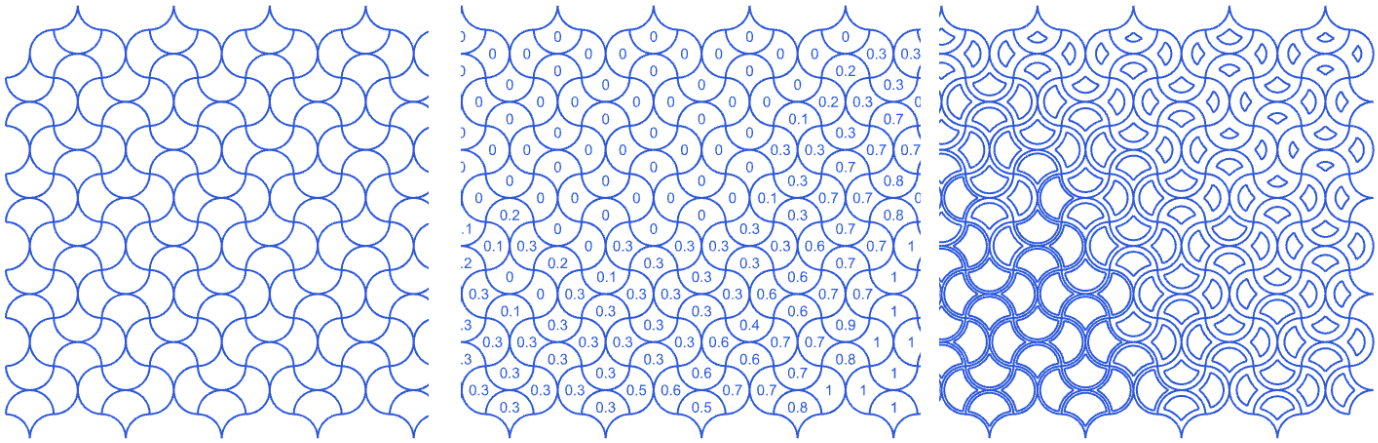
Facing page: construction of the facade pattern, depicting rippling water. An example of the descriptive mode of translation. Images by author (2024)

Applying the modes of translation

For an architectural design project that is not rooted in religion, unlike the studied symbolism of Islamic and Andalusí architecture, the modes of translation are unequally applicable. The prescriptive mode of translation is of less relevance, as it encourages certain religious virtues. The manifestative mode, too, does not have the same applicability as it has in architecture that stems from religion. After all, it is religious symbolic objects which are manifested into physical objects through the manifestative mode. In contrast, the descriptive mode and the arithmetical mode can be very suitable for conveying symbolism. Architectural properties such as material, colour, shape, proportion or orientation could all be informed by symbolic notions that the architect chooses to incorporate into the design. For the hypothetical brief of an Indonesian embassy, one could design a heptagonal building (arithmetical – after the seven provinces of Indonesia), featuring red and white masonry (descriptive – showing the colours of the Indonesian flag) and surrounded by flowers that bloom in August (descriptive – commemorating Indonesia's independence day on August 17th).

Within the symbolism of Islamic architecture, unity and harmony are the primary and most prevalent principles and therefore a large number of symbols can be traced back to Tawhid. An embodiment





Base pattern

Bitmap values

Final facade pattern

of this unity and harmony is the use of material and nature's resources: through the use of water's cooling properties, earth's insulative and protective properties, light and shade and the properties of wind (Moustafa, 2008a). Especially water is made use of extensively in Islamic architecture and its typologies. In the next chapter, the role of water and its use as a symbolic device within Andalusí architecture is explored. The concept of atmospheres will be introduced and the phenomenological qualities of water will be discussed.

Part two: Mayra - the giver of life

"Are the disbelievers not aware that the heavens and the earth used to be joined together and that God ripped them apart, that He made every living thing from water?"

The Qur'an, The Bee, 16:10, translation by Lapham's Quarterly, n.d.

Madrid is known as the city of water. Historically as well as in present times, water is inseparably connected with the city. Throughout Madrid, a network of underground waterways supplies the city with fresh water. The chosen site for the architectural graduation project features one of the many aqueducts of this network emerging above ground: a physical artefact of the importance of water in the city. Madrid even owes its name to water, deriving from the Arabic word *mayra*, meaning *water*, as in *the giver of life*. The importance of water in the city of Madrid has informed the brief of the architectural graduation project and has led to the placement of a particular focus on the historical, symbolic and phenomenological qualities of water within the research. This second part of the research therefore revolves around water as the giver of life, and in the next chapter the many qualities of water and its significance in Islamic architecture and in the architectural graduation project will be discussed.

Chapter 3
Water as symbolic device

Fresh drinking water is a necessity in the arid deserts out of which the religion of Islam spread. Oases have always been sources of great abundance within the dry Middle Eastern climates and water has always been the primary element to sustain life. Thus, first and foremost, water plays a very practical role within the architecture of Islam. Out of this necessity, however, arose the symbolic attributes of water and the somewhat poetic notion of water being the giver of life, almost as a deity of its own: able to sustain life by its presence and leaving death in its absence. In this sense, water is used as a symbolic device within Islam, being mentioned numerously in the Qur'an, both in the story of creation and in the description of paradise (Samalavicius, 2022).

Especially within Islamic architecture, water is often in motion – gushing, spouting, flowing – symbolising both movement and purity, refreshing itself constantly (Ribeiro, 2018). This constant purification is very important to the ritual of ablution, giving form to the typology of the Islamic hammam and the cleansing area in the typology of the mosque. The historic importance of the bathhouse typology – in both the Islamic period and the earlier Roman period of the Iberian Peninsula – has motivated the decision to design a contemporary bathhouse as graduation design project.

Islamic architecture very prominently features the integration of natural elements in its buildings. The garden typology derives from this integration of nature and architecture, symbolising the Islamic image of paradise (Samalavicius, 2020; Von Hantalmann, 2001; Wade & Wichmann, 2017). A lush garden provides a courtyard with much needed cooling and shading, but also serves as a place for contemplation and introspection, balancing functionality and spirituality.

The atmospheres of water

Water is also used for its many sensory qualities. Its reflective properties are used to create symmetries and mirror its surroundings, the sound of flowing water is used to invoke a meditative state and filter out ambient sounds and speech, and its cooling properties are used to climatise spaces and provide the cooling that is so critical in the hot climates of the Islamic world.

Facing page, top: acueducto de Amaniel, Madrid. Project site for the graduation design project. Image by Madrid Film Office (2019)

Facing page, bottom: el Bañuelo, the historic hammam of Granada. Image by Antonio Martínez (2018)

Samalavicius (2022) justly notes the symbolic role of water within Islamic architecture and culture is hardly exclusive and many other – if not all – religions and cultures place great importance upon water. In modern times, still, many phenomenological, poetic and even mystical qualities are attributed to water. Gaston Bachelard writes about the oneiric qualities of water in his essay Water and Dreams (1942). The sisters Jen and Lorraine Webb eloquently paraphrase Bachelard's poetic observations in their essay reviewing Bachelard's work: *"[Water is] an oneiric medium, after all: unstable yet always finding its own level; possessed of strong surface tension that is easily pierced; taking on viscous properties as easily as it vaporises; adhesive, and yet a universal solvent; constant and yet never the same."* (Webb & Webb, 2022, p. 7)

The key word in understanding these phenomenological, poetic and mystical qualities of water is *atmosphere*. Islamic architecture makes use of atmospheres in conveying its core principles, like serenity, remembrance and unity, and water plays an undeniably large role in the creation of these atmospheres. The cooling properties of water and the sound of trickling and splashing provide a space with calm and tranquillity. Its surface reflects and refracts the light of the sun, creating a silent dance of light on the surrounding surfaces. Its purifying nature evokes connotations with cleansing and cleanliness. All these qualities can be found in abundance in the Alhambra in Granada. Because of the major role that water plays in this monumental example of Andalusí architecture, the following chapter is dedicated to the atmospheres of the Alhambra and how water contributes to the tranquil and serene atmosphere that can be felt throughout the complex.

Chapter 4
The atmospheres of the Alhambra

The Alhambra has always had a certain allure, enchanting people ever since its construction in 1238. Despite its frugal exterior – as is characteristic of Andalusí architecture – its interior is very rich in ornamentation. In the 19th century, when the Alhambra had fallen into disrepair, Washington Irving revived widespread interested in the forgotten and unmaintained fortress with his book Tales of the Alhambra. He writes: *"Perhaps there never was a monument more characteristic of an age and people than the Alhambra; a rugged fortress without, a voluptuous palace within; war frowning from its*

Facing page: light reflecting off a water feature in the Alhambra, Granada. Image by author (2023)

battlements; poetry breathing throughout the fairy architecture of its halls." (Irving, 1832, p. 259)

The fascination Irving had for the Alhambra is not surprising: the complex is simply stunning. The abundance of the Andalusian sun made for a perfect setting for the medieval Muslim builders to utilise the powers of contrast, light and dark, which give definition to the sequence of many interior and exterior spaces. Dazzling mosaics line all surfaces of the palace rooms, secluded courtyards where only birdsong and the calming trickling of water can be heard are spread throughout the complex, letting in some direct sunlight but remaining sheltered from the summer heat by thick walls. The stone walls enclose lush gardens that emanate an atmosphere of quiet, cool and harmony.

Most notably though, water is used in all its different symbolic and functional manifestations. Streams trickle down the sloped paths, bodies of water cool the inside spaces and elaborate irrigation systems provide the gardens of the Generalife with water from the underground cisterns. The gardens prominently feature sprouting water features, strengthening the connotations with life and renewal that the vegetal gardens evoke. Spanish architect and historian Fernando Chueco Goita writes: *"[water] is fluid dispersed in blue veins that run through the architectural body, like venous arteries run through the human body, but always life-giving and omnipresent."* (Goitia, 1999, p. 287) This quote not only shows the fascination for the Alhambra, but also emphasises the great role that water plays in the complex, weaving through its halls and pathways.

The serene qualities of the Alhambra have been second to none for centuries and continue to intrigue visitors to this day. However, the use of atmospheres in architecture is not unique to the Alhambra or, indeed, Andalusí architecture. In the next and final part of this research paper, the application of atmospheric-architectural design within contemporary architecture will be discussed and an answer will be given to the final research question: *how can the Andalusí translation of symbolism into atmosphere be applied to contemporary architecture?*

Facing page: the fortified towers of the Alhambra, Granada. Image by author (2023)

Part three: **Atmospheric design**

Material is endless. Take a stone: you can saw it, grind it, drill into it, split it, or polish it – it will become a different thing each time. Then take tiny amounts of the same stone, or huge amounts, and it will turn into something else again. Then hold it up to the light – different again. There are a thousand possibilities in one material alone."

Peter Zumthor, 2006, p. 25

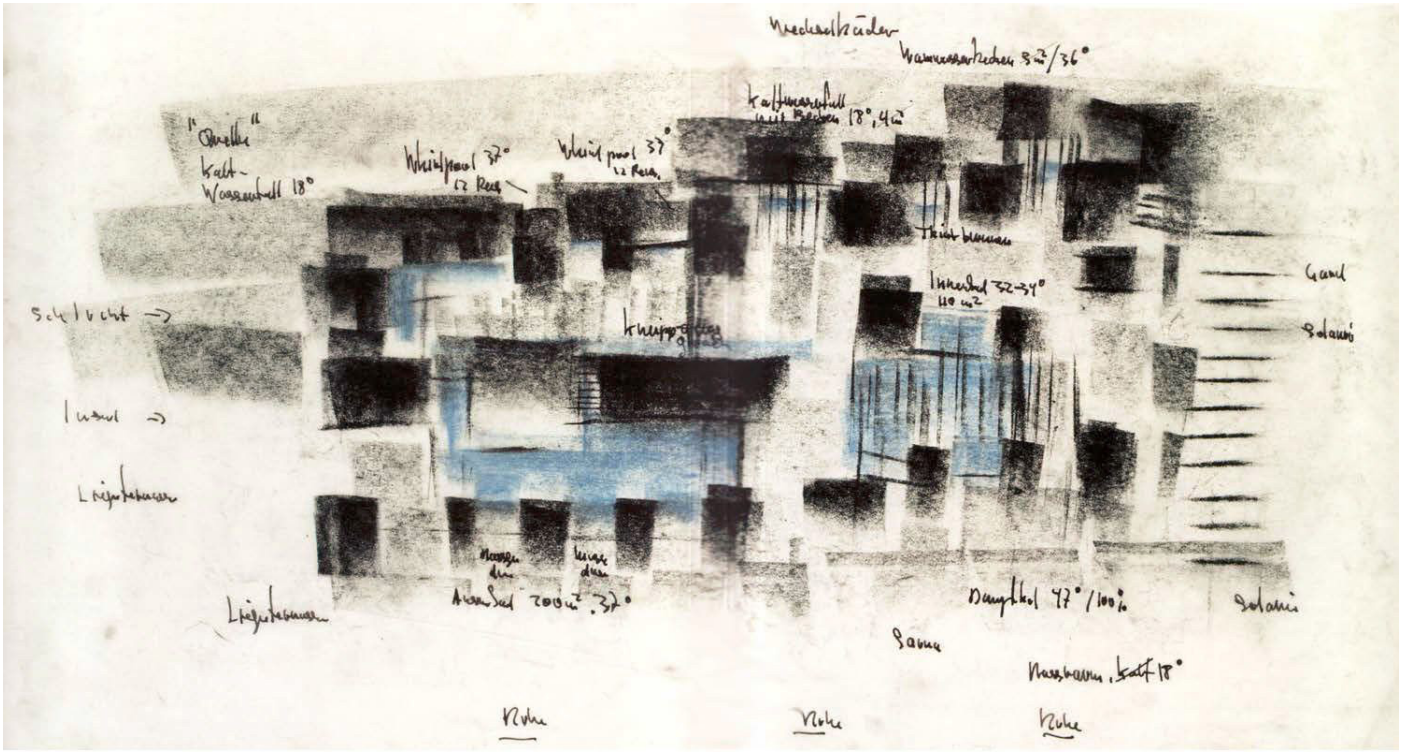
In this third and last part of the research paper, an example of contemporary, secular atmospheric architecture – the project Therme Vals by Peter Zumthor – will be analysed. Next, Zumthor's atmospheric-architectural design methodology will be viewed in light of the studied literature and finally, the application of this methodology through design experiments will be discussed.

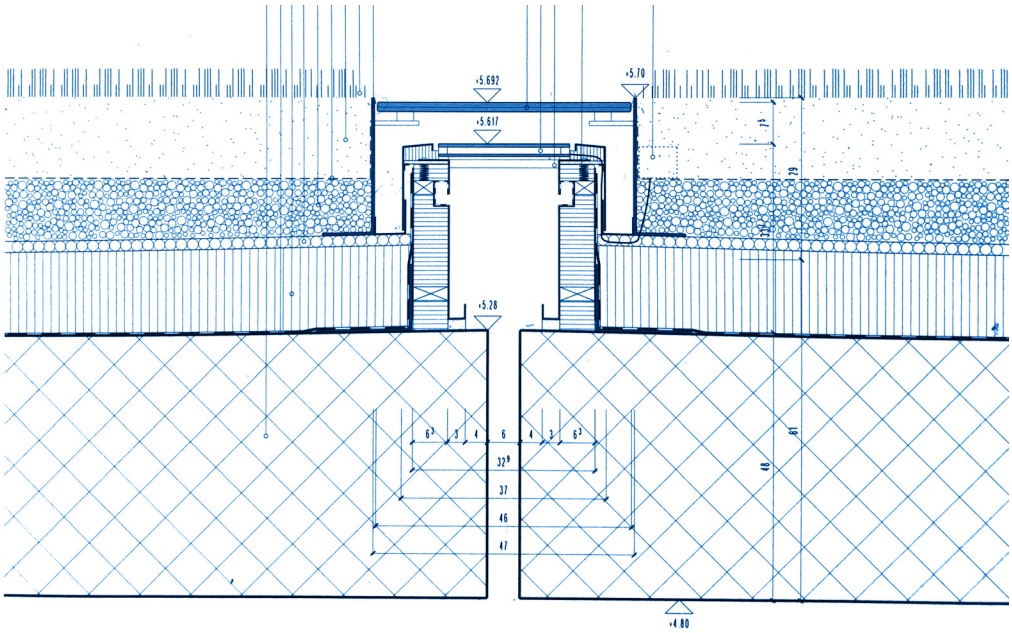
Chapter 5
Atmospheres in contemporary architecture

Contemporary architecture is completely deprived of symbolism and lacks any effort to stimulate its users other than in pragmatic ways. However, this does not apply to all contemporary architecture. In fact – as the principle example will illustrate – some architects create a sublime atmosphere in their projects. This project is Therme Vals (completed in 1996) by Swiss architect Peter Zumthor.

This project has been chosen as a reference both for its atmospheric qualities and its relevance to the design brief, being a public bathhouse. Peter Zumthor, widely known for his emotionally evocative architecture, defines atmosphere as the alchemy between elements, tangible or intangible. *"In Vals,"* he says in an interview with VernissageTV about the design of his thermal spa, *"it's stone and water, light and shadow. So, I need the shadow, and the light to make this chemical reaction happen. And I believe that the water loves the stone, and the stone loves the water. This love affair already exists, and the light makes it visible."* (VernissageTV, 2009)

During the early stages of the design process, Zumthor made a number of sketches illustrating the preliminary tectonic and atmospheric properties of the project. The most striking aspect of these sketches is the experience they convey. The images are very crude, yet succeed in communicating some of the core principles of the building: the interplay between light and dark and the contrast between water and natural stone. This design approach – starting with the envisioned atmospheric qualities instead of the pragmatic design brief – is what might be called an atmospheric-architectural design methodology. This methodology has been used in the design process of the architectural graduation project, as informed by Zumthor's atmospheric approach to architectural design. The ways in which this methodology has informed design decisions is elaborated upon in chapter 6.





Left: detail of the slits in the concrete roof slabs of Therme Vals. Image by Peter Zumthor (2007)

Zumthor makes the *"love affair"* (VernissageTV, 2009) between light and stone tangible by creating slits in the concrete roof slabs, allowing light to seep into the otherwise dark and monolithic spaces below. Through the addition of tinted glass above the skylights, the incoming daylight is coloured blue, emphasising the cave-like qualities of the bath that sits centrally in the architectural ensemble. Architecturally, the building's atmosphere is in the details. Behind the minimalist materialisation of the monolithic stone blocks hides a complex system of disjointed concrete slabs that allow for thermal expansion and sealing of the baths, all without compromising the interplay between light and stone.

> *"Daylight, the light of the sun, is one of the most beautiful things that exist. [...] We need the light in order to live, the plants need it, and the buildings benefit, too. You have certainly noticed already that there are buildings which are rather ugly, and the sun is capable of ennobling them."*
>
> (Peter Zumthor, VernissageTV, 2009)

The atmospheres that Zumthor creates are not based upon religious symbolism. Rather, the architecture of Therme Vals conveys the nature of the materials used in the project and the sunlight that is let in through the slits in the roof slabs, invoking a sense of calm and the feeling of being sheltered. The application of atmospheric-architectural design within a contemporary, secular context is elaborated upon in the next chapter.

Double spread: openings in the concrete roof slabs of Therme Vals. Image courtesy of wikimedia commons (2014)

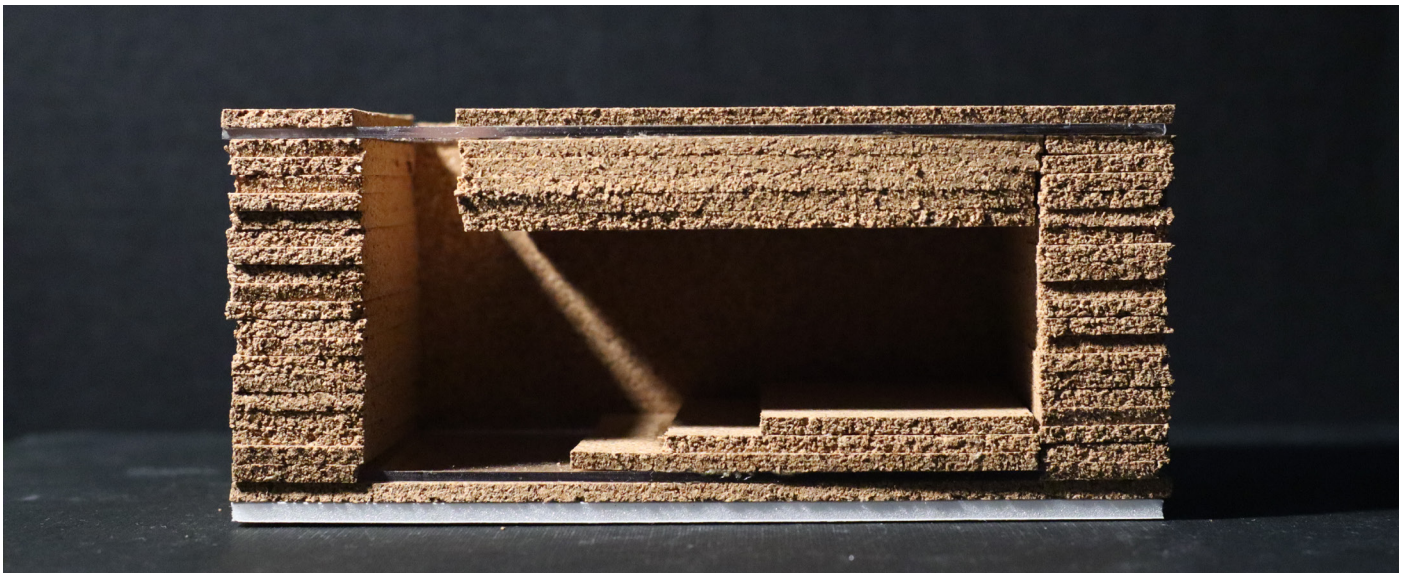
Chapter 6
Designing atmosphere

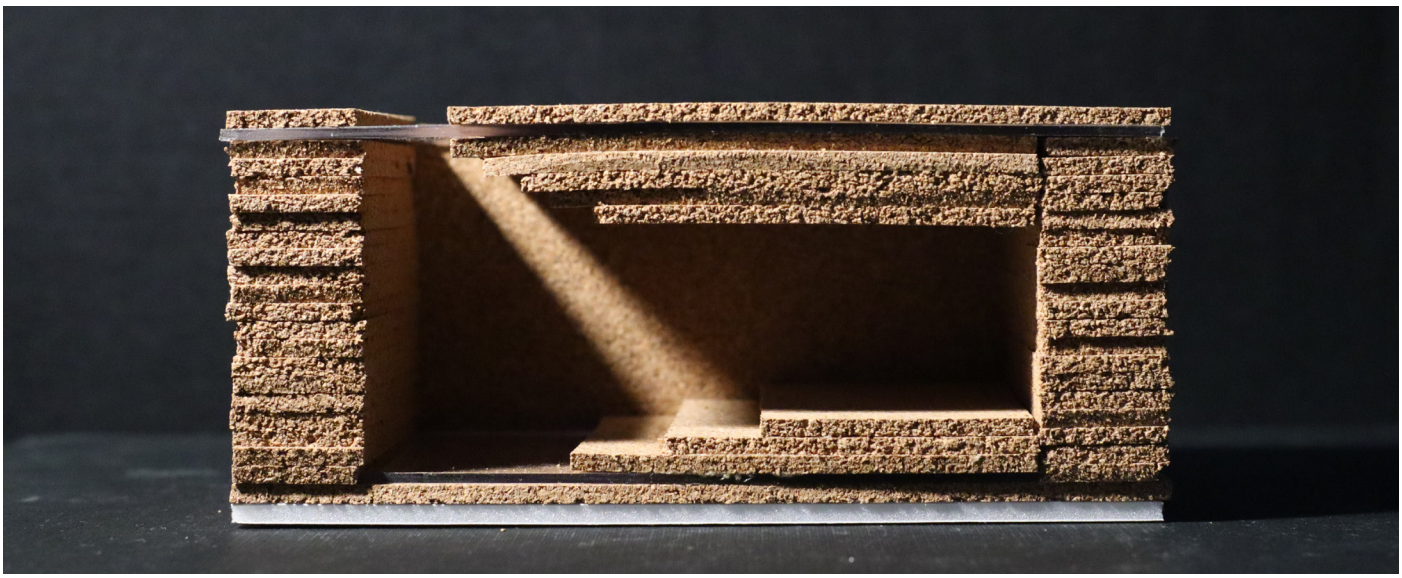
The final chapter of this research paper is answering the second research question: *how can the Andalusí translation of symbolism to atmosphere be applied to contemporary architecture?* Part of this question is experimental, and can be answered through applying the theory from this research to a design project. Another part, however, lies in identifying a methodology for applying said theory to the process of architectural design.

The methodology used in the graduation design process is that of atmospheric-architectural design: to design spaces starting from atmosphere, an experience or a state of being, rather than solely from pragmatic or functional requirements. It should be mentioned that this methodology is not substituting other "traditional" design methodologies: pragmatic and functional site conditions still dictate certain aspects of the design, but for instance the spatiality and materiality of a space can be informed by an atmospheric-architectural design methodology.

Answering the experimental part of this second research question has been done through design research, in the form of making sketches and crafting several study models. An important facet of both these design exercises was abstraction: capturing atmosphere – a certain play with shadows, a 'warm' combination of materials or invoking the sense of feeling small – is of a higher priority than physical accuracy. For example, in a pair of pigmented gypsum study models, the interplay of finish and colour was experimented with, resulting in the decision to design the walls of the subterranean baths using sand-cast concrete. Even though faults in the gypsum mould caused the steps to crumble, the impression of colour and texture are preserved. In another study model, the incidence of light into the underground bathing spaces was studied. By focusing only on shape and orientation towards a light source, and disregarding other factors such as material, scale, and colour, the model proved to be very effective in experimenting with the creation of an atmosphere based on light and shadow. The making of this model informed the geometry of the light shafts that allow for natural light to enter the subterranean spaces of the architectural graduation design.

Facing page: cork study models for studying the incidence of light into the underground bathing spaces. Images by author (2024)





The historic importance of water has been a major driving factor in the design of the bathhouse. The facades have been designed to display varying images through materialisation of a repeating geometric pattern. Through the undulating shapes of the base tile it is made of, the pattern itself invokes connotations of water and the motion of flowing. The images that are displayed in the parametrically designed façade are based upon the history of water on the building site and in Madrid, showing abstracted images of waves. This architectural interpretation of water can be viewed as part of the descriptive mode of translation and shows how in the methodology of atmospheric-architectural design – just as in Islamic architecture that has been the basis and inspiration for this research – the symbolic, the historic and the pragmatic can go hand in hand.

Facing page: gypsum study models. Images by author (2024)

Chapter 7
Conclusions

The effectiveness with which Andalusí architecture succeeds to convey notions of symbolism can be traced back to its use of atmospheres. These atmospheres are manifested through different means of translating symbolism into built form, which have been categorised into four distinct modes of translation: descriptive, prescriptive, manifestative and arithmetical. The ways in which the seven principles of Islamic architecture, as identified by Moustafa (2008a), are manifested into edifice can be understood through these modes of translation.

The role of water within Andalusí architecture is of great importance. Equally significant is the role of water within Madrid, both historically as currently. The city owes its name to the Arabic word *mayra*, meaning *water*, or *giver of life*. Within Andalusí architecture, water is the bearer of many symbolic connotations, such as the ritual of ablution, renewal, purification, movement, and life. Moreover, its physical properties are often used to create symmetry, reflection, and cooling. The historic, cultural and religious significance of water has informed the brief of the architectural graduation project: a public bathhouse. The reinterpretation of this ancient typology pays homage to the symbolic importance of water, as well as to the history of water within the city of Madrid. The act of enriching the design of the architectural graduation project by drawing from the Islamic way of translation symbolism into edifice is an example of what Khaled al-Sultani defines as *intertextuality* (al-Sultani, 2012).

Facing page: aqueduct in the Generalife gardens of the Alhambra, Granada. Image by author (2023)

In Islamic architecture, atmospheres convey religious symbolism and invoke a state of contemplation and serenity, conveying the *"oneness"* (Nejad et al, 2016, p. 1079) that is the basis of all Islamic architecture. Similarly, in contemporary architecture, atmospheres can be used to invoke a certain state of being, though not necessarily with spiritual or religious connotations. Through the use of atmospheric-architectural design – as seen in Peter Zumthor's approach to designing Therme Vals – spaces can be designed with phenomenological and atmospheric qualities as a starting point. By applying this methodology to the architectural graduation project of a contemporary bathhouse in Madrid, a more atmospheric and symbolically rich design is achieved, reassimilating the lost qualities of the historic Islamic architecture and improving the quality of the final design.

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Appendices

a. **Reflection**

b. **Mapping: Madrid's fountains**

c. **Survey maps**

Appendix a.
Reflection

Brief design description

The architectural graduation project consists of the redesign of a public park and the addition of a public bathhouse. The redesign of the public park - the gardens of Carlos Paris in the Bellas Vistas neighborhood in north Madrid - has been aided by a neighborhood survey that was conducted by Improvistos Creatividad y Territorio and includes the exposure of the historic aqueduct, the improvement of public walkways and the addition of more publicly accessible green spaces. The concept of seclusion, which was inspired by the Islamic principle of Haya', informed the design decision to lower the ground level of the park by 3 meters.

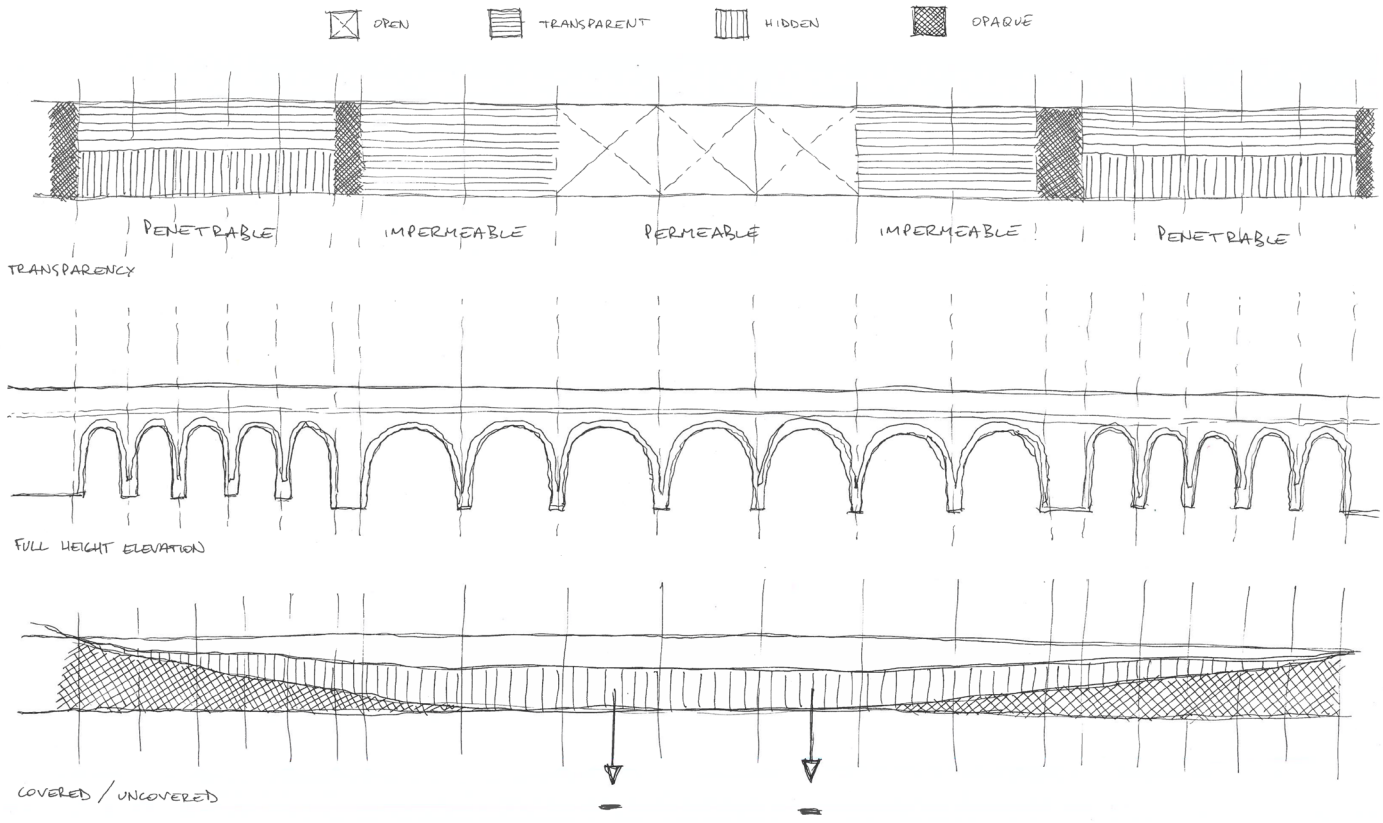
Facing page: Concept drawings of the design strategy for the exposure of the aqueduct. Images by author (2023)

The programme of the architectural design was chosen to be a bathhouse in an effort to reinterpret the historic typology of the Roman bathhouse and its successor, the Islamic hammam. The building consists of two separate parts: from the sloped terrain emerges a meandering volume that houses the circulation, internal patios, small baths, dressing rooms and a cafe; and below ground a series of subterranean spaces with large pools. The subterranean *caverns* are vertically connected to the upper volume through a number of light shafts.

Case 1 - Redesign of the gardens of Carlos Paris

A number of news articles were found reporting about the widespread discontent with the gardens of Carlos Paris. The park had been redesigned and transformed during the COVID-19 lockdowns, but surrounding residents were unhappy with the result. The year prior, they were involved in a large survey to identify the issues with the previous park design and suggest a number of new interventions for the future remodelling of the park. The results of this survey were, however, never used.

Through extensive research and contact with multiple actors, among which the municipality of Madrid, the neighborhood survey document was retrieved. The issues of the park that were identified in the survey (poor pedestrian accessibility, hindrance from visual barriers, and an unused potential of the historic aqueduct, to name a few) and the interventions proposed by the participating residents (addition of a petanque pitch, improval of the walkpaths,



The nonsense of the gardens of Carlos Paris in Bellas Vistas

An area " underused " with " great potential "

As a result of this process, a widely shared diagnosis was reached: the area had serious maintenance problems, accessibility difficulties in the environment, as well as an excess of obstacles and visual barriers.

Left: excerpt from a news article reporting about the gardens of Carlos Paris. Image by El Diario (2023)

and inclusion of the derilict plot at the south end of the park, among others) served as a basis for the redesign of the park. See appendix c. for a selection of maps from the survey and the proposal for the redesigned park.

As a next step in the design process, the results from the survey were combined with the initial design concepts. The concept of exposing the aqueduct was further backed by the identification of

Left: study model for the proposed redesign of the public park. Images by author (2024)

Facing page: participation of residents in the neighborhood survey for the gardens of Carlos Paris. Image by Improvistos Creatividad y Territorio (2018)

the unused potential of the aqueduct. The removal of soil and the lowering of the park's ground level, however, proved to be difficult for satisfying the demand for better pedestrian accessibility. To get a firm grip on the height differences and the required space for accessible circulation, a rough study model was made out of cardboard on a 1:500 scale. Through the process of making the model, a number of insights were attained and design changes were made consequently.

Firstly, the building volume - which was designed to have a sloping floor slab, providing a subtle but substantial height difference while remaining accessible for wheelchair users - was changed to be built on a level floor slab, gradually receding into the hillside instead of sloping upwards parallel to it. This design decision greatly reduced complexity and gave way to a larger degree of freedom in expressing the facades and the roof structure.

Another design change was the addition of circulation plateau on the +3000 level of the park. This plateau allows for uniterrupted circulation, while still providing vistas of the aqueduct and plenty space for ramps and stairs.

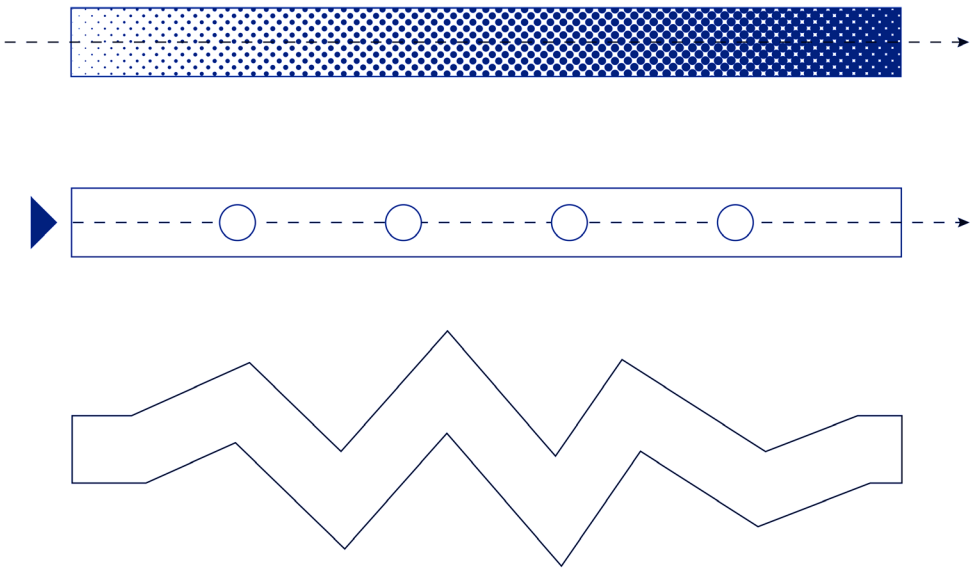
Lastly, the reliance on the neighborhood survey resulted in the addition of better walkways, the mitigation of visual barriers, the improvement of green spaces, and a more firmly substantiated design overall.

Case 2 - Evolution of the floor plan

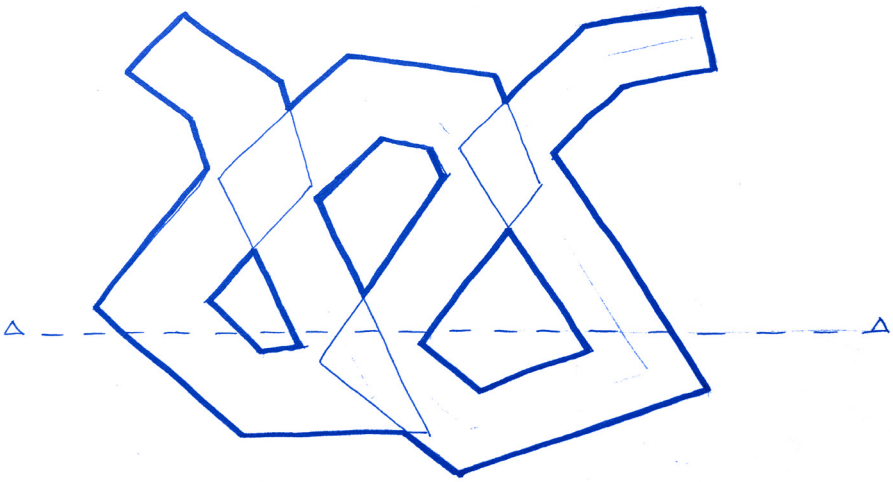
The floor plans of the building have undergone many iterations. Starting from the concept of a linear gradient - one that transitions from light to dark, from public to private, and from exposed to buried - the plan was conveived by folding up a linear volume. During the P1 phase, the building volume was erratic and meandering, but as the design process continued, the volume was altered to occupy a larger portion of the plot - a design decision informed by the study model show in case 1, where the building volume was found to be too slender and timid.

By widening the volume, the original shape and its underlying concepts became less visible, eventually resulting in the visible parts of the meander appearing to be anomalies, as opposed to part of a spatial concept.

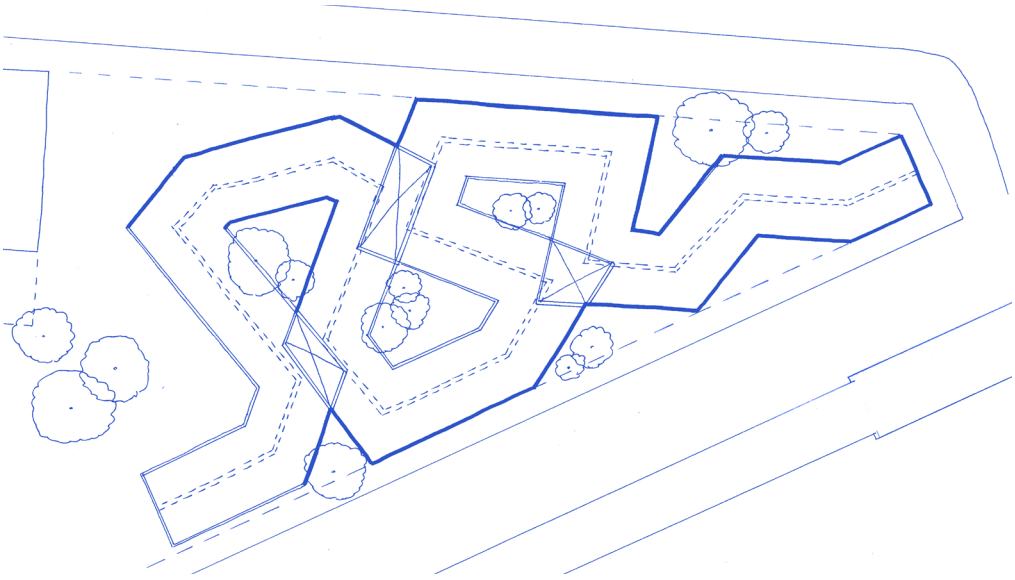
The result is a somewhat diluted shape: neither entirely adhering to the concept of the folded-up linear programme, nor fully occupying the plot by maximally widening the volume. The outer wall on the east of the building (topmost in the plans on the facing page) has become completely straight, making the recess of the wall into an internal void. The western exterior wall, however, still contains the jagged edges that were present in the first iterations of the plan. To improve conceptual and spatial consistency in the plans, more iterations are required and will be made in the period leading up to P4 and P5



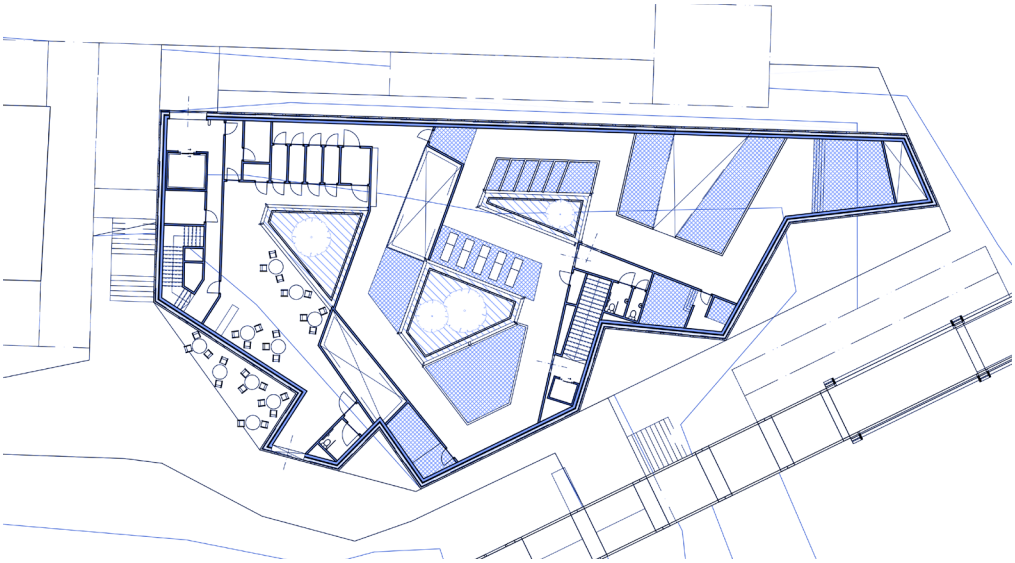
Left: spatial concept diagram, showing the linear gradient and the foldeding of the volume. Image by author (2023)



Left: concept floor plan, made during the P1 phase of the graduation. Image by author (2023)

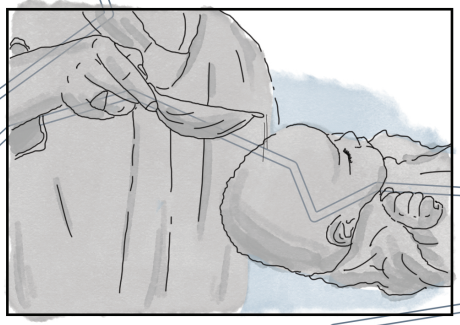


Left: preliminary floor plan, made during the P2 phase of the graduation. Image by author (2024)



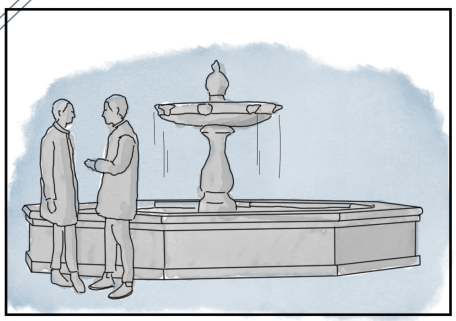
Left: preliminary floor plan, made during the P3 phase of the graduation. Image by author (2024)


1. Viaje Abronigal Bajo
2. Viaje Abronigal Alto
3. Viaje Fuente Castellana
4. Viaje Alcubilla
5. Viaje Amaniel
I. Islamic city wall
II. First Christian city wall
5
4
1
I
2
3
II
Plaza de los Carros



Baptism

In the now mostly Christian Iberian peninsula, water took on symbolic and ritual form in the rite of baptism.



Socialising

In modern times, fountains function as a meeting place and as a place to rest, cool down and observe city life.

Fountains

Viajes de agua

Arabic gardens

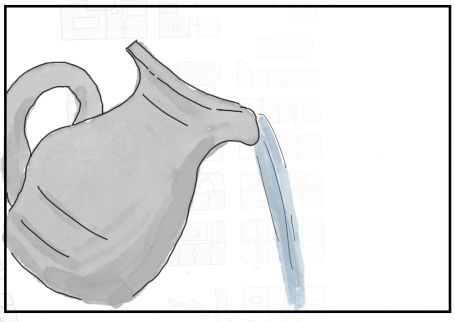
Ablution

For Andalusí muslims, water played a major part in the religious ritual of ablution.

Arabic irrigation systems

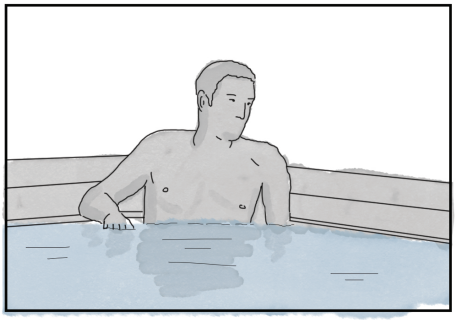
Roman irrigation systems

Roman infrastructure



Healing water

In Roman times, wells were constructed to harness the healing powers water was thought to possess.



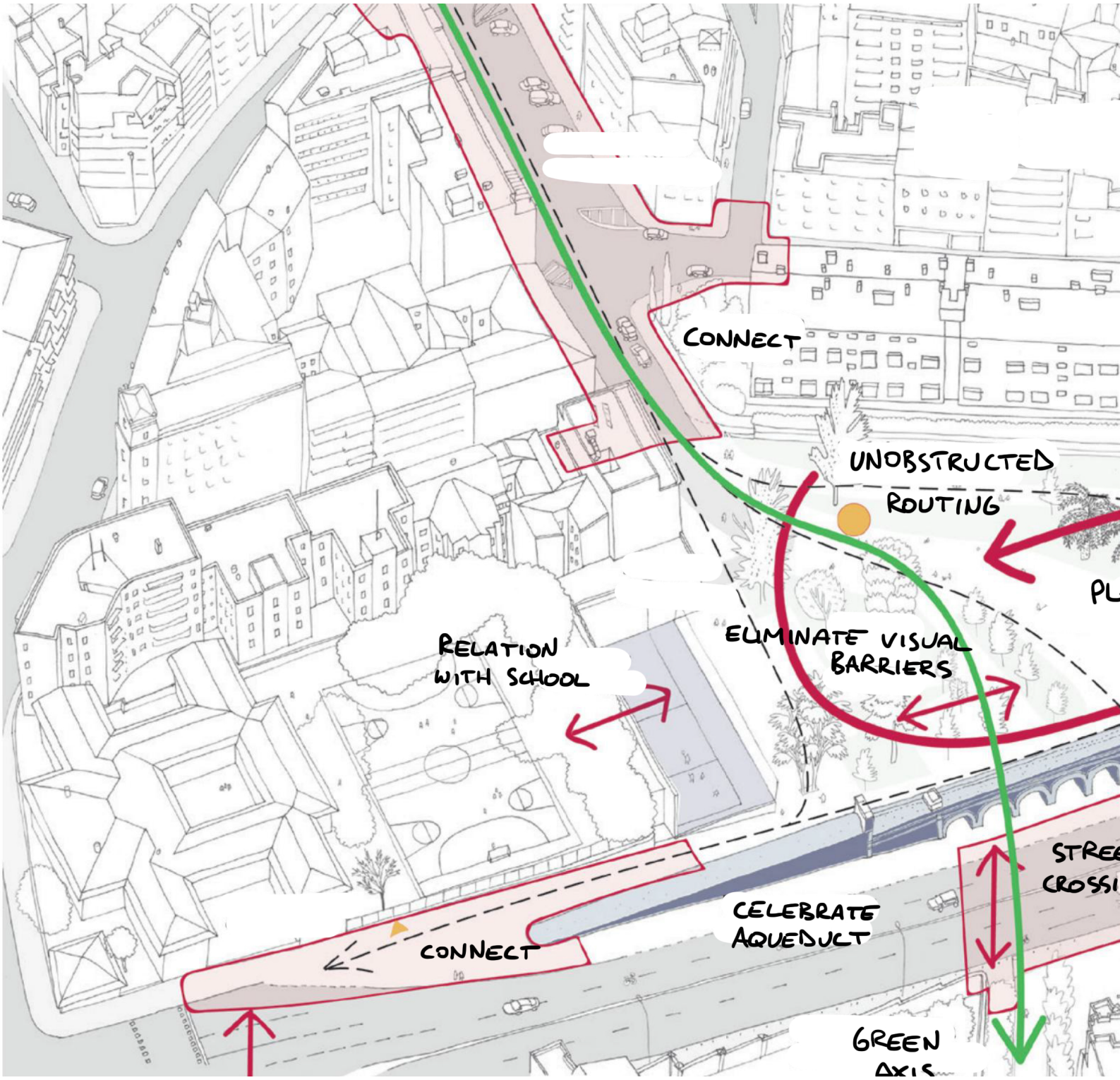
Bathing

Roman bathhouses were constructed, following example from the bathhouses in Rome, Sicily and Palermo.

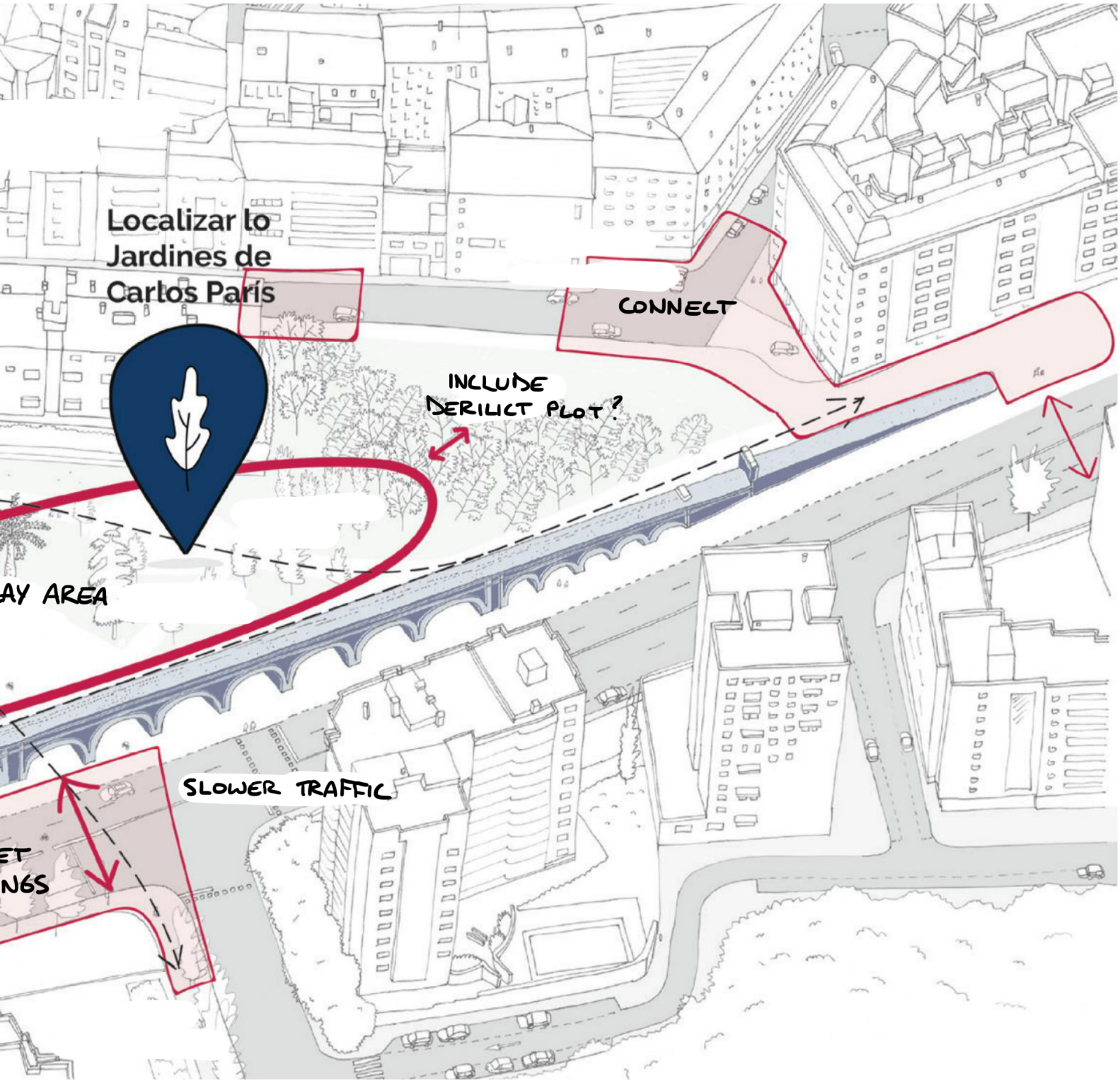
Time

Religious rituals

Profane rituals

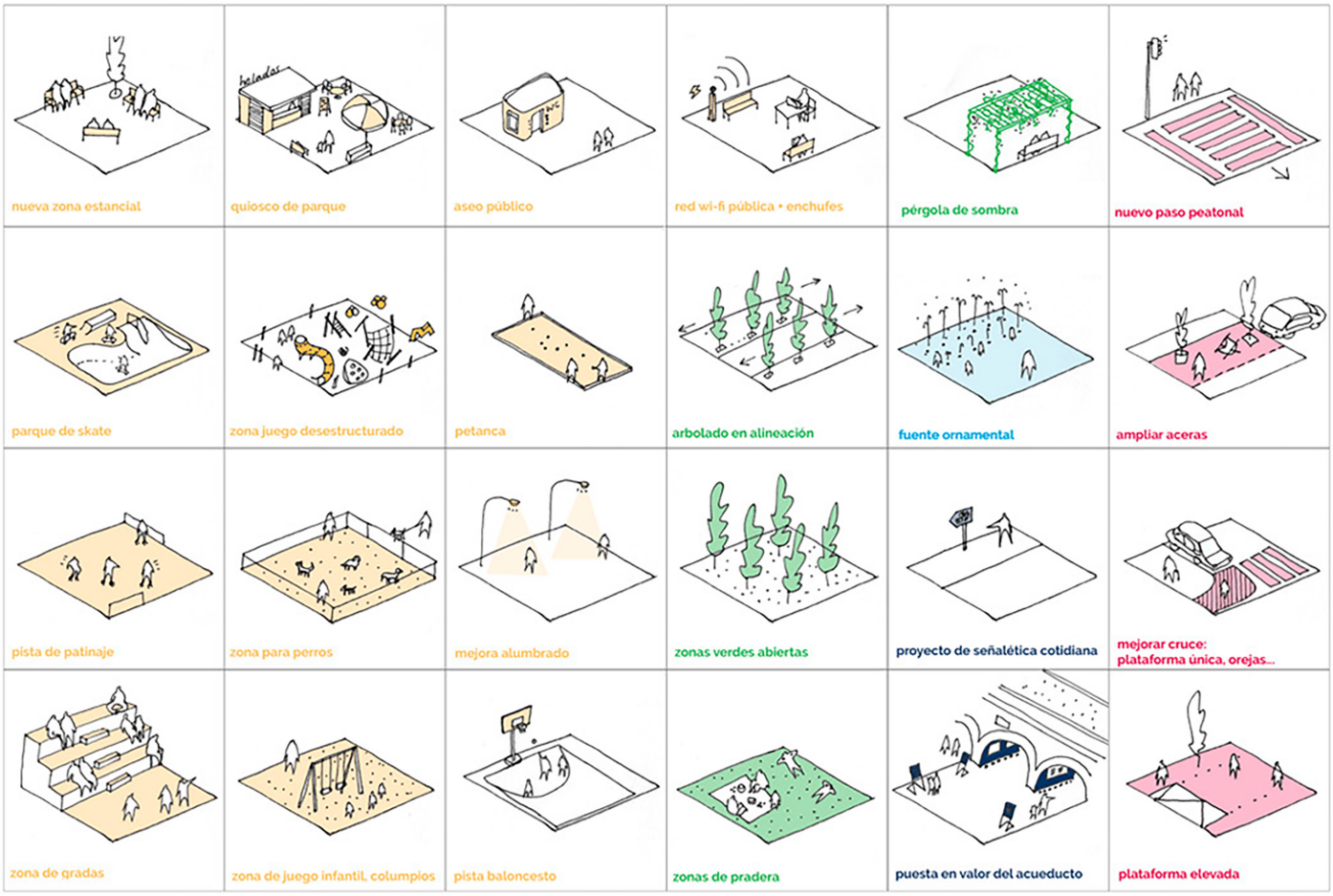


Above: issues and opportunities of the gardens of Carlos Paris. Image by Improvistos Creatividad y Territorio (2018)



Page 68: suggested interventions. Translated and edited by author. Image by Improvistos Creatividad y Territorio (2018)

Page 69: proposal for the redesigned gardens of Carlos Paris. Image by author (2024)


nueva zona estancial
quiosco de parque
aseo público
red wi-fi pública + enchufes
pérgola de sombra
nuevo paso peatonal
parque de skate
zona juego desestructurado
petanca
arbolado en alineación
fuente ornamental
ampliar aceras
pista de patinaje
zona para perros
mejora alumbrado
zonas verdes abiertas
proyecto de señalética cotidiana
mejorar cruce:
plataforma única, orejas...
zona de gradas
zona de juego infantil, columpios
pista baloncesto
zonas de pradera
puesta en valor del acueducto
plataforma elevada


SITTING AREA
KIOSK
PUBLIC TOILET
FREE WIFI
PERGOLA
STREET CROSSINGS
SKATE PARK
FREE PLAYING AREA
PETANQUE PITCH
ROWS OF TREES
ORNAMENTAL FOUNTAIN
WIDEN SIDEWALKS
ROLLERSKATE AREA
DOG AREA
IMPROVE STREET LIGHTS
OPEN GREEN SPACES
BETTER SIGNAGE
PEDESTRIAN FRIENDLY
PODIUM STAND
SWINGS
BASKETBALL PITCH
GRASS MEADOW
EXPOSITION SPACE IN AQUEDUCT
HEIGHTENED PLATFORM