Eindhoven University of Technology

MASTER

Temple of tolerance

religious openness in Singapore

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TEMPLE OF TOLERANCE

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✝EMPLE ☯F T☯LERAN☪E
RELIGIOUS OPENNESS IN SINGAPORE

Graduation Studio:
Building for the masses

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✝	= CHRISTIAN CROSS	(T)
ॐ	= HINDU SACRED OM	(M)
☸	= BUDDHIST EIGHT-SPOKED DHARMACHAKRA	(O)
☯	= TAOIST YIN AND YANG	(O)
☪	= ISLAMIC STAR AND CRESCENT	(C)

Abstract

In our quite secularized world religions are still a deep root of cultural life and identity. They provide important occasions for the congregation of large numbers of people, and it is significant that the word 'congregation' also involves a religious meaning in the English language.

Globalization promoted the movement of people across countries, and this brought to an increase of ethnical and religious diversity, which represents both a richness and a challenge today. Tourism became more affordable for many people, registering a constant increase, and religious buildings are one of the most visited places. Therefore, many places of worship are becoming attractions, while the coexistence of different faiths brings sometimes to frictions that culminate in violence.

This project addresses these two issues in the realm of architecture, with the ideal of tolerance as polar star. In fact, the *temple of tolerance* is both a multi-religious space and a museum of religions, thought for the mutual benefit of tourists and faithfuls, and to promote inter-religious dialogue.

The ideal place for the project appeared to be Singapore, mostly known as an economically prosperous and globalized island, and yet it is the most religiously diverse country in the world. The large amount of tourists that visit it every year and the plurality of religious traditions offer the perfect conditions for an attempt to rethink a place of worship in a globalized context.

The five major religions of Singapore, that are also the major five of the world, are Buddhism, Christianity, Islam, Taoism and Hinduism. In the *temple of tolerance* there is a place of worship for each of them, so that each identity is represented, and the inter-action is promoted with intermediate spaces and shared facilities. A single building that embraces and represents the different religious identities of Singapore and their peaceful cohabitation can easily become a touristic attraction, with the quiet atmosphere of spiritual recollection in the temples at risk. A museum of religions that crosses the five temples with passages where visitors can go unnoticed by faithfuls represents a solution that can offer to the tourist an unusual and interesting perspective for visiting the temple, and to the faithful a more absorbed and undisturbed prayer.

Besides the shared spaces, for creating more connection between faithfuls of different religions each temple has a view at least on the next one, so that some curiosity may rise for the other, or at least make perceive each other less strangers then before, with time.

The project also responds to some specific challenges that Singapore and the selected location present, such as the little available land, the high density of population in combination with a lack of public space and programmatic diversity, and the particular climatic conditions.

A research about the five religions brought to identify specific concerns for each of them and also some common features that constitute the base for the architecture. The balance between agreement and disagreement, unity and division is implied in the concept of tolerance and this is mirrored in specific architectural solutions.

The project also deals with symbolic aspects, as it is necessary with religious buildings, but it is first of all an architectural translation of the ideal of tolerance as an heritage of the Enlightenment, and therefore guided by reason.

Preface

Religion had an important role in my life, despite I grew up without a religious upbringing – no baptism, no catechism – in Catholic Italy.

About 14 year old, one day I found in the bookshelf *The Inner Teachings of the Philosophies and Religions of India* by William Walker Atkinson, and I started reading it. Religion, and metaphysics with it, became part of my fascinations and readings from then on.

Over the years, I read sacred texts of different religions such as the Christian "Canonical Gospels", the Hindu "Bhagavad Gita", the Buddhist "Dhamma-Pada", and the Taoist "Tao Teh Ching" and "Zhuangzi". This made me particularly enthusiast of Eastern religions, and open to experiment even some of their spiritual practices, as Yoga and meditation.

Although metaphysical problems gave me more than once dizziness, I still find these riddles highly interesting, and if compelled to define my position with the oversimplification of one single sentence, I would call myself a Spinozist with an infatuation for negative theology, such as Neo-Platonism.

Moreover, when I was twelve I visited many religious buildings, during a long trip with my family in France, Spain and Portugal, and that was an important experience that contributed to trigger my interest for architecture. Later, during my studies in Rome, I had the occasion to visit many churches and ruins of ancient temples, and that intensified my interest for religious architecture. Entering into the Pantheon multiple times has been a repeated experience of wonder, and the controversial thesis, suggested by its name, that it actually was a temple of all the gods inspired me.

So, my personal ambition for this work was to design a building, of which I would be the first enthusiast visitor, and to deepen a topic which interested me for a long time.

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By chance a certain priest was going down that way. When he saw him, he passed by on the other side. In the same way a Levite also, when he came to the place, and saw him, passed by on the other side. But a certain Samaritan*, as he travelled, came where he was. When he saw him, he was moved with compassion, came to him, and bound up his wounds, pouring on oil and wine.

Luke 10:30–37

* The Samaritans were an idolatrous people who did not know their worship of the Eternal and were hated by the Jews to the point of destroying one of their temples.

The truth is One, but sages call it by different Names

Rigveda

Verily! Those who believe and those who are Jews and Christians, and Sabians, whoever believes in God and the Last Day and do righteous good deeds shall have their reward with their Lord, on them shall be no fear, nor shall they grieve.

Quran 2:62

Kings accepted religious tolerance and that Emperor Ashoka maintained that no one would consider his/her is to be superior to other and rather would follow a path of unity by accuring the essence of other religions.

Edicts of Ashoka
issued by buddhist Indian emperor
Ashoka the Great (269–231 BCE)

The more he helps others, the richer his life becomes.
The more he gives to others, the more he gets in return.
The Tao of Nature benefits and does not harm.
The Way of a saint is to act naturally without contention.

Tao Teh Ching

For though men be ignorant, yet they are men.

Spinoza, *Ethics*

What is tolerance? It is a necessary consequence of humanity. We are all fallible, let us then pardon each other's follies. This is the first principle of natural right.

Voltaire, *Philosophical Dictionary*

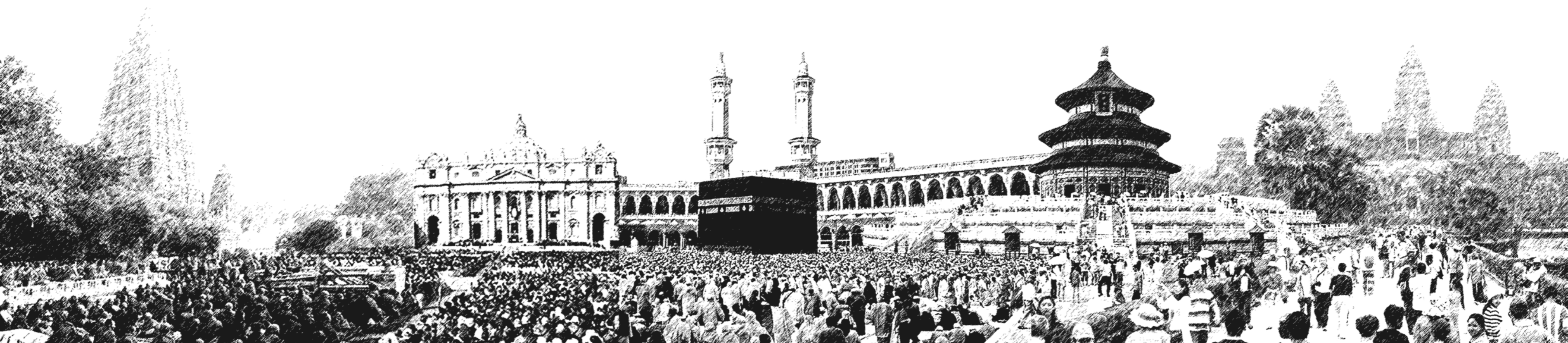For everyone is orthodox to himself.

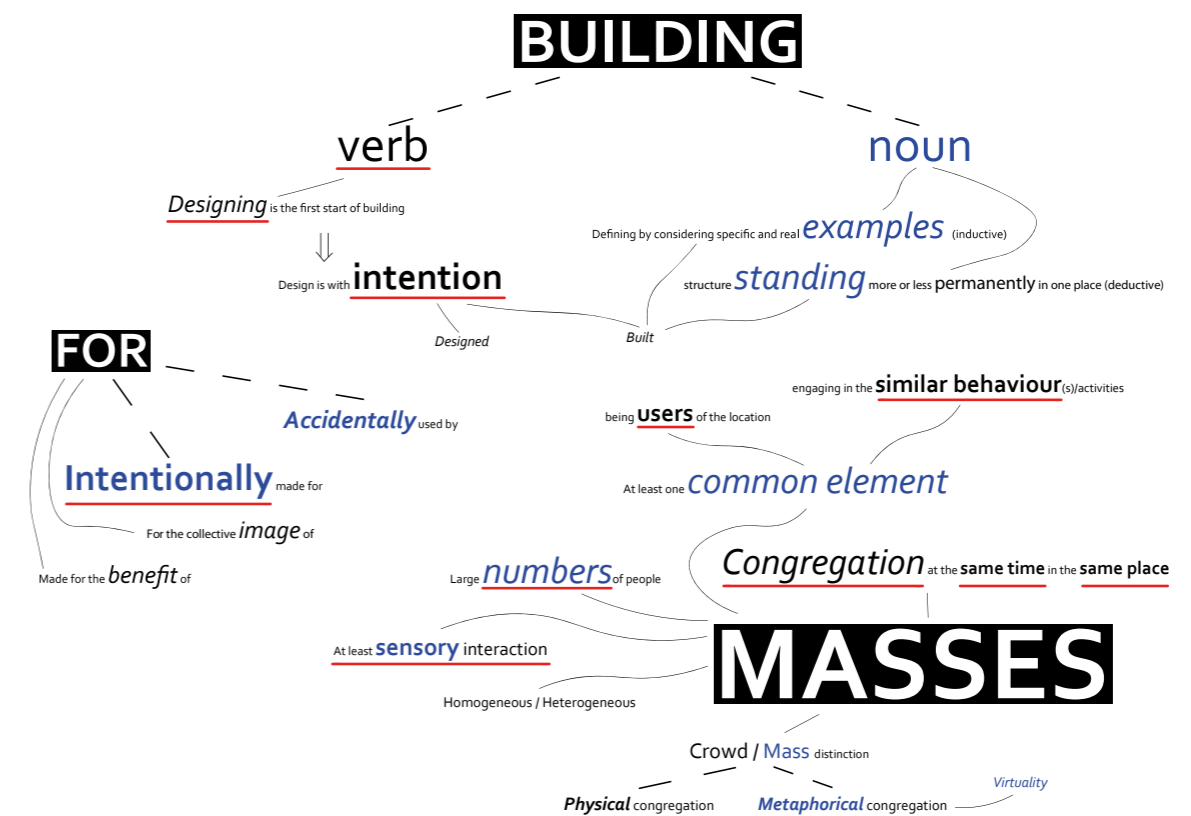Locke, *A Letter Concerning Toleration*

Figure 3. *Definition process diagram*

1.1 Religious masses

Starting from its very first steps mankind has always been concerned with the sacred, and the development of civilization coincided with the appearance of organized religions. Although hermitages, sects, castes, initiatory cults and ethnicity are not negligible religious aspects, the masses have always been a fundamental character in the history of religions.

Today, it is estimated the existence of about 10.000 different religions in the world [1], yet about 83% of the world population is affiliated to the five largest religious groups: Christianity, Islam, Hinduism, Buddhism and forms of folk religion (about 16% unaffiliated)[2].

The western model of modern state based on laicity spread in the whole world in the last couple of centuries, and today only a minority of nations still embrace a state religion. Moreover, it is possible to find precepts of tolerance and fraternity in the religions themselves, despite religious radicalism and intolerance are quite widespread.

The rise of globalisation provided a new possibility for an increase of tolerance, by intertwining national states in economical relations for the mutual benefit, it generated faster and larger movements of goods and people, creating the conditions for unprecedented peaceful mixture of cultures and religions worldwide. Obviously, this also creates frictions, as the present political scenario shows clearly, with an increased criticism and opposition to globalization, especially in western countries.

Religions, with the worldviews, set of values and traditions they embody, represent a very strong factor of personal identity, and this is a reason to be extremely cautious and respectful during the almost unavoidable fact of superimposing our own worldview while judging them.

Although religions, as already mentioned, have in different ways promoted respect for other faiths, it is in the tradition of western thought that the concept of tolerance was properly developed. The Renaissance (with, above all, More, Erasmus, de Montaigne) and, most importantly, the Enlightenment (with, among others, Spinoza, Locke and Voltaire) significantly contributed to the the-

oretical promotion and formulation of this concept, which in a second moment became a solid base for the modern state in its secularization. This tradition of thought is also the acknowledged inspiration from which the research and the project start.

Despite the political fight against organized religions that in many nations took place for the creation of secular states, it must be recognized that common values and beliefs have been a key factor in creating strong and large communities over the centuries, and organized religions provided the base for them, and for a long time it has been one of the main reasons for the congregation of masses, during rituals and festivities.

The process of secularization mentioned has reduced, on average, the attendance of such events, and yet the millennial history of religions and its influence is far from being uprooted from society.

The graduation theme *building for the masses* has been developed to stress some aspects of the religious topic chosen, and it is therefore defined as:

The activity of designing for a large number of **individuals**, *congregating at the same time and location and engaging in similar behaviours, provided that the building allows each one to be influenced by the perception and interaction with* **others**, *in large numbers.*

Key words

Individuals. Despite it has been affirmed that "religion is the opiate of the masses", they (at least the major and universalist ones) are very concerned with individuals – in fact, Heaven, Jannah, Nirvana, Moksha, harmony with the Tao, are achieved personally.

Others. The moral sphere is highly involved in the achievement of the ultimate goals cited above, and precepts of compassion, in different forms, are common to all of those religions.
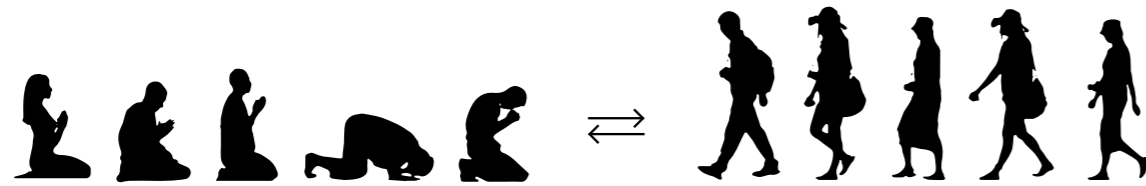
1.2 Objectives and research question

The research and the project have the objective of accompanying and further promoting the social change that is already taking place: the tension towards an ever more multireligious, ethnically mixed, and interconnected society.

The idea of a *temple of tolerance*, a religious complex composed by temples of major world religions and by shared spaces, through the means of architectural relations of proximity, circulation, form and materiality, is conceived to achieve the congregation and interaction of people that would commonly remain segregated in the religious buildings of their own faiths. People already meet every day in different contexts, without religious faiths being immediately manifest - a similar temple could bring in daily life a contribution of direct perception in this sphere, an expedient for starting a conversation on religion, an occasion for reciprocal understanding and recognition.

The goal is not merely to reinforce the mutual tolerance among faithfuls with the architectural statement of a solid coexistence agreement, but also to attract visitors from the nearby and from abroad with the attractiveness of the yet unprecedented. In fact, religious buildings are already among the most visited architectural typologies by tourists for their cultural and representative value. Therefore, achieving a mutual benefit relationship between visitors and faithfuls is crucial.

The project then refers to a target of quite diverse masses, trying to create as many moments of shared experience as possible. Architecture, with the simple mean of proximity, can create opportunities for encounters and make some unnoticed information available. This is another reason to include visitors in the dialogue between faithfuls: because every faithful is already an observer and a visitor outside his temple.

The knowledge of the other is in fact the first tool in fighting prejudices, which could lead to forms of intolerance.

However, the difficulties rising from the possible conflicts between religions need also to be taken into account and to be prevented through architectural means, and by the choice of the right context. In fact, varying from place to place, the plausibility of a similar project can be very different.
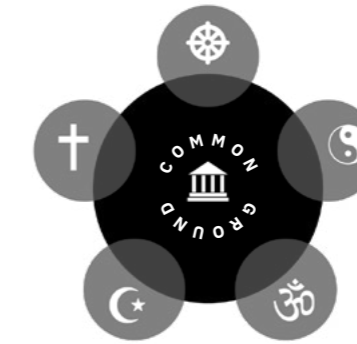
Dealing with the identity, or identities, of the city chosen for the design and triggering a dialogue with it is another important objective. In a city already characterized by high religious diversity the potential for designing a building very representative of its culture is remarkable – the identity, in fact, is already present on the social level, even if it has not been expressed by one single building yet.

In consideration of these objectives the research question has been formulated:

- **How can architecture promote tolerance and inter-religious dialogue?**

And two sub-questions have been derived further in the discussion:

- **How can the relationship between masses of faithfuls and visitors be rethought for their mutual benefit in religious buildings?**

- **How can architecture embody the identity, or identities, of a very modern and multireligious city, while responding to the specific constraints and challenges the city itself presents?**

1.3 Relevance

This work wants to face religious conflicts, without the naivety of solving a world issue rooted in the history of mankind since centuries, but with a sensible proposal and a small contribution. In fact, it is outside of the power of architecture the resolution of such issues. What architecture can do is to open possibilities for encounters in the physical space and then to become a tool for intensifying relationships, without the certainty that the result of such meetings will relieve the conflicts or will exacerbate them. It can only try to direct its use, but it cannot control it. Therefore, the relevance of this work is in its attempt of contributing to the inter-religious experimentation in the realm of architecture, identifying common features, special relations, differences, and solutions. The work starts from a theoretical position that doesn't disdain looking at the discipline as a rational problem solving task, even if the chosen topic involves irrational spheres of the individual, and the power of the symbolic language has to be taken carefully in consideration.

This thesis is also guided by personal convictions, and then it intends to be also a manifesto of the ideal of tolerance, an architectural translation of the Enlightenment values. The idea that through the experience of wars and conflicts the history of mankind can bring to a resolution of the conflicts themselves for a rational necessity, for example with the institution of a union of nations recognizing an international law, as exposed by Kant in the essay *Perpetual peace: a philosophical sketch,* and as it has been actually realized with the UN after WWII, could be applied also to religions, which have been an important factor for a great number of conflicts, at least in the history of Western civilization.

In a world where the movement of people is constantly increasing, and globalization bringing more and more ethnic mixture, the times are probably most favorable then ever for improvements in the understanding and recognition between faiths. It is inside this framework that this thesis wants to bring a contribution.

1.4 Reading guide

The thesis is divided in two main sections, the first one contains the research on the topic and location, and the second one illustrates the design process and the results.

The research is not intended to be systematic, but it is instead targeted for supporting the design decisions.

The images are placed on top of the related texts and are usually on the same double spread page, with only a few exceptions. All the unmodified pictures instead, are placed in square format on a double spread page, in the form of collage, after the text which is related to them.

The figures not produced by the author are referenced at the end of the book, while specific references in the texts are placed on side notes in the page. Also all the figures with their number and title can be found on the same space on the sides of the pages. Some double spread figures are numbered and named in the preceding or next page with a side line differentiating them from the rest. The bibliography at the end of the book integrates the side notes, as a more general source of information for the texts.

Figure 6. Next page: picture of Pura Penataran Agung Lempuyang in sketchy style

ACCEPTANCE

Figure 7. *Diagram for the definition of the concept of tolerance*

AGREEMENT   **TOLERANCE**   DISAGREEMENT
UNITY   DIVISION

INDIFFERENCE

2.1.1 The concept of tolerance

[1] Locke, J. (2009) *A Letter Concerning Toleration*; LibertyLibrary of Constitutional Classics; p. 20
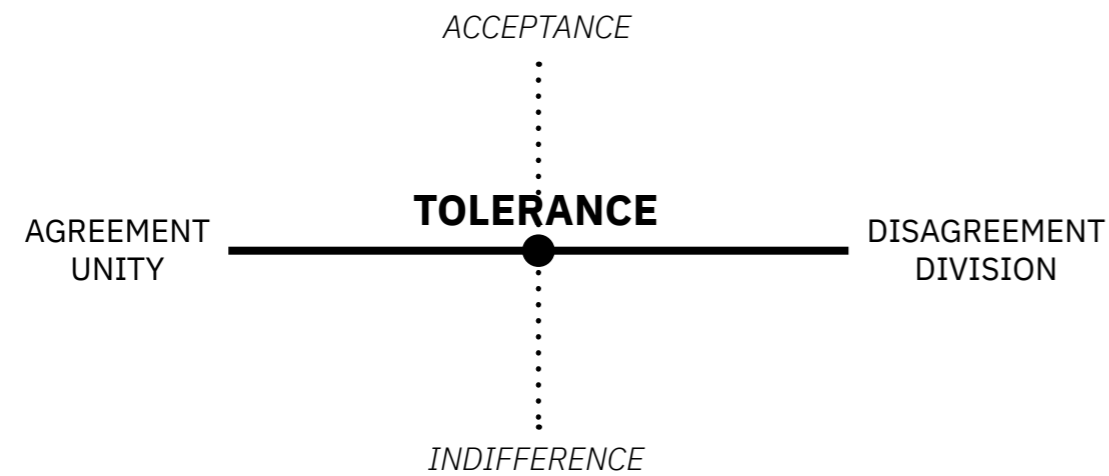
The modern formulation of the concept of tolerance, as we already mentioned, can be traced back to the Enlightenment, but it can also be observed that the topic was already discussed in the philosophical tradition in ancient times, by the first Christians like Tertullianus and Augustine, getting a particular importance in the Middle Ages with Christian and Muslim authors like Abailard, Maimonides and Averroes, to be later discussed extensively by humanist authors like Erasmus, Nicolas of Cusa, and others.
The recurrent point of discussion is always where the line should be traced, what is the nature of the disagreement that can be tolerated, and what is instead intolerable. The problem of its limit is unescapable in its discussion. We can observe, with a very emblematic example, that even in *A Letter Concerning Toleration* by John Locke, considered at the foundation of the modern conception, we can read that atheists should not be tolerated because:

[2] Popper, K. (1945). *The Open Society and Its Enemies*; Routledge, United Kingdom

Promises, covenants, and oaths, which are the bonds of human society, can have no hold upon or sanctity for an atheist. [1]

This problem is brought to the logical extremes in the formulation of the so called *paradox of tolerance* by Karl Popper, in the *Open Society and Its Enemies*, which argues that an unlimited tolerance, applied to the intolerants, would bring to the disappearance of tolerance by the onslaught of the intolerants [2]. Other paradoxes have been formulated on this difficult concept, but for us it is important to notice two basic things: that there wouldn't be any need for tolerance where the same opinion is hold and that there could be no tolerance where two opinions are in absolute disagreement.
We can conclude, in a no less paradoxical manner, that tolerance could be conceived as a sort of agreement to disagree.
The East also developed the concept in its religious reflection, and differently from our tradition, has also applied it in a rather effective way. It is enough for us to mention the figure of Mahatma Gandhi, who considering the concept of tolerance unsatisfying for implying a position of superiority of the tolerant towards the tolerated, integrated other religions and some of their practices in his Hindu belief and even wrote:

It is the duty of every cultured man or woman to read sympathetically the scriptures of the world. [...]a friendly study of the world's religions is a sacred duty. [3]

On this basis we could then distinguish a high form of tolerance, which becomes acceptance by knowing and embracing different religions, and a low one, which is the mere indifference to religious traditions and beliefs, that can be tolerated insofar as they don't interfere negatively with one's daily life.

2.1.2 Method

[3] Gandhi, M.K.(1962). *All Religions Are True*; Bharatiya Vidya Bhavan

The methodologies employed in the research are dependent on the research topic and on the overall structure of the work, in order to bring to useful conclusions for the design. The vastness of the theme required a pragmatic and targeted approach to not become a dispersive work.
A *literature review* of architecture manuals, scientific studies, institutional documentation and topic related books contributed to the development of the project and it was important to integrate the information gained through *observations* of religious buildings and public spaces related to them, both in traditional and modern examples.
Case studies were important sources for the research, in order to clarify what has already been done in similar directions and what could have been the next steps to dare, besides giving important information on the programmatic and functional needs for the design.
A *research through design* with a trial and error approach was then employed in the design phase which was conducted in parallel with the topic related research.

Figure 8. *World map of religion affiliation in pie charts*

UNAFFILIATED	BUDDHIST	CHRISTIAN	HINDU	JEWISH	MUSLIM	OTHER
16.3%	7,1%	31,5%	15%	0,2%	23.2%	6,7%

1500 BC 1400 BC 1300 BC 1200 BC 1100 BC 1000 BC 900 BC 800 BC 700 BC 600 BC 500 BC 400 BC 300 BC 200 BC 100 BC 0 100 AC 200 AC 300 AC 400 AC 500 AC 600 AC 700 AC 800 AC 900 AC 1000 AC 1100 AC 1200 AC 1300 AC 1400 AC 1500 AC 1600 AC 1700 AC 1800 AC 1900 AC 2000 AC

RIG VEDA HYMNS WRITTEN BRAHMANAS WRITTEN TANTRAS WRITTEN BHAGAVAD GITA WRITTEN LAWS OF MANU WRITTEN

VEDISM *BRAHMANISM* UPANISHADS WRITTEN *BHAKTI MOVEMENT*

HINDUISM

SHRAMANAS (RELIGIOUS WANDERERS)

VEDIC RISHIS

BUDDHISM

TIANTAI *TENDAI* *NICHIREN*

SIDDHARTA GAUTAMA (BUDDHA) *TANTRAYANA* *ZEN* DGE 'DUN GRUB (1ST DALAI LAMA)

MAHAYANA

CHINESE FOLK RELIGION TRADITION

TAOISM OFFICIAL RELIGION OF CHINA

LAO-TZU DECLINE OF TANG DINASTY: CONFUCIANISM AND BUDDHISM SUSBSTITUTION

PHILOSOPHICAL TAOISM

HEBRAISM

BIBLICAL JUDAISM *JUDAISM* *HELLENISTIC JUDAISM* *RABBINIC JUDAISM*

TIME OF THE PATRIARCHS

JESUS OF NAZARETH

CHRISTIANITY

NEW TESTAMENT GOSPELS WRITTEN COUNCIL OF NICEA GREAT SCHISM PROTESTANT REFORMATION

MUHAMMAD

ISLAM *SUFI* *SHI'AH* *SUNI* *BAHA'I NATION OF ISLAM*

QURAN WRITTEN

LEGEND

•••••• = influenced by

SECT OR SCHISM IMPORTANT EVENT
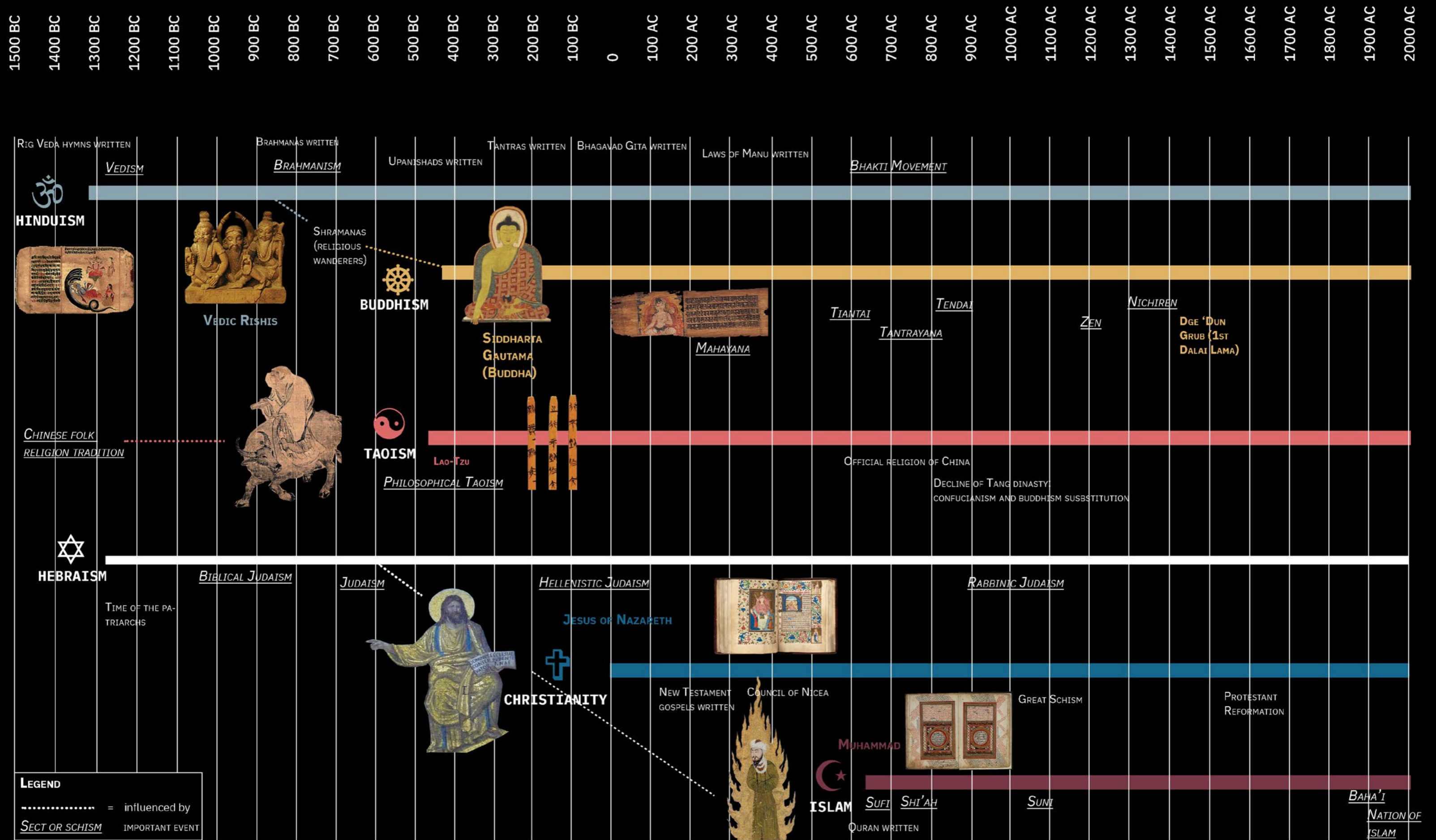
Figure 9. *Timeline of religions*

Figure 10. Exemplification of clothing for Buddhist monk, priest, imam, daoshi and guru

Figure 11. Some important colors in the religions' traditions

golden

Lapis lazuli blue

Islamic green

Black and white (yin and yang)

saffron
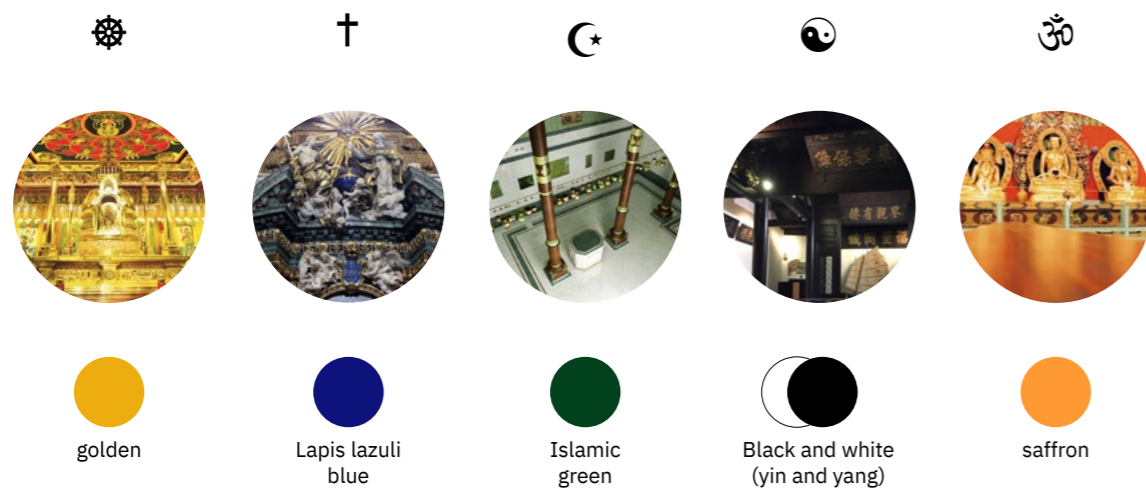
2.1.3 Religious traditions

The five major religions considered here count, taken together, over 80% of the world population as followers, a number that testifies the failure of the idea, which can be traced back to the French Revolution, that reason would have replaced religion. This simple fact shows us that this idea probably was not reasonable in itself in the first place. Religions have deep roots that intertwine almost inextricably with a civilization, and, in the past more than today, with a language, a geographical region and an ethnic group.
However, it can be observed that, despite there are important differences that define the separate identity of each religion, there are common roots that link them in a peculiar way. Christianity and Islam are both branches grown from Judaism, and share many beliefs, from the Final Judgment to the assumption that Jesus was a virgin birth Messiah, but also disagree on many other

points, sometimes to the point of considering each other heretics. Moreover, the geographical proximity favoured a continuous reciprocal influence and exchange in history, included in the form of religion wars.
A much more peaceful cohabitation has taken place in the East, with Hinduism constituting the acknowledged foundation from which Buddhism has risen in India, to later become, spreading in China, an important influence in the development of Taoism. The high degree of mutual compatibility is most clearly shown by the various forms of religious syncretism that have arisen, i.e. the blending of multiple traditions in one.
However, the contacts between East and West have been more conflictual, with Christianity exported through colonialism, while the spread of Islam in Asia has generated frictions and conflicts in some regions, something that we can still observe today.

RELIGIOUS CALENDAR
major festivals and holidays in 2019

Figure 12. Circular religious calendar of 2019

Uposatha:
1st, 8th, 14th, 15th, 18th, 23rd, 24th day of the lunar calendar

Sunday, the Lord's Day

Jumu'ah, Friday prayer

Not fixed, festivals and holy days

Not fixed, depending on the week day sacred to the divinity of the place of worship

WEEKLY DAYS OF WORSHIP

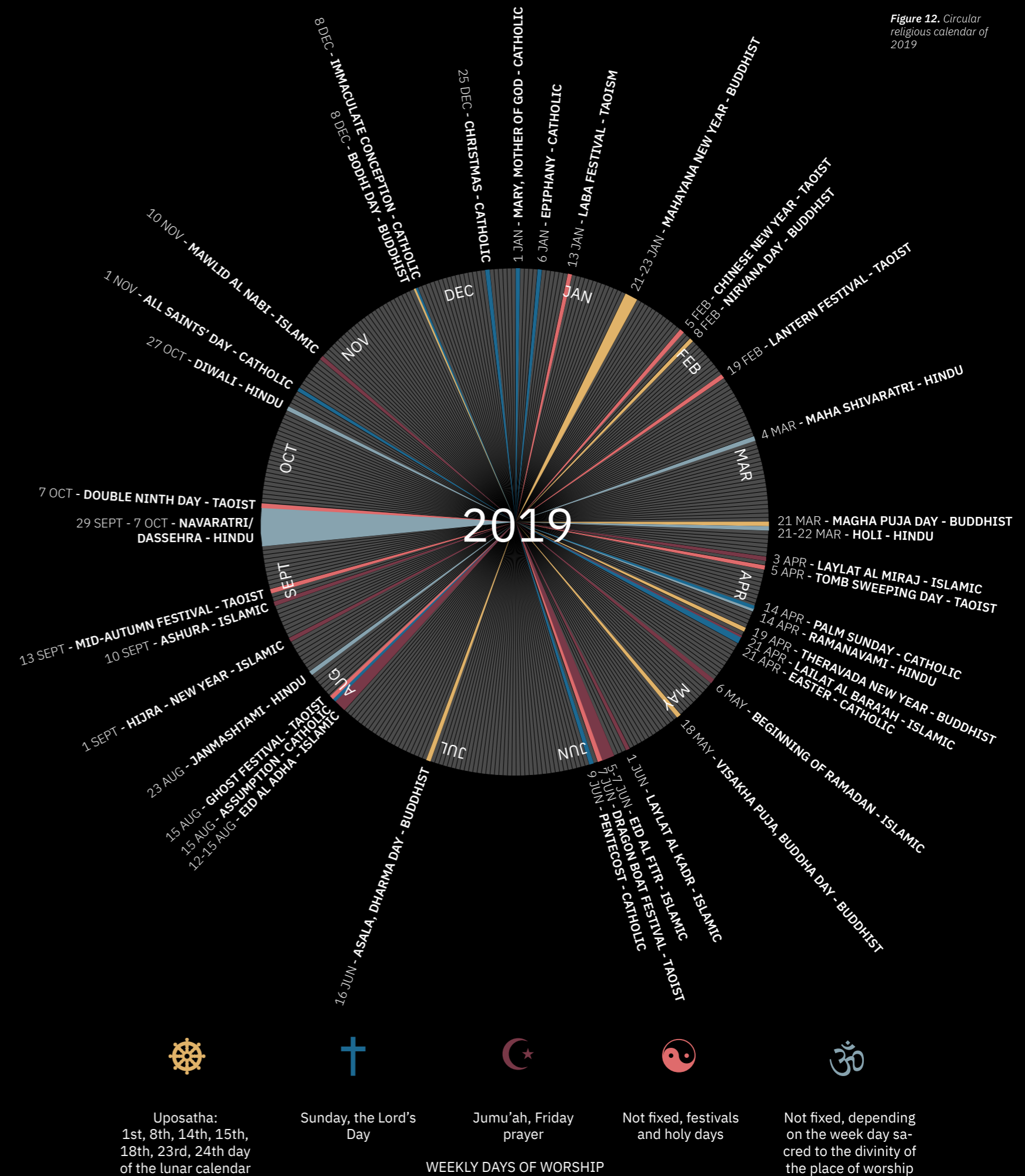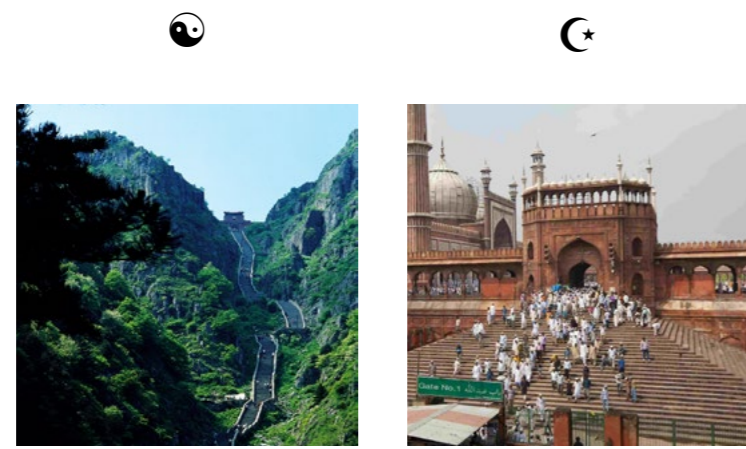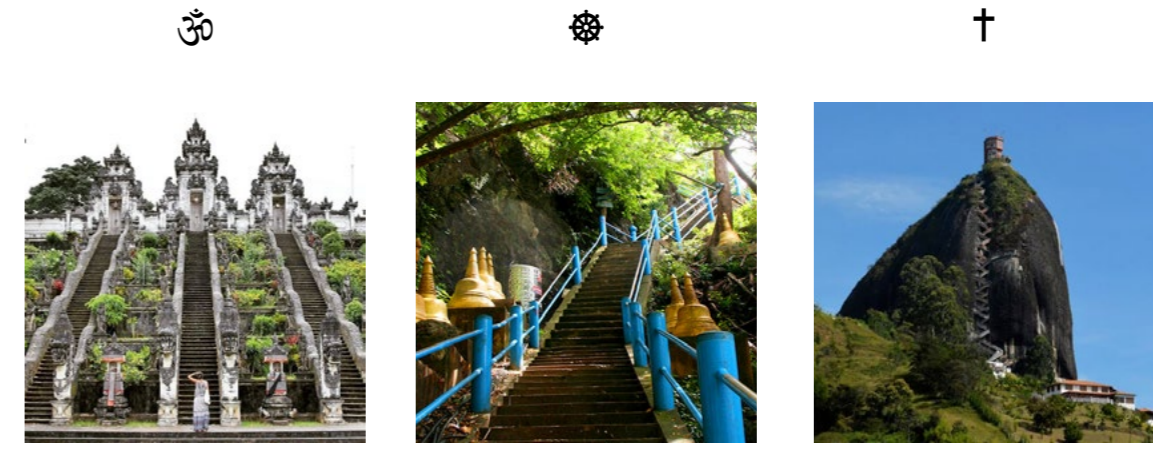Figure 13. First row of very long stairs leading to places of worship around the world

☯

Mount Tai temples - Taoist Temples in China

6.660 steps

☪

Jama Masjid mosque - Mosque in India

39 steps

ॐ

Pura Penataran Agung Lempuyang - Hindu Temple in Bali

around 1.700 steps

☸

Tiger Cave Temple - Buddhist temple in Thailand

1.237 steps

✝

El Peñón de Guatapé - Catholic shrine in Colombia

740 steps

Mount Mian temples - Taoist Temples in China

more than 2.000 steps

Underground Mosque at Taman Sari - Mosque in Indonesia

22 steps

Batu Caves Temple - Hindu temple in Malaysia

272 steps

Fanjingshan temples - Buddhist temple in China

around 8.000 steps

Trinità dei monti Church - Catholic church in Italy

136 steps

Figure 14. Second row of very long stairs leading to places of worship around the world

2.1.4 The ascent to the sacred

The stair is one of the most significant elements used in sacred architecture, and this can be observed in many different traditions of the present and even in old civilizations.
It has been seen also as a symbol of spiritual development representing the steps a man needs to ascend with effort to reach a more divine state in a very large number of traditions, making it almost a universal metaphor.

In more practical terms it can also be seen as a tool mankind employed to reach more proximity with the sky, or to reach more easily the peak of a mountain, considered by many cultures as the seat of the gods.
Examples can be found almost in all places and times, from the acropolis of Athens to the Pyramid of the Sun in Mexico, up to the Temple of Heaven in China.
Among the five religions chosen it can be ob-

served that the three Eastern ones present a deeper connection of their temples with natural locations, where natural elements in some cases are worshiped and where more isolation can be found from the exterior world for monks, and here the most extreme examples can be found when looking for very long stairs to reach worship places.
Christianity also present a good number of them, while in Islam this is much more rare,

even if short stairs are very commonly employed (it is enough to think to the minbar).
It is interesting to notice that the stairs became the occasion also for some religious practices in itself, as it is the case for the Scala Sancta of Saint John in Laterano, where Catholics climb on their knees since centuries as a devotional act, or as it is the case in China, where Shaolin monks climb down stairs on all fours practicing kong fu.

Figure 15. Next page: pictures of stairs in world religions

30
31
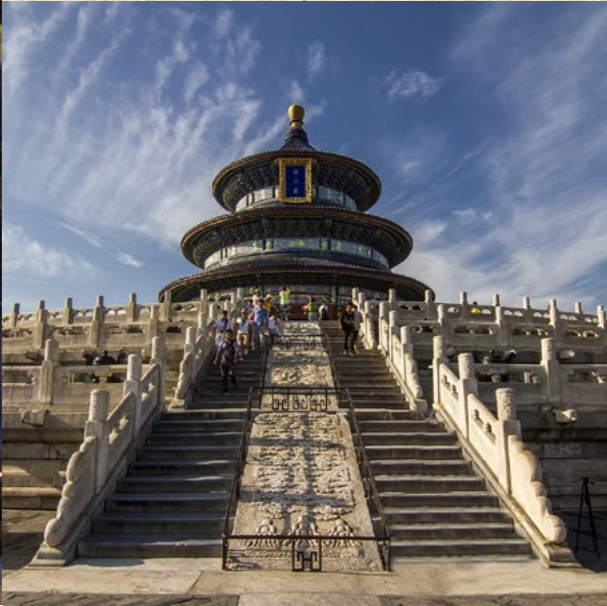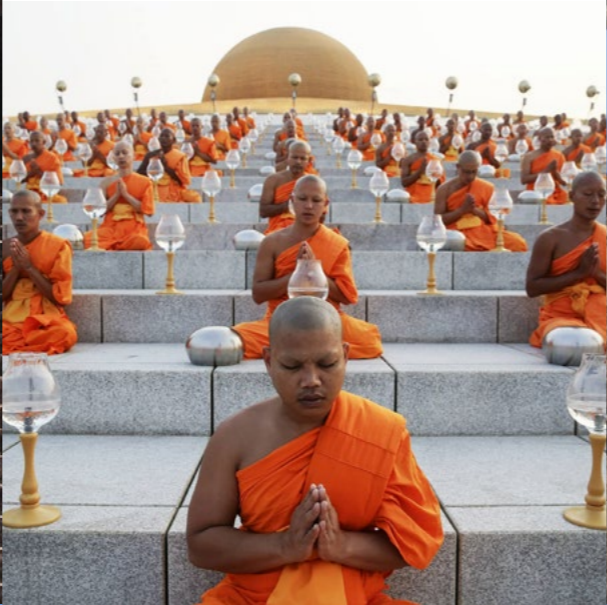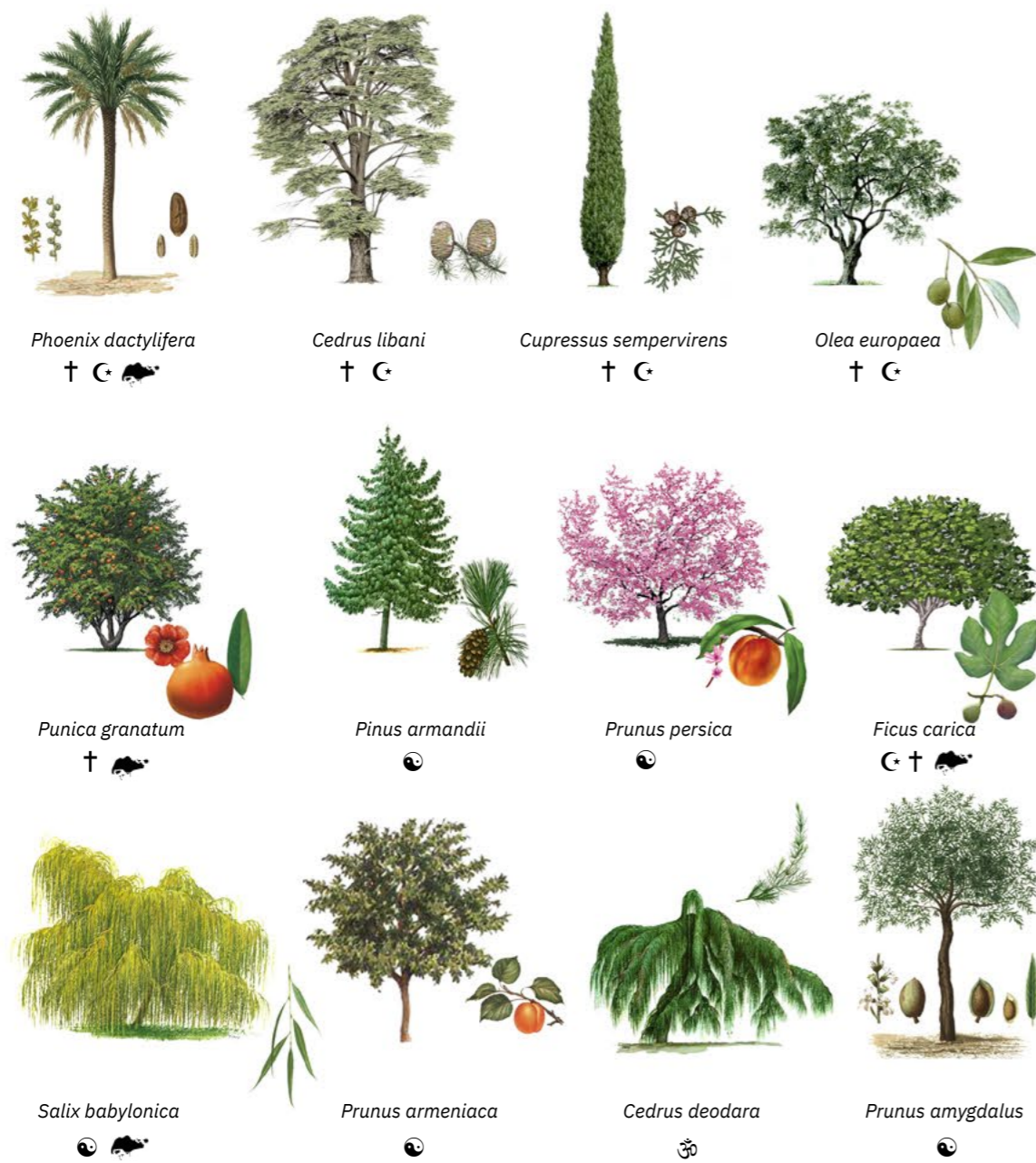
Figure 16. Botanical illustration of trees relevant in religious traditions

Phoenix dactylifera
† ☾ 🐀

Cedrus libani
† ☾

Cupressus sempervirens
† ☾

Olea europaea
† ☾

Punica granatum
† 🐀

Pinus armandii
☯

Prunus persica
☯

Ficus carica
☾ † 🐀

Salix babylonica
☯ 🐀

Prunus armeniaca
☯

Cedrus deodara
ॐ

Prunus amygdalus
☯
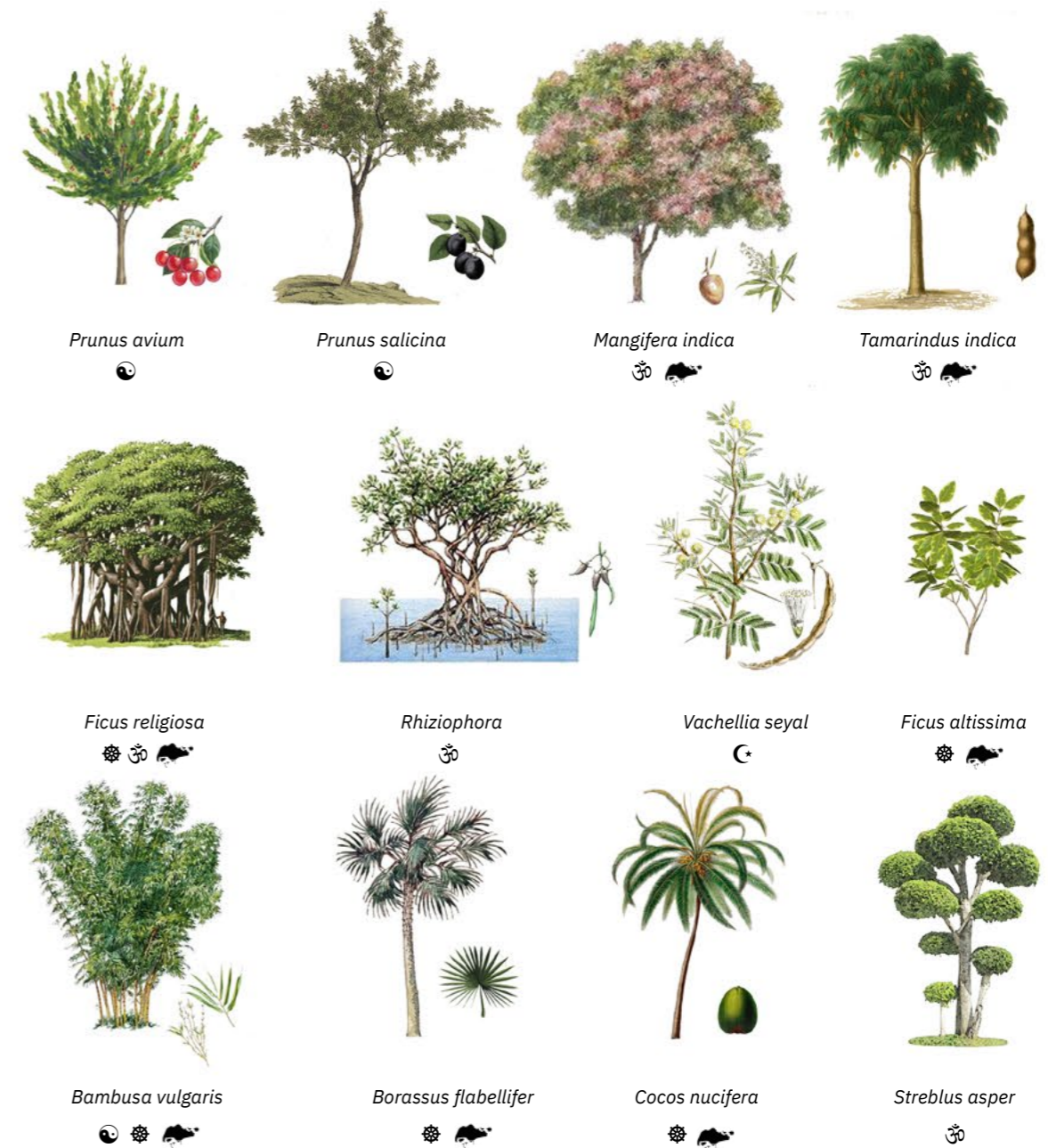
Figure 17. Botanical illustration of trees relevant in religious traditions

Prunus avium
☯

Prunus salicina
☯

Mangifera indica
ॐ 🐀

Tamarindus indica
ॐ 🐀

Ficus religiosa
☸ ॐ 🐀

Rhiziophora
ॐ

Vachellia seyal
☾

Ficus altissima
☸ 🐀

Bambusa vulgaris
☯ ☸ 🐀

Borassus flabellifer
☸ 🐀

Cocos nucifera
☸ 🐀

Streblus asper
ॐ

2.1.5 Trees and religions

All the five religions found a symbolic value in trees and plants, and their scriptures mention them multiple times with different purposes, while their traditions established some conventions for their use in places of worship.

Abrahamic religions share a common symbolic background for the significance of trees that derives from the Bible, with some exceptions proper to each tradition.

The three Eastern religions attributed even a higher importance to trees and plants, and we can observe a larger variety of them having a particular significance. Similarities come from their intertwined history and geographical proximity.

Buddhism focuses on the relation of trees with the personal history of the Buddha, Taoism on their implicit yin and yang balance, and Hinduism on its long tradition.

CHRISTIANITY

Olea europea
Cupressus sempervirens
🐀 Punica granatum
🐀 Ficus carica
Cedrus libani
Phoenix dactylifera

ISLAM

🐀 Phoenix dactylifera
Cedrus libani
Cupressus sempervirens
Olea europea
🐀 Ficus carica
Vachellia seyal

BUDDHISM

🐀 Ficus religiosa
🐀 Ficus altissima
🐀 Borassus flabillifer
🐀 Cocos nucifera
🐀 Bambusa vulgaris
  Corypha umbraculifera
🐀 *Areca catechu*

Plants
Nymphaeceae
🐀 *Crinum asiaticum*
  Hedychium crhysolecum
🐀 *Magnolia champaca*
🐀 *Plumeria rubra*
🐀 *Musella lasiocarpa*

HINDUISM

Cedrus deodora
🐀 Mangifera indica
🐀 Tamarindus indica
Rhiziophora
Streblus asper
🐀 Ficus religiosa
  Ficus racemosa
🐀 *Ficus benghalensis*
🐀 *Aegle marmelos*
  Elacarpus ganitrus
🐀 *Phyllanthus emblica*
🐀 *Azadirachta indica*
🐀 *Neolamarckia cadamba*
  Prosopis cineraria
  Vachellia nilotica

🐀 *Moringa oleifera*
🐀 *Shorea robusta*
  Haldina cordifolia

TAOISM

Prunus persica
Pinus armandii
🐀 Salix babylonica
Prunus armeniaca
Prunus amygdalus
Prunus avium
Prunus salicina
🐀 Bambusa vulgaris

🐀 = can grow
  in Singapore

Source for what can grow in Singapore: National Parks Board, Singapore. https://www.nparks.gov.sg

Figure 18. Next page: pictures of gardens related to places of worship

2.2 Precedents

This chapter wants to give an impression of the state of the art of projects that are directed to multiple faiths or to tourists interested in religions, or both the things combined.

In the next pages we will bring two representative examples of religious buildings that host multiple faiths, two of the most famous museums of religions around the world, and two temples that have a strong relation with a museum.

Since there are not so many examples for each category, the choice was quite restricted and almost obliged. It can be already observed that all the examples brought are quite recent, and this suggests that the initiatives in these directions are growing especially in recent years.
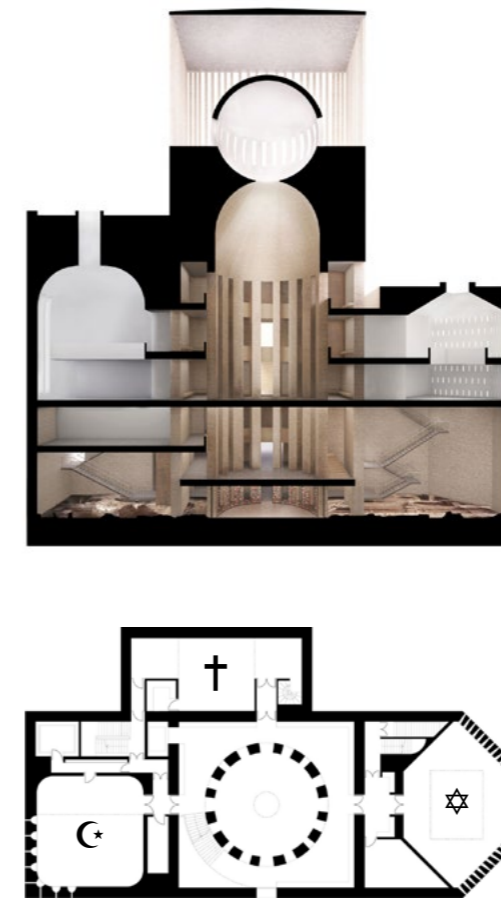
2.1.1 House of One, project in Berlin

Starting from the initiative of the protestant church community of St. Petri-St. Marien, to which also a Jewish and a Muslim community soon joined, in 2011 were established structures for equally owned action, that led to launch a global architectural competition in 2012 and to start a global fundraising campaign in 2014 for the construction of the House of One.

The construction of this building that includes a church, a synagogue and a mosque under one roof is set to start, according to the organization, in the first half of 2020.

The plot chosen for the competition included the ruins of an old Gothic church that were required to be integrated in the design and made accessible to the public as an archeological area. The winning project arranges the three holy rooms of the three religions around the central hall, that is the place where all faithfuls have the occasion of meeting each others. This space is also thought as the connection with the secular society through the possibility of setting art exhibition or a discussion room, while another shared space is the loggia on top of the central hall, which will provide a view on the city of Berlin.

The use of light was a central theme mentioned in the competition brief as a criteria of evaluation, and, besides strict technical requirements that needed to be met, the request for a building that would distinguish itself by its strangeness in the urban context in Petriplatz.

If realized the project will be the first one in the world to include the three Abrahamic religions under the same roof.

2.2.2 Loyang Tua Pek Kong Temple in Singapore

The history of Loyang Tua Pek Kong Temple can be traced to the early 1980s when statues of Taoist, Buddhist and Hindu deities were found by a group of friends on the coast near Loyang Way, on the beach.

A modest hut, made of bricks and zinc sheets, was built on the shore to house and worship the deities. In 1996 a fire destroyed the hut and the Taoist statue of Tua Pek Kong, the god of prosperity, was the only one that was not damaged, and with generous donations by its devotees a new temple with brick walls and tiled roofs was rebuilt in 2000, the name of the only deity statue which survived the fire. The temple was visited by around 20,000 devotees per month despite the fact that bus services were limited to week days and the nearest bus stop was half an hour's walk away. In 2003 the loan on the land on which the temple stood expired, and the temple had to move to the current location, which is less than 2 km away from the previous one. The new temple cost €8 million and its construction was completely funded by public donations. The temple has Hindu deities worshipped alongside Chinese deities, exemplifying the religious harmony in Singapore, and it is also one of the few temples that is opened 24 hours for prayer.

A service for tourists is provided in the form of guided tours and it became a quite important place for the celebration of religious festivals in Singapore. Responding to the need of a space capable of hosting the large numbers of people gathering on these occasions a big covered space of industrial appearance has been integrated in the complex.

2.2.3 Temples reletion with museums in Singapore

Fuk Tak Chi Museum was opened in 1998, converting the oldest Chinese temple of Singapore, built in 1824. The temple was dedicated, again, to Tua Pek Kong, the Taoist God of Prosperity, and is placed in the first street of the city. Cantonese and Hakka immigrants built it, and the shrine was where many Chinese immigrants gave thanks for their safe journey to Singapore at their arrival. It became the headquarters for the Cantonese and Hakka communities, even functioning as a welfare association where disputes were settled. in 1990 the temple moved to another place, and to preserve its history it was handed over to the government.

The temple became a free access museum on Chinese history and culture with about 200 artefacts on the lives of early migrants living in the island.

Buddha Tooth Relic temple and museum was opened in 2007, built in only two years on a vacant site in Singapore Chinatown, with a cost of about €40 million.

Shi Fa Zhao, the current president and abbot of the temple and museum, rejected designs that were too contemporary, but also rejected the Southern Chinese style, which can be found in the old temples of the neighborhood; he finally decided for a Northern Chinese style with arts from the Tang dynasty. The temple gains its name from the relic it contains, which is claimed to be an authentic tooth of the historical Buddha.

A museum has been designed from the beginning in connection with the temple, which illustrates through artefacts the history of Buddha Sakyamuni and of Buddhism in Asia.
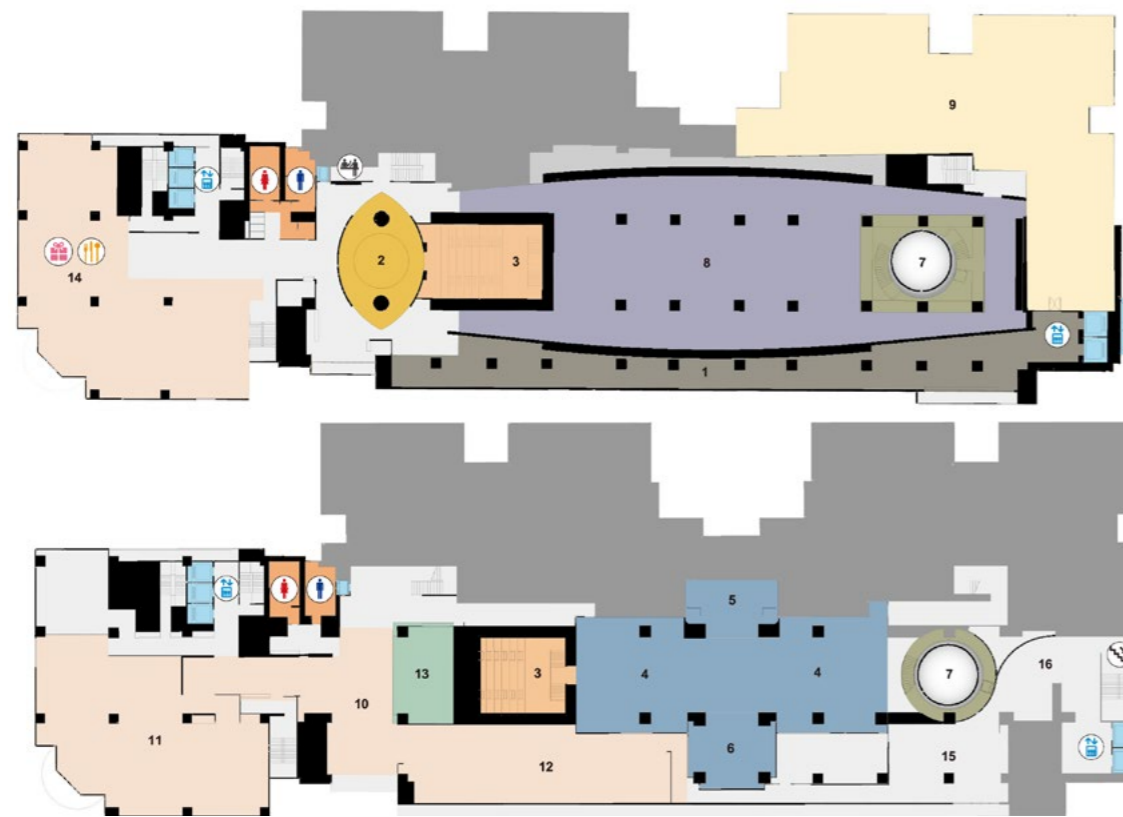
1. pilgrims' way
2. golden lobby
3. creations hall
4. hall of life's journey
5. awakenings
6. meditation gallery
7. avatamsaka world
8. great hall of world religions
9. love wonderland
10. hall of earthly peace
11. special exhibit area I
12. special exhibit area II
13. multi-function room
14. the space for life, peace and creativity
15. multifunctional education center
16. museum history exhibition room

2.2.4 Museum of World Religions in Taipei

The museum was founded in 2001 on the initiative of Hsin Tao, a Buddhist monk born in Myanmar who, orphaned at an early age, moved to Taiwan in his youth.
Taiwan is the second most religiously diverse country in the world according to the PEW Research Center, and this makes of it an ideal place for a similar museum.
The declared mission of the museum is to emphasize international aspects and include every religious belief of the world, promoting tolerance and knowledge. The idea of the founder is to attract the interest of people mixing education with leisure time, also through the use of technology to attract young people, and to provide essential information and multiplicity of choice to the visitors: "entering the museum will be like entering a religious department store"[1].
The museum is on the 6th and 7th floor of a high rise building and it has been designed by Ralph Appelbaum Associates. There are a temporary and a permanent exhibition, which follow a thematic criteria of distribution, with symbolic spaces that try to unify all religions, and other spaces that illustrate with artifacts, architectural models, panels and interactive technologies eight different major religions each time (Buddhism, Daoism, Christianity, Islam, Hinduism, Sikhism, Judaism and Shinto), including temporary exhibitions on two ancient religions.
Admission is free for over 65 and under 2, with a regular price of 4,42€.

Other (minor) museums on one or more religions in Europe are:

- *Stara Zagora Museum of religions in Bulgaria, opened in 1907*
- *Museum of Religions in Germany (Philipps-Universitat), opened in 1927*
- *Museum Catharijneconvent in the Netherlands, opened in 1979*
- *St Mungo Museum of Religious Life and Art in Glasgow, opened in 1993*
- *Interreligious Museum Bertinoro in Italy, opened in 2005*

1. archaic and primitive bilieves
2. silver treasury (orthodox)
3. religions of the ancient world: polytheism
4. religions of the ancient world: Judaism and the rise of monotheism
5. religions of the ancient world: concepts of the soul and the afterlife
6. rise of Christianity
7. the history of Russian Orthodoxy
8. the Catholicism
9. Protestantism department
10. religions of the East
11. Sukhavati: the pure land of Buddha Amitabha
12. the Islam

2.2.5 Museum of the history of religions in St. Petersburg

The State Museum of the History of Religion was founded in 1932 as a part of the Academy of Sciences of the USSR, following the initiative of Vladimir Bogoraz-Tan (1865-1936), a Russian historian, ethnographer and anthropologist. In opposition to the numerous antireligious museums supported by the regime, it had the purpose of exploring the complex social and historical phenomenon involved in religions, including religious arts and psychological aspects of faith. In 1954 the words "and Atheism" were added at the end of its name and in 1961 it went under the supervision of the Ministry of culture, to finally get back its original name in 1990.
Today the museum collection contains about 250.000 exhibits in its permanent exhibition, but it also hosts a temporary one.
The organization of the permanent exhibition follows a mixture of geographical and chronological order, starting from the first beliefs known in the history of mankind, and ending with the youngest of the major religions, Islam.
The museum follows a didactic approach, which tends to separate the topics and look at them in an analytical and historical perspective rather than aiming at showing the unifying factors, as it is the case in the example described in the previous page.
Admission is free for children under 7 and the regular price is 4,23€.
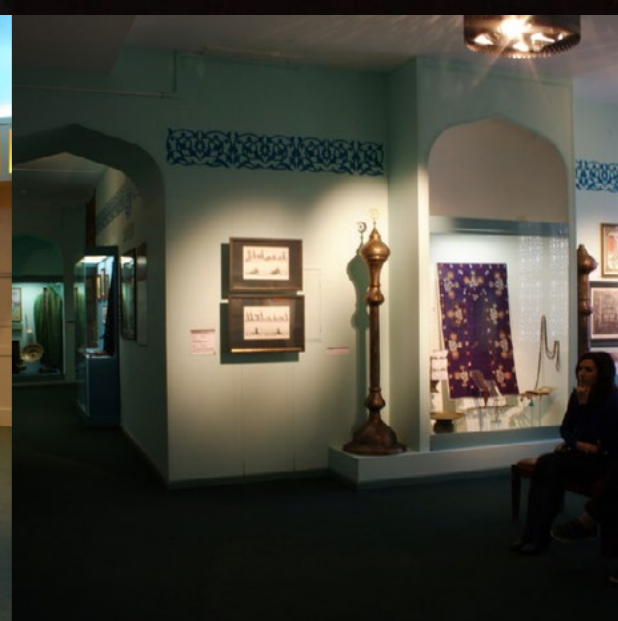
Figure 25. *Five squared plans of important temples of the five selected religions*
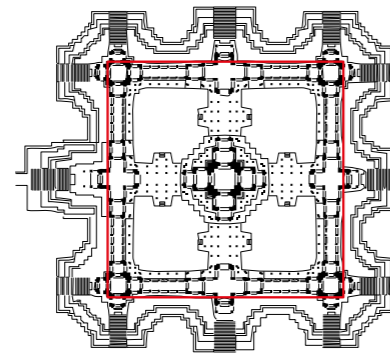
Angkor Wat, Cambodia
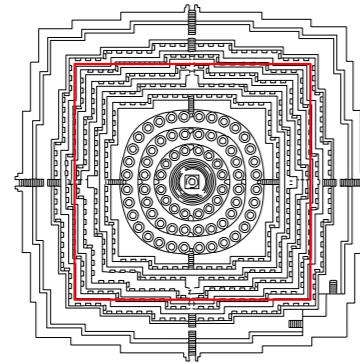
Borobudur, Indonesia
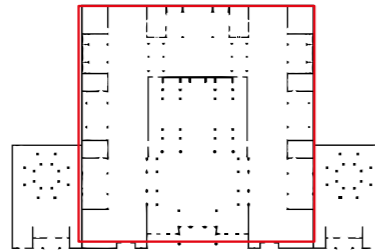
Thian Hock Keng, Singapore
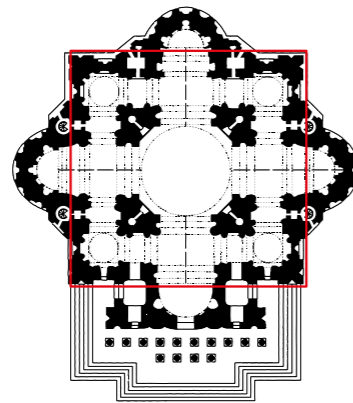
St. Peter's Basilica, Vatican City State
(as in Michelangelo project)
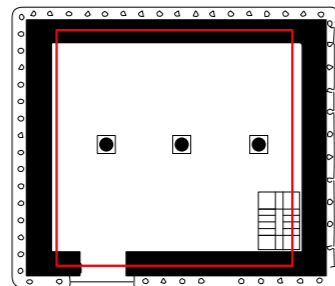
Kaaba, Saudi Arabia

2.3 Case Studies

In the next pages some case studies for each of the five religions we deal with are illustrated (on the left page), selected based on the importance they had in inspiring some aspects of the design. They are combined with a synthesis of the important elements that characterize a place of worship of each religion (on the right page), which is based on both observation and consultation of manuals dedicated to the topic.

Here on the left page are represented the floor plans of some of the major temples of each religion that testify that the square is probably the most important geometrical figure that can be observed in religious architecture. Many other typologies can be named as the circular or rectangular plan, but the great amount of examples and the relevance of these buildings in the history of the respective religions lead us to conclude that the most universal and the most historically affirmed typology is the square plan temple.

Among the case studies there are also projects related to the specific religion that are not official temples, but are selected for their strong representative character, which in some cases translates the religious tradition into a modern architectural language. Most of them are modern. The representative examples that are not official churches for Christianity are: the *Saint Peter's square*, chosen to show that the column can be found in the most important square of Catholicism enclosing the faithfuls in the recurrent oval disposition, typical of Baroque; the *Danteum* for its translation of Dante's Divine Comedy in architectural spaces with a carefully thought use of light for representing Hell, Purgatory and, particularly interesting, Heaven, with glazed columns; and finally the project "reading between the lines", which well represents an ethereal religious architecture.

Others are *Namaz Khane*, which is not a mosque but a prayer room for Muslims in a sculptural environment, which has a peculiar way of directing movement and actions, and last the Buddhist *Center of Gravity Hall*, which is both a Zen meditation center of an association and a Buddhist temple.

All the others following are actual temples.

Figure 26. Bird eye view drawing and floor plan of Saint Peter's square and Basilica
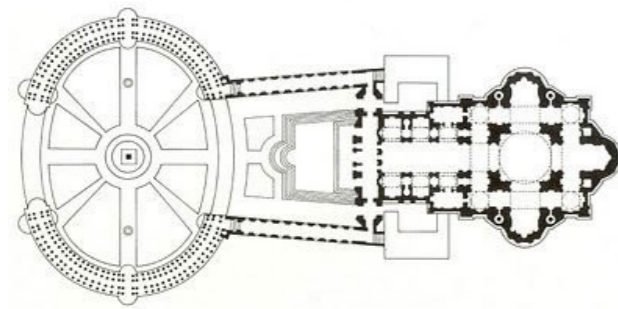
Saint Peter's square - Gian Lorenzo Bernini, Rome, Italy, 1667

Figure 27. Modern Render and original floor plan of the Danteum
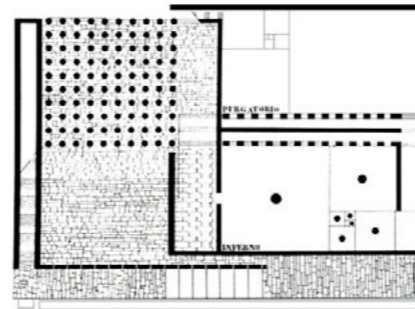
Danteum - Giuseppe Terragni, Rome, 1938-1940

Figure 28. Pictures of "reading between the lines" project
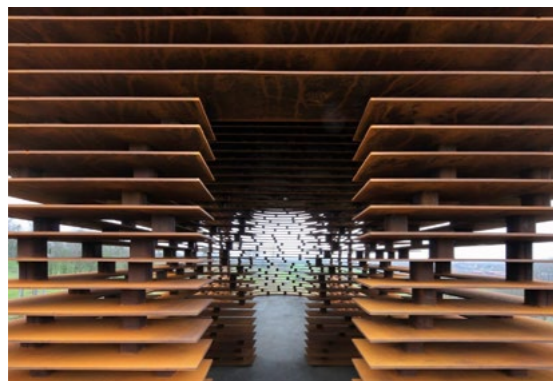
Reading between the lines - Gijs Van Vaerenbergh, in Looz, Limburg, Belgium 2011
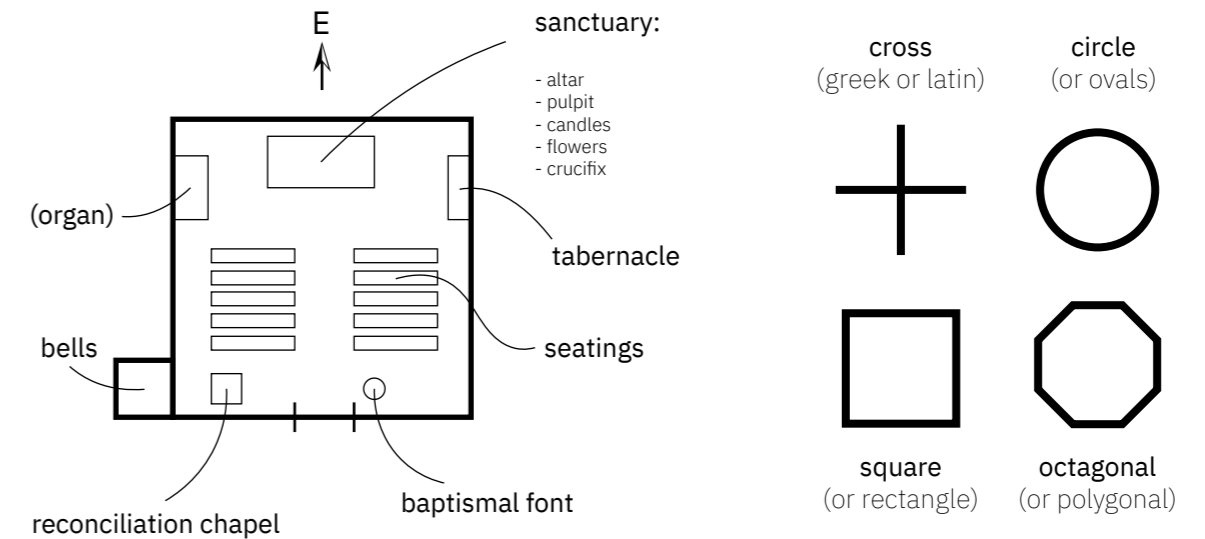
Figure 29. Schemes of church's elements and plan typologies

2.3.1 Catholic Church   †

Christianity has developed many different typologies of sacred spaces in its history, under the influence of geography, religious congregations, building technologies, and other factors. Catholic churches, in particular, can be considered as very versatile in style: from the Romanic to the Gothic, and later Baroque, modern movement, post-modern etc. The variety can also be observed in the different typical floor plans adopted in history: Greek or Latin cross, circular or oval, squared or rectangular, and a variety of polygonal figures. In this rich and long tradition some spaces have been codified and they, as usually in religious buildings, are planned in view of the rituals, which in the case of the Catholic tradition consist of established traditions and the seven Sacraments, divided in: initiation (baptism, confirmation and eucharist), healing (reconciliation, anointing of the sick) and service (holy orders and matrimony). Religious schisms in Christianity brought to the recognition of different sacraments and consequently also a differentiation in architecture, despite similarities and a common base that all Christians share.

The most important and specific design concerns for Catholic churches are in some standards that they should provide to the faithfuls. The ***sanctuary***, where ministers celebrate the rituals of the liturgy, consists of: altar, pulpit, a crucifix, candles and flowers; in some case also seats for the presiding priest or other ministers. The ***congregation seating***, where faithfuls attend to religious celebrations, can be pews, movable chairs, a combination of the two, or even theatre-style fixed seating. A ***baptismal font*** should greet the congregation as they arrive in the church, and this element acquired a renewed importance since the Second Vatican Council. ***Bells*** were introduced in the Christian tradition in the VIII century C.E., and can deliver different messages to faithfuls in the proximity of the sacred place. A ***reconciliation chapel*** must be provided for the Penance rite, also known as confession, as also a ***tabernacle***, which could be placed either in the sanctuary apart from the altar or in another chapel suitable for adoration and private prayer. Music space, dedicated to a choir or an organ and similar can additionally be provided, as other ancillary spaces.

Other important features are that traditionally churches are oriented towards East and that a gathering space can usually be found in the proximity of the entrance.
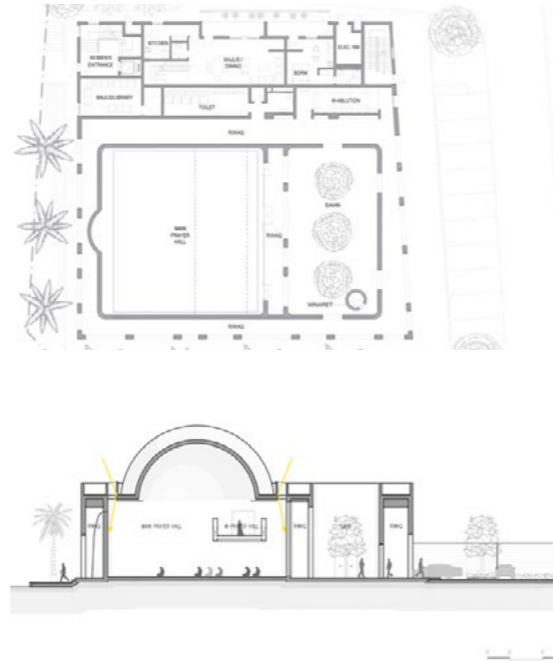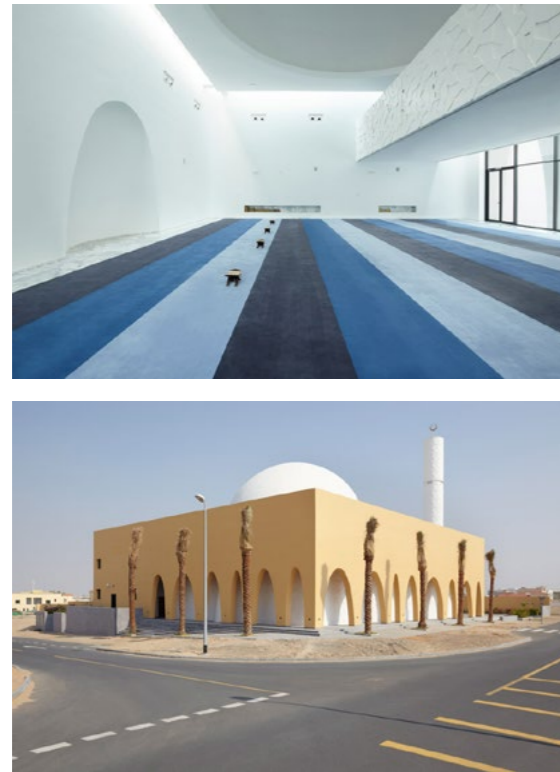
Dubai mosque - Ibda Design, Dubai 2016, United Arab Emirates

Namaz Khaneh - architect Kamran Diba, Tehran, Iran 1978
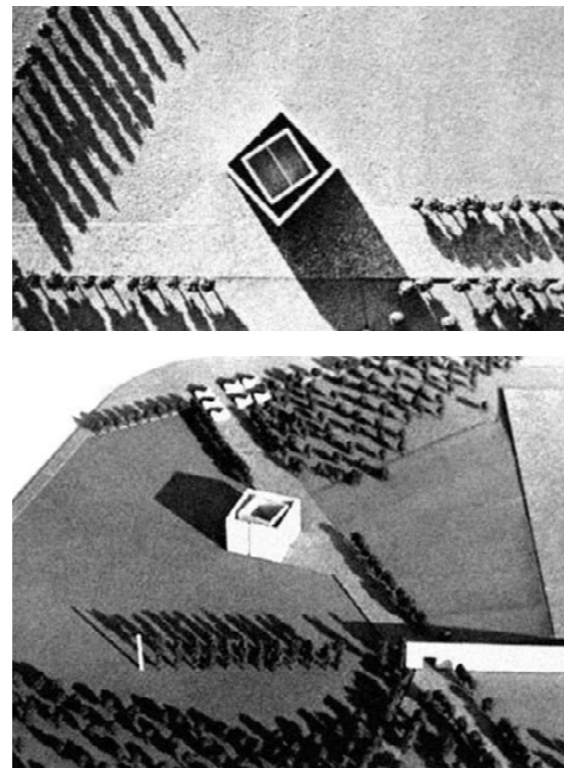
Mecca

qibla wall

mihrab

women gallery

minbar

minaret

sahn

open plan   closed plan
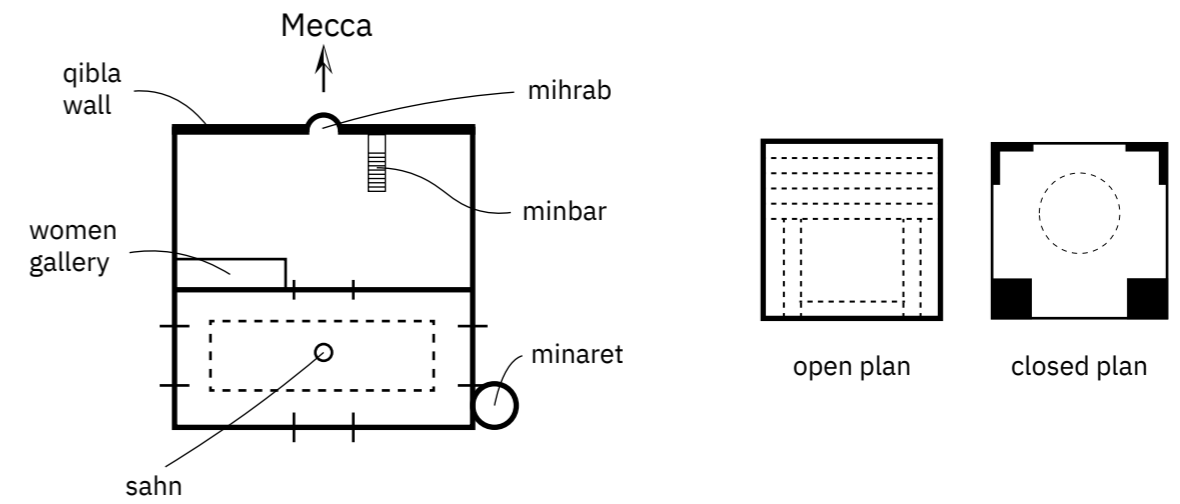
2.3.2 Mosque ☾

As the principal religious building of the Islamic religious community the mosque has an important role in the life of Muslims, despite the fact that they can also perform the five daily prayers at home and that women are not everywhere encouraged to take part in the mosques' congregations. The broad diffusion of Islam in a large area of the world, from northern Africa to Asia, has led to a large variety of architectural practices and styles for the construction of mosques. A first main distinction can be traced on the base of the floor plan organization in open-plan and closed-plan design, while a second based on geographical traditions in: Arabic, Persian, Turkish and Indian. A large variety of modern mosques can also be observed departing from these old traditions in terms of style.

Despite these differences some design rules have been set that all mosques respect. The first important condition is that the orientation points toward Mecca. A **mihrab**, or niche, in the **qibla wall**, the wall pointing to Mecca which usually differs from the others by size, is defining the direction for prayers. The **minbar**, a pulpit used for Friday sermons and special occasions, usually takes the form of an enclosed space with an entrance portal and a miniature flight of stairs leading to a platform visible to the prayers where the speaker addresses the congregation. It must be located in front of the qibla wall and to the right of the mihrab. The **minaret** is a distinguished and free-standing tower which indicates a building of worship to the faithfuls and it is also the place from which the adhan, the call to daily prayer, is called by the muezzin. Women usually have an enclosed space for praying, so called **galleries**, which is commonly placed behind the main prayer hall where men can pray, and it is usually 5-25% of the men area size. The **sahn**, a courtyard, is usually used as a transitional space between the sacred and the profane and it could contain a fountain or pool. In addition, domes can be found in many mosques, as also gateways marking the threshold to the sacred space, and muqarnas, a typical decoration in the transition from round to square in vaulted ceilings.

A last important thing that differentiate Islam from the other religions analyzed here is that, similarly to Judaism, the depiction of sacred images is forbidden in sacred spaces, and therefore writings and abstract and floral decoration are widely used in its tradition.

Buddhist temple - Toru Kashihara Architects, Tokyo, 2019

Center of Gravity Hall - Predock Frane, USA, 2003

statues of Buddha

tables
(for offerings
and instruments)

benches

prayer mats

circumbulating
path

axial path

segmented path
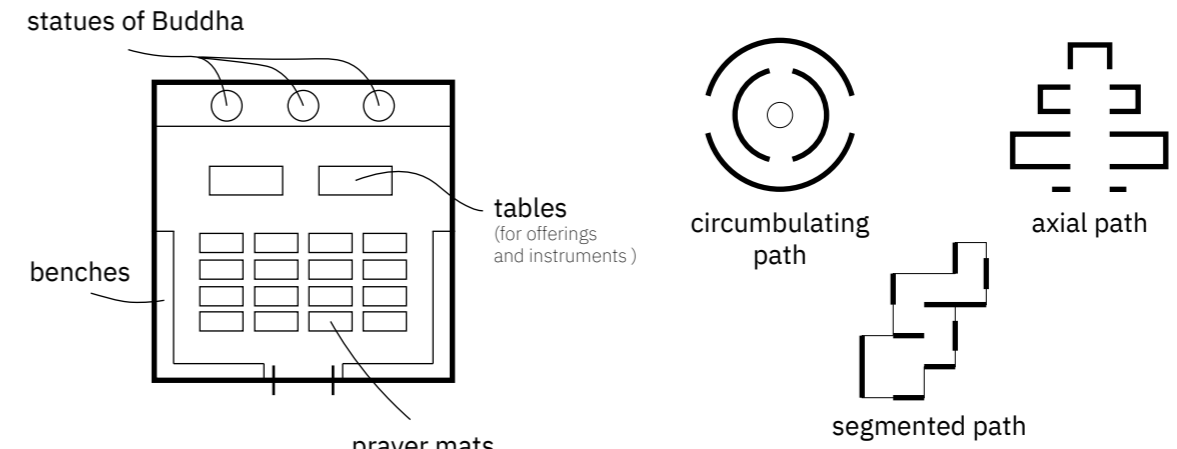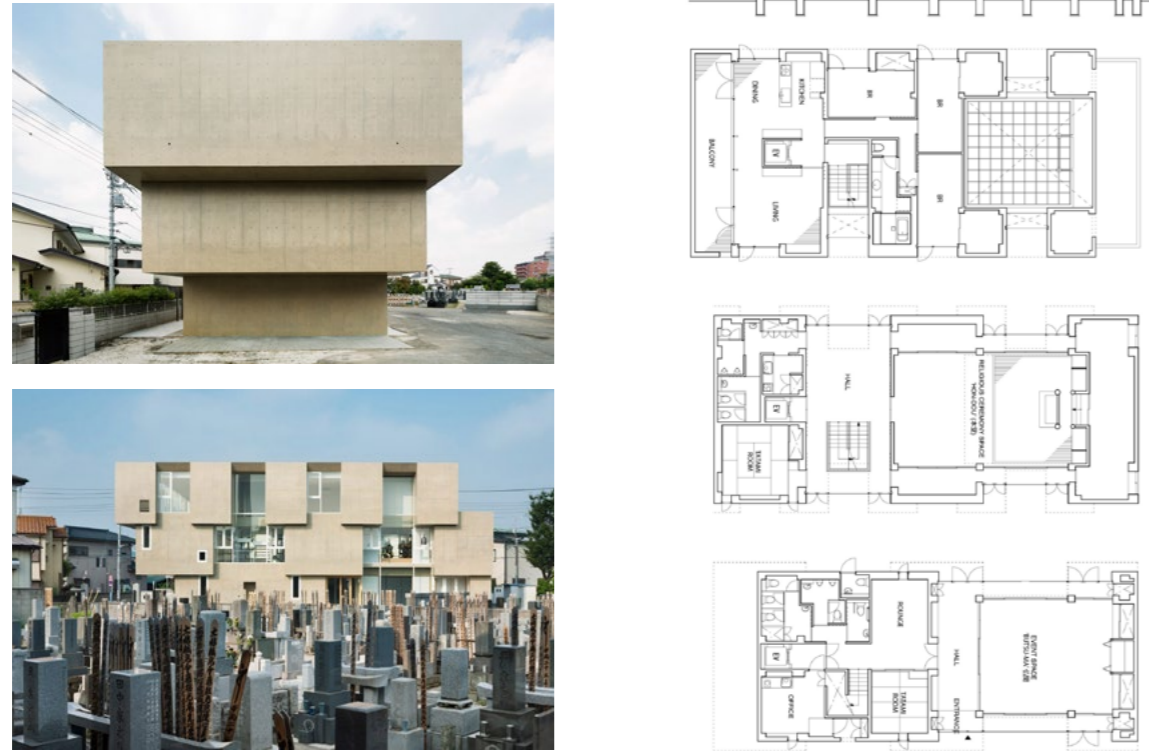
2.3.3 Buddhist temple ✿

The several strands of Buddhism created many different styles of temples. They can vary considerably also in dimension, ranging from small buildings to complexes which include many facilities. In the Buddhist tradition private worship is practiced alone in meditation, while the days of collective worship are usually arranged on the base of the moon phases, depending on the different strands. Buddhist monks can live inside the temple complex, which is a typology that can be found with more frequency in rural areas, while smaller temples are more common in urban contexts. In fact, the presence of natural elements has a particular importance and even in urban temples a reminder of nature is usually integrated in the form of gardens with ponds and trees.

Inside the variety three recurring plan typologies can be observed, based on the path the visitor has to follow as a symbolic journey toward enlightenment: a first one is the circumambulating path which is organized around a central sacred space surrounded by concentric rings, a second one is the segmented path which consists of multidirectional connected series of paths that lead through gates and spaces before reaching the sacred place and is the most common in Buddhist complexes, a third one is the axial path which leads the visitor in along a linear axis between buildings arranged symmetrically. Besides these, it is possible to find small temples consisting of simply one hall. Complexes usually include a main gate, a decorated bodhisattva hall, a meditation hall, a courtyard for walking meditation and gardens besides the main shrine. This last is the most important and essential part of a Buddhist temple and consists of: an altar located along the back where one or more statues of the Buddha, the most prominent object of worship, are placed; instruments, such as gongs, drums and bells; offering tables, which are usually placed on the sides of the altar, with candles as offerings to the Buddha, or as alternatives incense, flowers, lamps soaps, fruits, tea, food, treasure, beads, and clothes; depending on the belief associated with the temple there could be kneeling pads facing the altar organized in rows on the floor.

In the Buddhist tradition wood is a typical material for the construction of temples and the primary structure is often a post-and-lintel frame, yet in modern times it is common to find temples made of different materials.
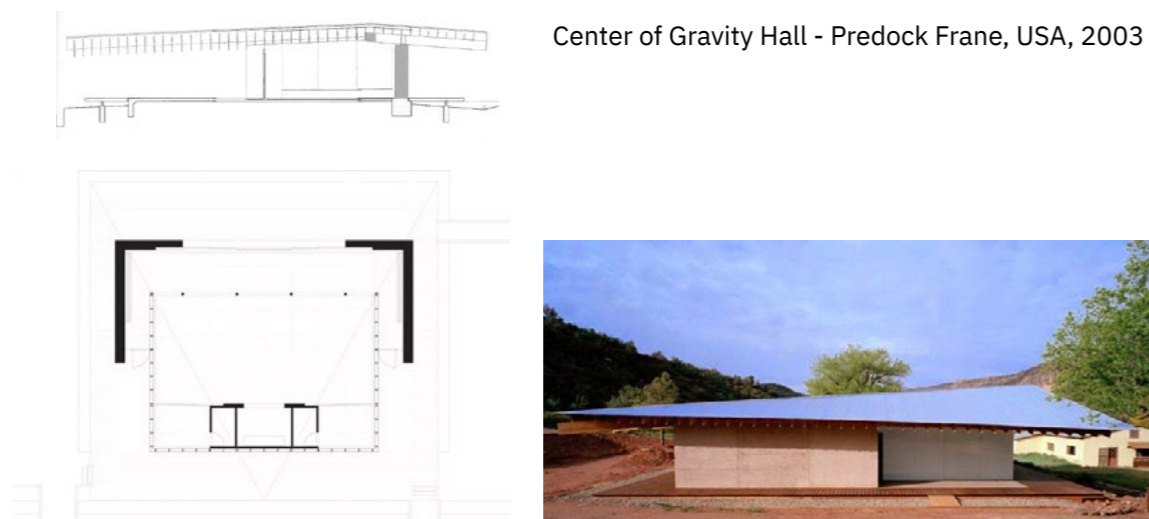
Wong Dai Sin Temple -Shim-Sutcliffe Architects, Markham, Canada, 2015
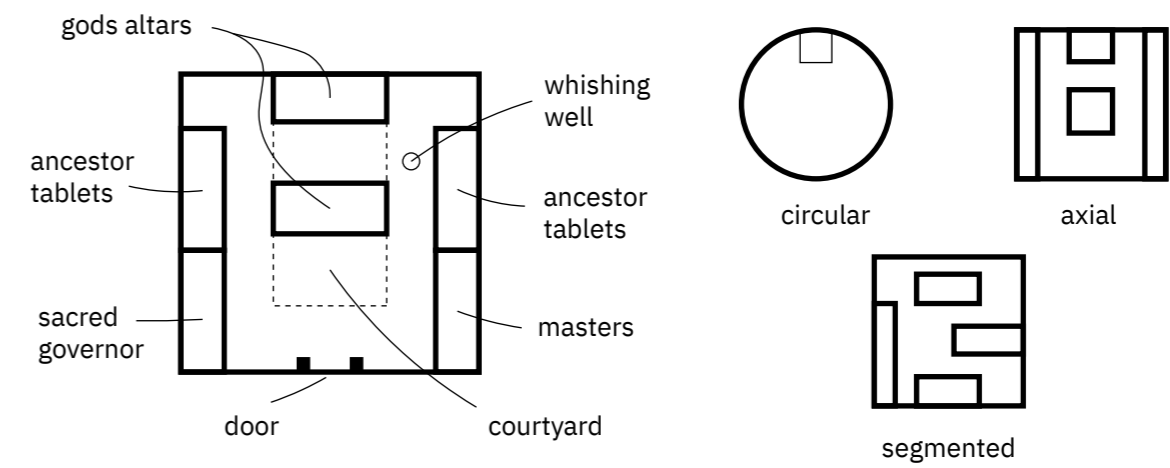
2.3.4 Taoist temple ☯

Temple for the God of Wealth - CNRPD/Fuyingbin Studio, China 2018

The Taoist tradition has roots in China, and its architecture has been obviously influenced by the local architecture, and also by Buddhist temples architecture in particular, since the two religions have, in some cases, managed to integrate one another in a form of syncretism. Taoism presents also regional differences within itself in terms both of practices and architecture based on the Taoist school the temple belongs, with the influence not only of Buddhism but also of Confucianism to be mentioned. Taoist temples can be found both in remote rural regions and in cities, and the emphasis on the contact with nature is even stronger than in Buddhism, with many altars spread in the natural environment where gods and spirits are believed to have their residence. Temples can be both single buildings or a complex in the form of monasteries, where monks live rather detached from the mundane life. It is to be observed that most rites in Taoism can be performed everywhere and don't need a temple, in so far as the presence of the daoshi is present, so that even an apartment can be used for religious purposes.

The organization of temples often resembles the Buddhists, and it is divided in holy halls for sacrifice, altars to pray at, courtyards, gardens, an entrance gate or door and in monasteries there are also houses to live in and rooms to chant scriptures in, besides other facilities for education. It is also common to find a furnace to refine pills of immortality, that are believed to lengthen the duration of life. In the main sanctuary it can usually be found *altars* dedicated to specific gods, where offerings can be placed, a room dedicated to the *ancestors*, with tablets where their names are written, some altars dedicated to important political figures of the past, an *entrance door* and sometimes even a *wishing well*.

Different typologies can be observed, similarly to Buddhism, where the organization of the plan is in a segmented path or in an axial path which respect symmetry, but with the presence also of a different type following a circular organization with the altar placed on one side.

SANCTUM

LINGA

DHYAN KAKSH
(MEDITATION
PLACE)
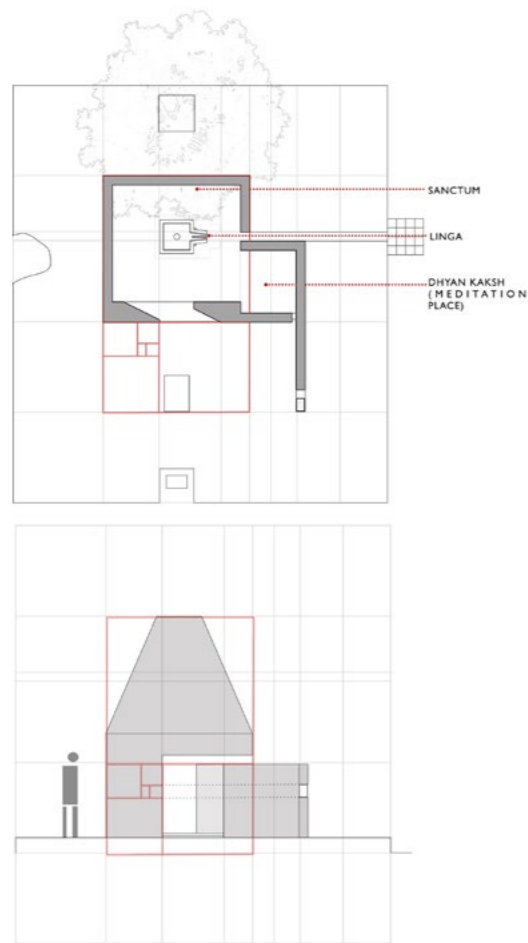
Tejorling Radiance Temple- Karan Darda
Architects, Pune, India, 2018
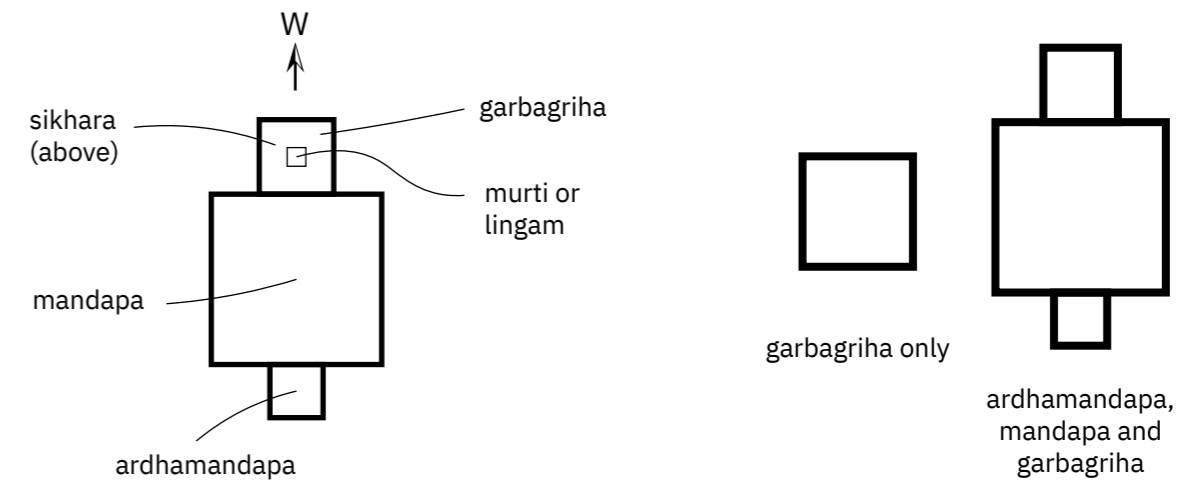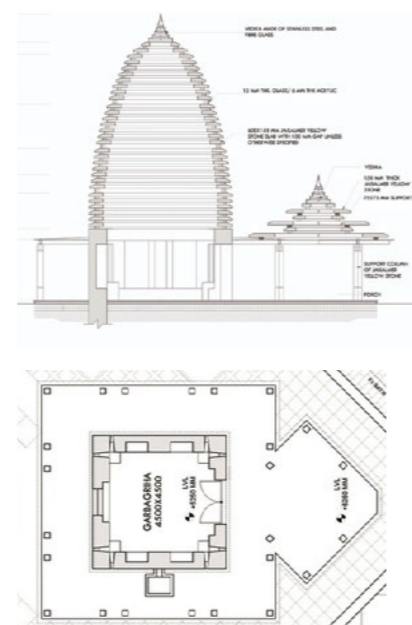
Hindu Temple in Barmer -
SpaceMatters, India, 2016

W

sikhara
(above)

garbagriha

murti or
lingam

mandapa

ardhamandapa

garbagriha only

ardhamandapa,
mandapa and
garbagriha

2.3.5 Hindu temple ॐ

The Hindu temple is central in all aspects of everyday life for the Hindu community and there are no fixed days of the week for believers to congregate, besides important festivities and celebrations during the year. In the history of Hinduism a complex symbolism was developed and a strong representational emphasis can be observed in temples, usually richly decorated with statues and colours. A quite strict rule of orientation is also observed, following that symbolism, with the entrance facing East so that the rising sun can penetrate into the temple. In India three stylistic classification for traditional temples have been identified: the Nagura, or northern style, the Dravida, or southern style, and the Vesara, a hybrid of the previous two. Yet nowadays, besides traditional styles, more variation and less decorative examples can be observed.

Hindu temples are constituted by key programmatic elements, with some variation: the most important and essential is the *garbagriha*, literally the "womb", which is the inner sanctuary that houses the sacred objects, images, and symbols of the deity to whom the temple is dedicated, so called *lingam* or *murti* of the god, around which the visitors can walk and bring offerings to the god. This room is usually the same in height and width and above it is most often located the Sikhara, which is the typical pyramidal roof, usually not visible from the room itself, hided by a ceiling. Besides the garbagriha, there could be other two elements: the *mandapa*, which is the central hall that serves as an assembly for the devotees and which sometimes is repeated more than once, and the *ardhamandapa,* or porch, that acts as the entrance to the temple and is usually in the form of a raised platform with steps leading to the temple. It is also possible to find larger complexes where other facilities are integrated such as educational spaces, auditoriums, courtyards, and places for ablution. Since the temple architecture of Hinduism is centered on gravity and mass, with its very thick walls, and commonly richly decorated with statues it has been also called large-scale sculpture.

LOCATION

Figure 43. explicative charts for the choice of the location

PEW RELIGIOUS DIVERSITY INDEX

1.		**Singapore**	**9.0**
2.		Taiwan	8.2
3.		Vietnam	7.7
4.		Suriname	7.6
5.		Guinea-Bissau	7.5

Sources: Pew Research Center
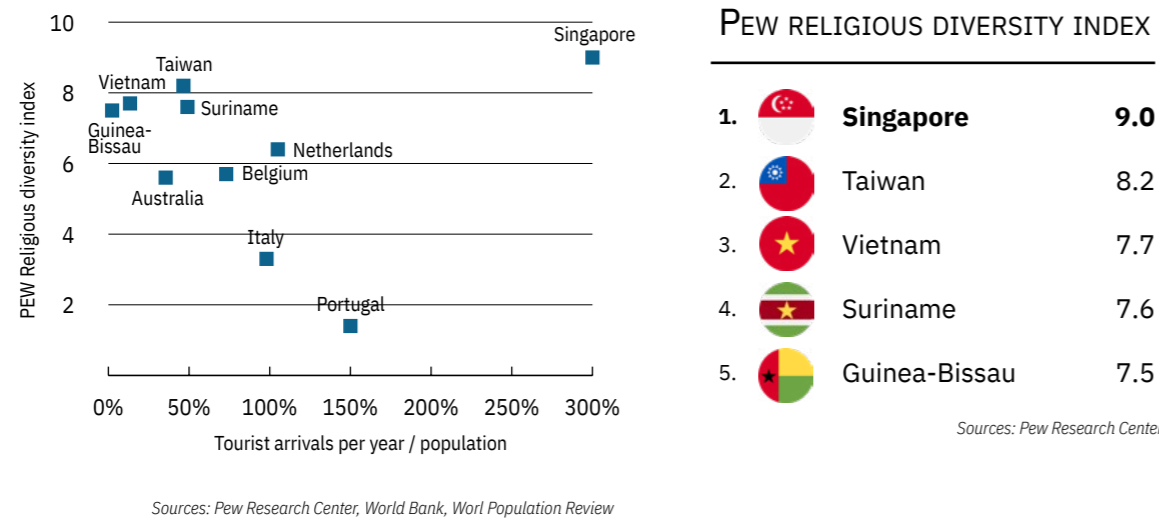
Sources: Pew Research Center, World Bank, Worl Population Review

Legend
Population density (residents per sq km)
- 0 - 5.000
- 5.000 - 10.000
- 10.000 - 15.000
- 15.000 - 20.000
- 20.000 - 25.000
- 25.000 - 30.000
- 30.000 - 35.000
- 35.000 - 40.000
- 40.000 - 45.000
- 45.000 - 50.000

Sources: gov.sg

Figure 44. Singapore density of population

3.1 Singapore

[1] A. H. C. Ylagan (2018), Innovation in the business ecosystem; Business World.

[2] Velayutham S. (2009) Everyday Racism in Singapore. In: Wise A., Velayutham S. (eds) Everyday Multiculturalism. Palgrave Macmillan, London

[3] Pew Research Center: Religion & Public Life (2012); The Global Religious Landscape.

The city-state of Singapore appears as the ideal place for this project for several reasons. Plurality of ethnicities, religions and nationalities (39% of its residents are foreign nationals [1]) combined with a prosperous economy based on trade, logistics, technology, finance and tourism, make it a shining example of a global city.

The quite recent colonial foundation, in 1819, and the strategic geographical position for commerce made of it a rapidly growing city with large numbers of people from different countries moving there. Peaceful coexistence of many religions is part of its culture from early times – with only two occasions of serious conflicts in the last century, still taught to children at school as a reminder: the Maria Hertogh riot in 1950 (18 people killed) and the 1964 race riots (22 people killed)[2].

In 2014, a study by Pew Research Center recognized Singapore as the most religiously diverse nation in the world [3], and - relevant for this project - it is also a quite proportionate representation of the world religious affiliations, despite an over-representation of Buddhism (33% of affiliated population that makes it the first religion of the island).

Religious festivals and events are part of the city popular culture, and the high degree of religious tolerance can be best exemplified by the activities of the Inter-Religious Organisation, Singapore (IRO) – with ten major religions represented in the organisation, founded in 1949 and still operating – or, as we already saw, by the Loyang Tua Pek Kong Temple, a 24/7 open religious building where a Buddhist, Hindu and Taoist temple are co-located and the different deities worshipped in the same space.

The world five major religions indicated are also the major ones in Singapore, with only 0,6% of the population affiliated to other religions. The city can also be considered quite religious since only 18,3% of its population declare no affiliation.

Singapore tourism boomed after 1981, when the Singapore Changi Airport was opened and Singapore Airlines formed, and today is still growing, with 18,5 million visitors in 2018, which makes of it the 5th most visited city in the world [4]. Therefore, a project that has the ambition of attracting tourists is very fitting to it, especially because it is a city more famous and appreciated for the novelties it offers than for its (short) history.
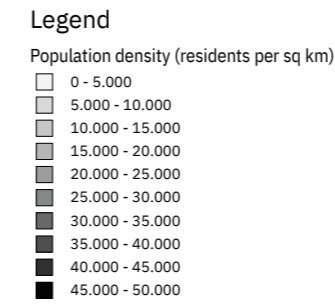
A stimulating and challenging aspect of designing in Singapore is that the amount of buildable land is limited and therefore expensive, which suggests the city will develop more and more along the vertical axis, or by reclaiming land from the ocean (it already increased by 23% in size from its independence in 1965 [5]), or, as some (Prof. Chien Ming Wang for instance) are studying and proposing, by building VLFPs (very large floating structures) on the ocean. The limited amount of land available and the large amount of people attracted by the city prosperous economy made of it one of the most densely populated area in the world.

Despite the city is famous as a place of thriving business and as a tax haven, its multicultural identity makes of it a unique place where different ethnical groups and religions managed to coexist peacefully. It is sufficient to mention, as an emblematic fact, that the state recognizes four official languages: English, Malay, Mandarin and Tamil. It is projected, according to a report of Citibank [6], that Singapore could become by 2050 the state with the highest GDP per capita in the world with 137.710,00$ per year. Its fame is then justified, and global tendencies are mirrored in the urban development of the city. However, its deep cultural roots are often overlooked, and it is precisely the conjunction of traditional ethnical and religious values with the global values of a free market economy that makes it a unique example of global city.

An attempt to embody this marriage of values is a unique possibility offered by this special location, in which every year arrive 18 million tourists, which is approximately three times the number of the residents.

However, despite the apparent harmony, the city state can also be seen in a quite suspicious way by a Western eye, because liberal values, differently from the consumerist ones, did not spread so deeply in this society, where the state detain a large decisional power, and where death penalty is required by law for drug dealers, to bring an example.

[4] The Straits Times; Singapore is 2nd most visited city in Asia-Pacific, 5th in the world: Mastercard (2018)

[5] Erik S. Mustonen, ASLA, CSLA, RLA (CA + MN), CLARB, LEED APND (2018). The 2018 IFLA World Congress in Singapore. Retrieved from: https://thefield.asla.org/2018/08/16/the-2018-ifla-world-congress-in-singapore/

[6] The Straits Times; Singapore is 2nd most visited city in Asia-Pacific, 5th in the world: Mastercard (2018)

WORLD   SINGAPORE

31,5%	Christianity	18,7%
23,2%	Islam	14,0%
16,3%	No affiliation	18,3%
15,0%	Hinduism	5,0%
7,1%	Buddhism	33,2%
5,9%	Folk religion, Taoism	11,0%
1,0%	Others	0,6%

Figure 45. Comparison chart of the religious affiliation in Singapore and in the world
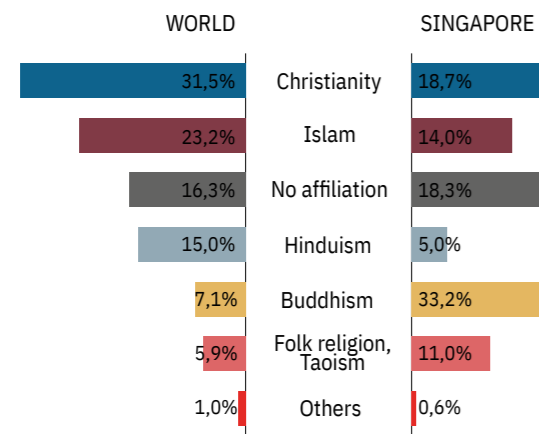
Sources: Pew Research Center, Statistics Singapore

Four official languages
Empat bahasa rasmi
四种官方语言
நான்கு உத்தியோகபூர்வ மொழிகள்

Figure 46. Chart on the variation of religious affiliation in Singapore
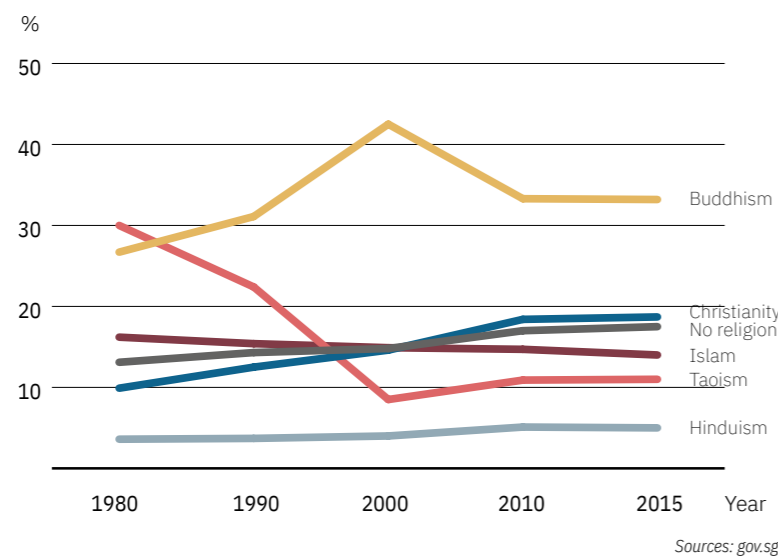
Sources: gov.sg

3.2 History

When Thomas Stamford Raffles arrived in the island in 1819 to establish a new British colony and a port of obliged passage for the maritime commerce between India and China, found only around one thousand people living there.

Indians, Malays and Chinese were attracted by the need of work force of the colony from the very beginning, and they have been the majority of its population since then (British being a minority only busy with the government). Malays were the major ethnic group, but the proportions have gradually changed, and now Chinese are the majority.

During the colonial period the newly founded city grew steadily and considerably in number of inhabitants and maritime traffic, passing through the different British governmental administrations. The construction of new infrastructures were a determinant factor in this growth.

During WWII the island was an object of contention between the British Empire and Japan, which occupied it on the same day in which it attacked Pearl Harbor, to subtract a strategic military base of the Allies in South-

Figure 48. Illustration of the double soul of Singapore

Figure 47. Comparison chart of the resident population of Singapore with its tourists
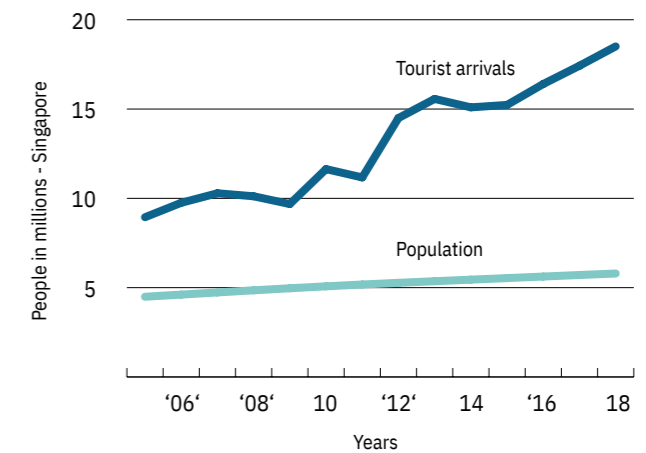
Sources: UN, Singapore Tourism Board

Figure 49. Chart of the yearly average weather in Singapore
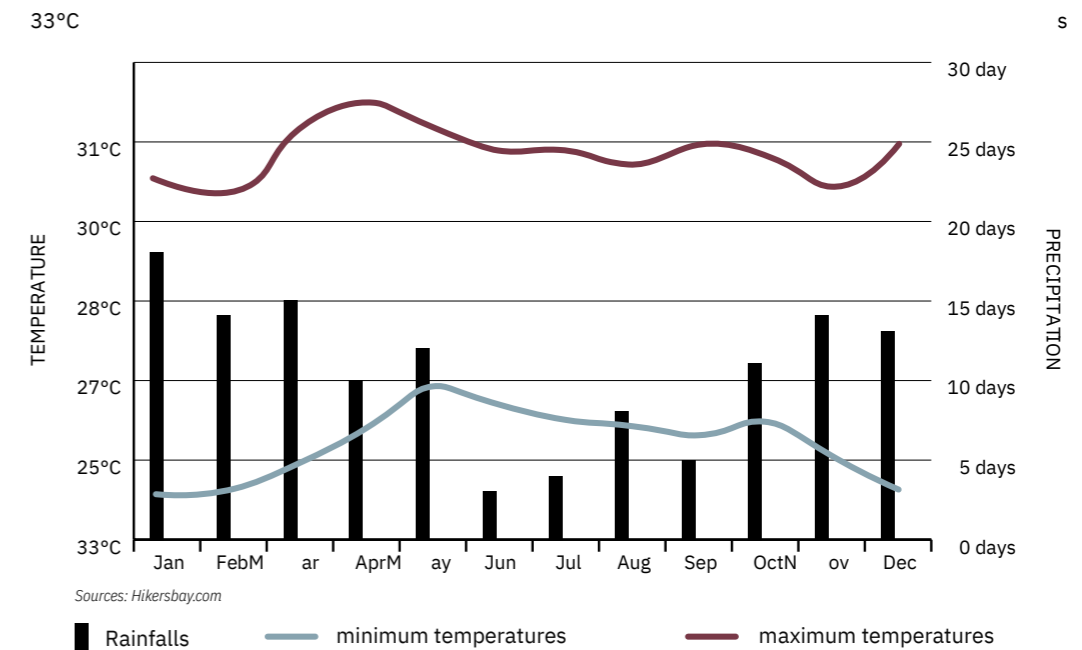
Sources: Hikersbay.com

■ Rainfalls — minimum temperatures — maximum temperatures

East Asia, causing the Pacific war to begin.
After the Japanese surrender in 1945 Singapore returned to the British, but with growing discontent in the population, which saw the fallibility of Britain in protecting the island during the war.

In 1958, after attempts of including the locals in the government of the city by the British, the State of Singapore Act was passed in the United Kingdom Parliament providing for the establishment of the State of Singapore, and free elections were held the next year. The People's Action Party led by Lee Kuan Yew won, and after the attempt for some years of merging with Malaysia, the independence was gained abruptly in 1965. The leader remained in power for more than 30 years, and the party has won every election since then (60 years). From the 60ies the economy and the population growth boomed, also thanks to the policy adopted by the government, which decided to invest in industrial estates and attract foreign investments to the country with tax incentives. From a condition of relative poverty it became a modern metropolis in few years.

Figure 50. *Timeline of the history of Singapore*

1819 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 **1965** 1970 1980 1990 2000 2010 2020 2030 2040 2050

Source: Singapore Government

DEMOGRAPHY

5.680.000
6.378.000
9,2%
13,4%

74,1%

1000

POPULATION

ETHNICITY
- Others
- Indians
- Malays
- Chinese

POLITICS

Source: Singapore Government

31,1%

69,9%

ELECTIONS
- Others
- PAP

137.710,00 $

Thomas Stamford Raffles
Governor and founder

THEN

Lee Kuan Yew
First prime minister, '59- '90 in charge (PAP)

INDEPENDENCE

Anti-Catholic riots
(500 dead)

Hokkien-Teochew riots
(200-480 dead, 222 injured)

WWII

Maria Hertogh riots
(18 dead, 173 injured)

1964 Race Riots
(36 dead, 556 injured)

Little India riots
(62 injured)

1819 – 1826
British East India Company

1826 – 1942
Straits Settlements

1942 – 1945
Japan

1946 – 1959
Colony of Singapore

1963 – 1965
Malaysia

1965 - present
Singapore

Source: World Bank

64.030,00 $

72,2%

ECONOMY

Port in a strategic position

Staple port

First railway

NOW

First airport

Changi airport

27,8%

PERCENTAGE ON GDP
- Private Owned Enterprises
- State Owned Enterprises

GDP per capita

427,00 $

GEOGRAPHY

580 Km²

ORIGIN

1958

1987

+ 20,7 %
2007

+ 24,1 %.
2017

+ 32,0 %
2030

We theorised and you people are getting it built

Fumihiko Maki about People's Park Complex[1]

"mediating public space": the city room - Fumihiko Maki

3.3 Architectural history of Singapore

Singapore architecture always maintained a direct connection with the Western world, since in early times all the most prestigious buildings were built by the British, importing styles, architects and engineers. In a second moment, with its independence, the tie was maintained with the affirmation of modernism for the construction of massive quantity of housing buildings, and a large number of architects operating in the international scene were commissioned for the design of representative buildings.

However, in its early history, the different ethnic groups emigrated on the island built in their traditional manner their temples and their neighborhoods, as it is the case with Chinatown, Little India, Kampong Glam.

The 19th century is characterized mainly by neoclassical and British colonial style, while already in the first half of the 20th century Modernism makes its appearance.

The importance of shading in the equatorial climate of Singapore determined also the presence of recurrent solutions that can be observed in its varied architecture.

After the independence the decisions taken by the governmental institutions for the development of the city were crucial, and in particular the Housing and Development Board (HDB). The urgency of solving the housing problem had the priority in the 60ies, and following also the indication given by the UN in a report appositely prepared, construction of housing blocks on massive scale began. The approach of the *tabula rasa*

was employed and very little of the old city survived. An interest in preservation by the government only appeared very late, in quite recent times, yet now there are almost 7200 heritage buildings protected[1].

However, after independence, despite the almost absolute monopoly of HDB (it is enough to mention that still today 90% of Singapore population lives in state owned apartments[2]), some Singaporean architecture studios affirmed themselves in the scene. The most important one, which produced works that can be considered an Asian modernism influenced by the Metabolists, is Design Partnership. Some of their projects can represent probably the most local form of architecture produced in the island. Their buildings try to respond to an Asian lifestyle, with a particular attention to the climate, as it is most visible in the Golden Mile Complex, where the reduction of surface exposed to the sun is minimized by following the sun direction in the shifting of each apartment on the horizontal direction and then benefitting of a terrace for each floor.

Besides a few exceptions, architecture in Singapore followed, and it is still following, the international tendencies, but conversely some local architecture studios are affirming themselves in the international scene, like WoHa architects for instance.

Finally, a peculiar aspect of its recent architecture is the affirmation of green terraces that enrich the densely built urban environment of parks and public space the city would otherwise be in shortage of.
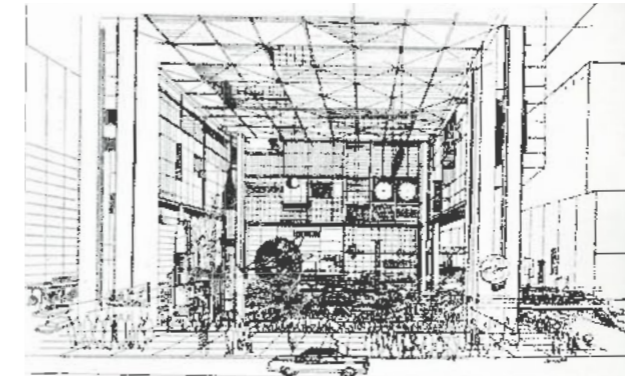
[...] The respect given to each specific culture - its ethnic, religious heritage - is an alibi for avoiding the serious demands - for more and more freedoms - of modern culture.
Each identity is a vessel carefully emptied through the efficiency of earlier cultural uprooting.

Rem Koolhaas about Singapore[1]

Source: URA Publication
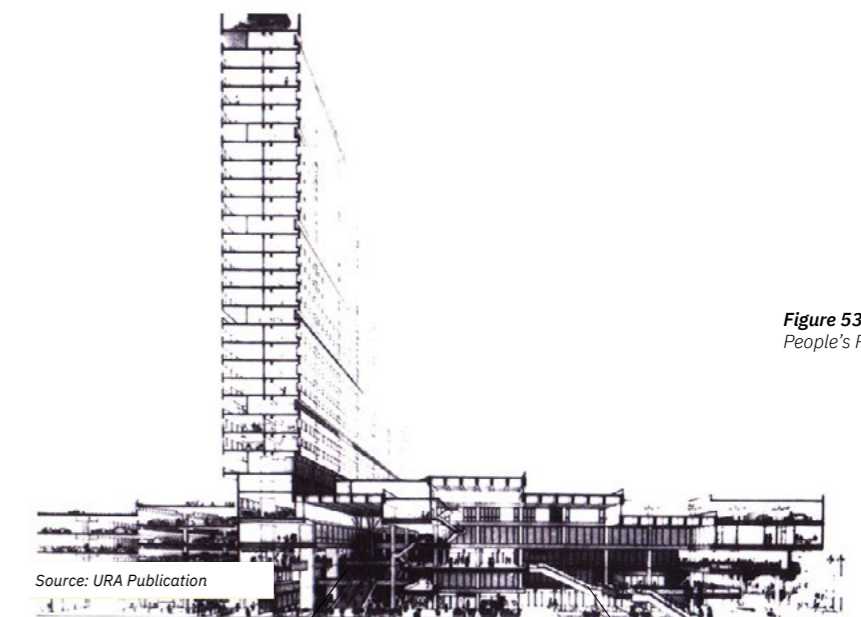
City Room   City Room

People's Park Complex, Singapore - Design Partnership
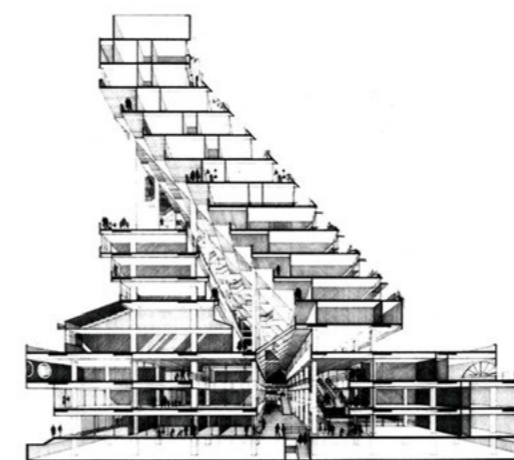
Golden Mile Complex, Singapore - Design Partnership

1820

NEO-CLASSICAL

TRADITIONAL

1845

GD Coleman

COLONIAL

1875

Public Works Department

1900

James McRitchie

VICTORIAN

1930

RAT Bidwell

BEAUX-ARTS

MODERNISM

1940

Figure 55. *Timeline of the history of architecture in Singapore*

1940

MODERNISM

Ng Keng Siang

Architects Team 3

Design partnership

METABOLISM

IM Pei and Partners
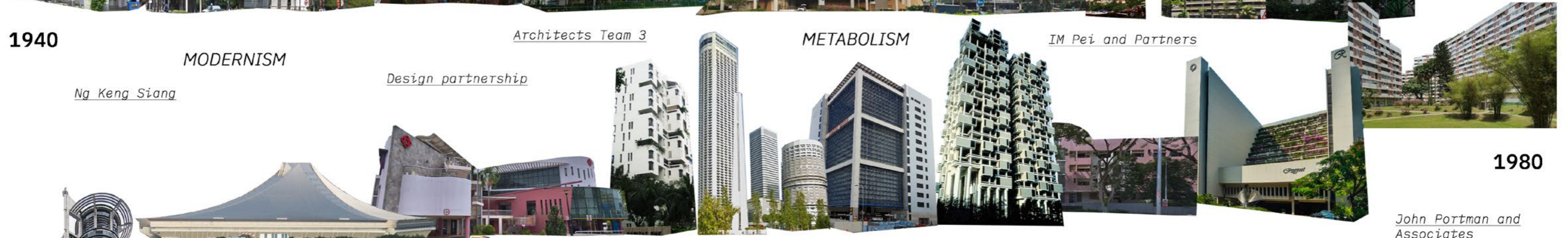
1980

John Portman and Associates

Kenzo Tange

BRUTALISM

Moshe Safdie

Paul Rudolph Architects

William Lim Associates

Foster and Partners

HIGH-TECH

1990

Kisho Kurokawa

POST-MODERNISM

James Stirling

URA

Tangguanbee

Akitek Tengara

ICONIC BUILDING

Richard Meier

2000

DP Architects

OMA

BIOMORPHIC

WOHA Architects

2019

Thomas Heatherwick

Figure 55. *Timeline of the history of architecture in Singapore*

Figure 57. Masterplan of Singapore 2014

7.183 conserved heritage buildings

LEGEND
RESIDENTIAL
RESIDENTIAL WITH COMMERCIAL AT 1ST STOREY
COMMERCIAL & RESIDENTIAL
COMMERCIAL
HOTEL
WHITE
BUSINESS 1
BUSINESS 1 - WHITE
BUSINESS 2
BUSINESS 2 - WHITE
BUSINESS PARK
BUSINESS PARK - WHITE
RESIDENTIAL / INSTITUTION
HEALTH & MEDICAL CARE
EDUCATIONAL INSTITUTION
PLACE OF WORSHIP
CIVIC & COMMUNITY INSTITUTION
OPEN SPACE
PARK
BEACH AREA
SPORTS & RECREATION
WATERBODY
ROAD
TRANSPORT FACILITIES
RAILWAY
MASS RAPID TRANSIT
LIGHT RAPID TRANSIT
UTILITY
CEMETERY
AGRICULTURE
PORT / AIRPORT
RESERVE SITE
SPECIAL USE
PLANNING AREA BOUNDARY
PLOT RATIO BOUNDARY

conventional approach   new approach

Figure 58. URA diagram explaining the approach for the new residential development Marina South

gated condominium   fenceless precinct

Figure 59. URA diagram of the key strategies of the masterplan 2014

3.4 The last masterplan

In the last masterplan approved in 2014 by the Urban Redevelopment Authority of Singapore are traced the guidelines for the future development of the city. The rapidity of construction in the island is remarkable, and the majority of the projects included in the document are already under construction, or completed.

The masterplan gives indications for the next 10-15 years, and it is part of a larger concept plan, which gives general directions for the development of the city in the next 40-50 years. The last masterplan is centered around six main topics, which are: *housing*, to provide more variety and quality to Singaporeans, *community*, with the objective of creating more shared spaces, *transport*, to be enhanced, *identity*, to be reinforced, *recreation*, to add options of leisure, and *economy*, to make Singapore even more flourishing .

A big development is set for the central area, which will provide 30% more office space in 15 years from the date of approval of the masterplan. The new high rise buildings are planned to expand the CBD area towards south, occupying a good portion of Marina Bay, a large area reclaimed from the sea years ago. A 100 ha of this area have been devoted to three public waterfront gardens, to create a 24/7 precinct with the injection in the new high rises also of residential, hotel and retail functions. Just behind the public

gardens it is planned, and already under construction, a new housing project of 9.000 residential units, which include community amenities, and follows a *fenceless precinct* approach, block links, courtyards and open spaces. Another large intervention is set for the so called North Coast innovation corridor, on the opposite side of the island, and another one in Kampong Bugis, 4.000 residential units. A Landscaping for Urban Spaces and High Rises program (LUSH) has been approved to introduce more and more vegetation on buildings. Another remarkable development is the ambition of creating on the southern side a continuous 30km waterfront of public space by bringing new

life to it. An important change in transport is represented by the plan of implementing a large net of bicycle paths.

Other developments are planned, but despite the recent attention shown to the conservation of the urban heritage, we can criticize the fact that a great importance is given to spectacular and large new developments, and very little is planned to improve the low quality of existing residential areas, built in the 60ies, 70ies, 80ies and 90ies, which are the apartments where a great number of Singaporeans still live. The government reveals an approach which seems not yet very far from the *tabula rasa* mentioned before: implying that the old will simply be replaced.

528   **22** *TAOIST TEMPLES*   **600 m²**   *Average*
                                             125 m² - 1.300 m²   *Min-Max*

*400+   **11** *CATHOLIC CHURCHES*   **1.125 m²**   *Average*
                                                    480 m² - 2.100 m²   *Min-Max*

120+   **13** *BUDDHIST TEMPLES*   **1.150 m²**   *Average*
                                                 330 m² - 2.350 m²   *Min-Max*

70   **17** *MOSQUES*   **1085 m²**   *Average*
                                      240 m² - 2.150 m²   *Min-Max*

26   **8** *HINDU TEMPLES*   **645 m²**   *Average*
                                           370 m² - 1.150 m²   *Min-Max*

Figure 60. *Diagram of temples of the chosen religions in Singapore*

* including all Christian denominations

3.5 Temples in Singapore

Figure 61. *On the right page: map of the five selected religions in Singapore*

In Singapore a great variety and quantity of temples can be observed, also besides the five chosen religions. There are many Christian denominations churches, Sikh temples, a couple of synagogues, and even some buildings for the congregation of faithfuls of Jainism, Zoroastrianism, and Baha'i. Freedom of religion in Singapore is guaranteed under the Constitution, yet the Jehovah's Witnesses faith and the Unification Church have been banned in 1972 and 1982 respectively, since they were retained prejudicial of public welfare by the government.

The highest concentration of temples is now in the central area, which has also become one of the least densely inhabited over time. It is very common to find temples built one close to the other, with a special frequency of Taoist and Buddhist temples coupled. In fact, the Taoism practiced in Singapore presents a form of syncretism with Buddhism and Confucianism, and for this rea-

son some Buddha and Confucius statues can be found in their temples.

A particular attachment to traditional architecture in the construction of temples is evident for the three Eastern religions, as we already saw with Loyang Tua Pek Kong Temple and Buddha Tooth Relic Temple, both built recently. Instead, churches and mosques are built following a much more contemporary architecture approach, and we can find a good number of them around the city.

Among the five religions chosen we can observe that Taoist temples are the most numerous in the island, but their dimensions are on average quite small, while Hindu temples are both small and relatively few. Mosques, churches and Buddhist temples tend to be bigger in dimensions and quite well spread, but both very large and very small examples can be found all around the city.

Churches

Mosques

Buddhist temples

Hindu temples

Taoist temples

Figure 62. *Selection of representative temples of Singapore*

Temples distribution in
Singapore central area

Population density in
Singapore central area
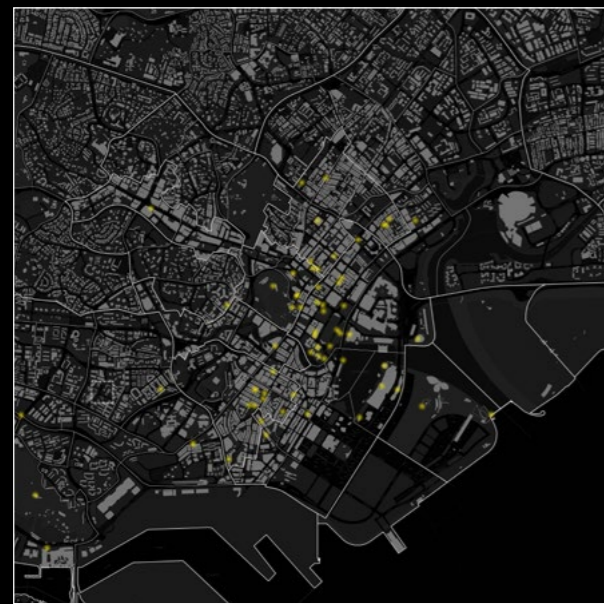
Touristic attractions in
Singapore central area

Religious affiliation in
Singapore central area
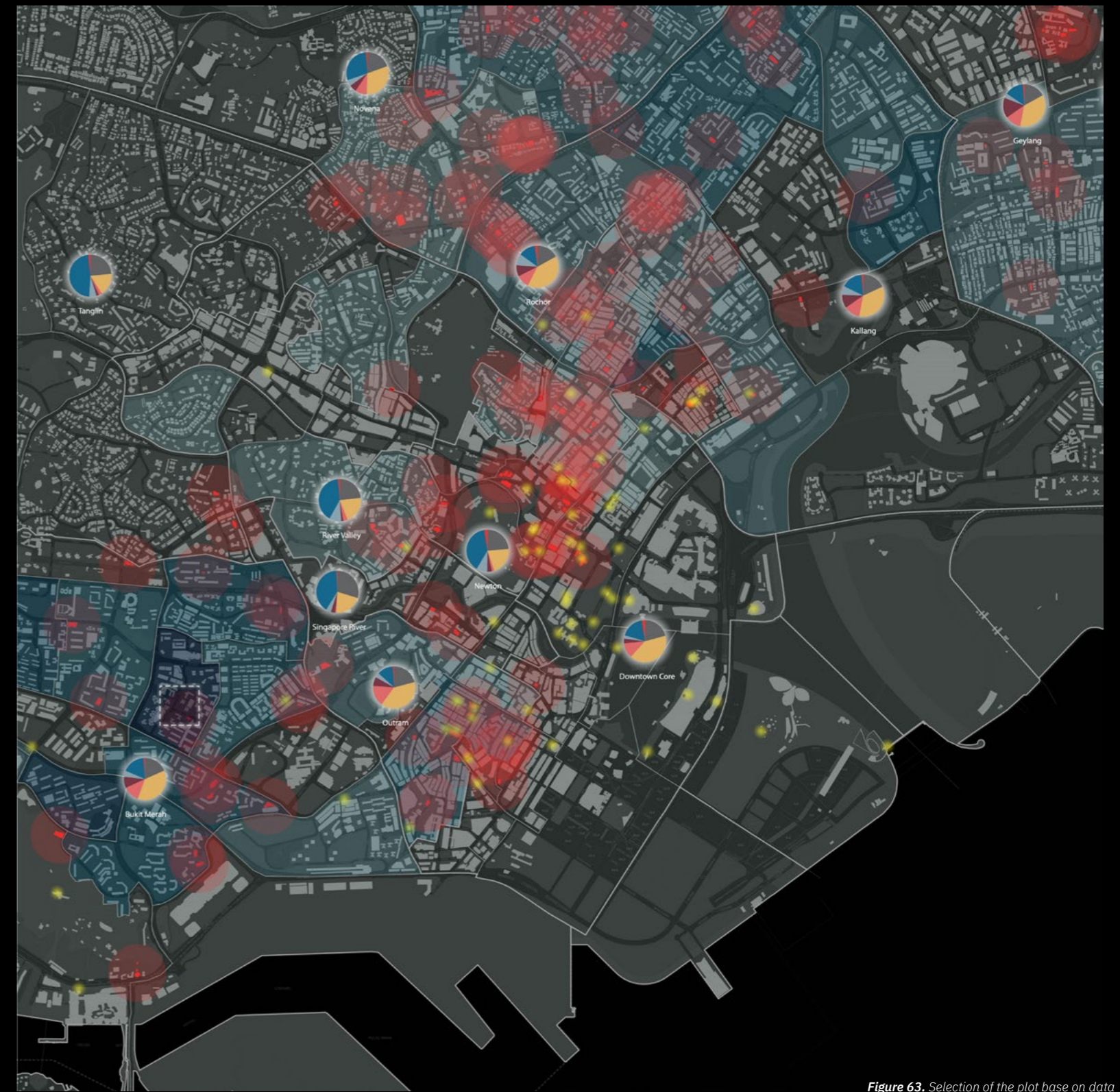
Figure 63. *Selection of the plot base on data*

- - - -   Chosen site

Touristic attraction

Temple

Population density (residents per sq km)

- 0 - 5.000
- 5.000 - 10.000
- 10.000 - 15.000
- 15.000 - 20.000
- 20.000 - 25.000
- 25.000 - 30.000
- 30.000 - 35.000
- 35.000 - 40.000
- 40.000 - 45.000
- 45.000 - 50.000

Religious affiliation
(here Singapore total)

Other
Christianity
No affiliation
Hindu
Islam
Buddhism
Taoism
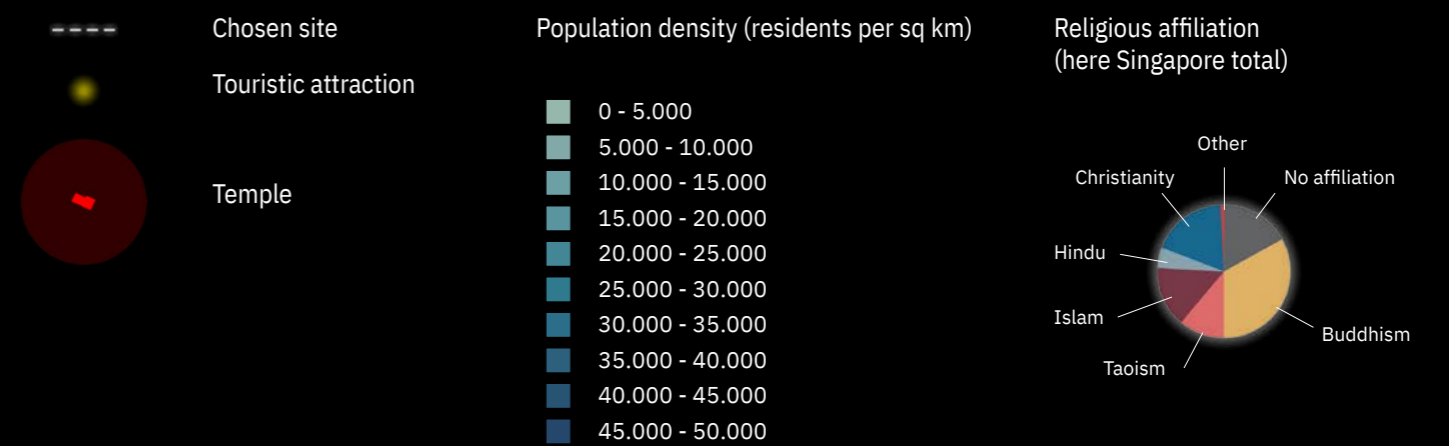
Figure 64. *Masterplan of Singapore of 1958, zoom on the proximity of the plot*

MASTERPLAN 1958

- Residential
- Commercial & residential
- Business 1
- H Health & medical care
- W Place of worship
- Civic & cumminity institution
- Open space
- Park

Figure 65. *Masterplan of Singapore 1980, zoom on the proximity of the plot*

MASTERPLAN 1980

- Residential
- Commercial & residential
- Business 1
- H Health & medical care
- W Place of worship
- Civic & cumminity institution
- Open space
- Park

Figure 66. *Masterplan of Singapore 2014, zoom on the proximity of the plot*

MASTERPLAN 2014

- Residential
- Residential + commercial at 1st storey
- Commercial & residential
- Commercial
- Hotel
- Business 1
- H Health & medical care
- Educational institution
- W Place of worship
- Civic & cumminity institution
- Open space
- Park

Religious buildings

- Church
- Mosque
- Taoist temple
- Buddhist temple

Figure 67. *Analysis of the area around the selected plot*

Tourism

- Heritage conservation
- Hotel

Health, education, production

- Business 1
- Hospital
- Education

Transport

- Main street
- Secondary street
- Subway

SEASIDE   CITY CENTER

Population density (residents per sq km)

- 0 - 5.000
- 5.000 - 10.000
- 10.000 - 15.000
- 15.000 - 20.000
- 20.000 - 25.000
- 25.000 - 30.000
- 30.000 - 35.000
- 35.000 - 40.000
- 40.000 - 45.000
- 45.000 - 50.000

Masterplan 2014

- Residential
- Residential + commercial at 1st storey
- Commercial & residential
- Commercial
- Hotel
- Business 1
- Health & medical care
- Educational institution
- Place of worship
- Civic & cumminity institution
- Open space
- Park

Figure 70. *Analysis of the area around the selected plot*

Figure 68. *Chart of private cars number in Singapore*

Private cars

Private cars

650000

600000

550000

2008 2010 2012 2014 2016 2018 Year
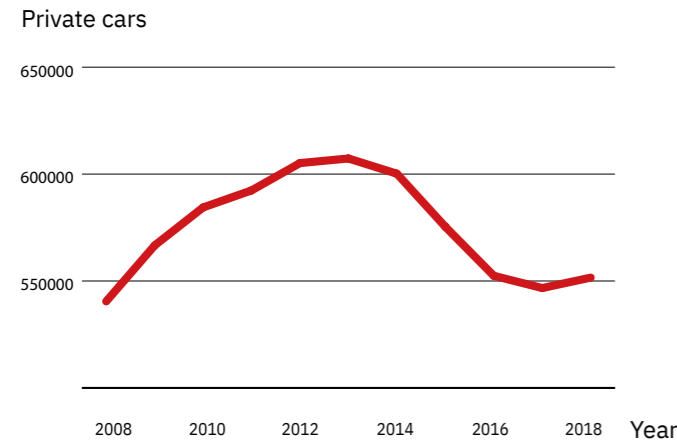
Source: Land Transport Authority Singapore

Figure 69. *List of vehicles per 1.000 people for 7 chosen countries*

Vehicles per 1.000 people

🇺🇸	U.S.A.	833
🇮🇹	Italy	695
🇵🇱	Poland	631
🇩🇪	Germany	589
🇳🇱	Netherlands	556
🇨🇳	China	173
🇸🇬	**Singapore**	**170**

Source: gov.uk

3.6 Site

The choice of the ideal site for the project is based on a targeted research. Four criteria have been set in order of importance: a low presence of pre-existing temples to ensure the desirability of a new one, a high density of population to facilitate its use by locals, a position close to other touristic attractions of the city to promote the visits, and a balanced religious affiliation in the neighborhood, similar to the national proportions.

The choice then fell on Bukit Merah, in particular on the sub-zone named Tiong Bahru Station, which gets its name from the metro station it contains.

A closer look into the area shows that the location is at 35 minutes walking distance from the city center, and it is very well connected, through the mentioned subway, with the rest of the city.

From the old masterplans we can observe that only a few housing buildings of the ones we see today were there in 1980, neither in actuality nor in the plan even. We can deduce that the majority of them have been realized during the 90ies. In this small sub-zone, in which almost 17.000 people live today, we can find only one Hokkien Taoist temple (Kim Lan Beo Temple), which was moved there in 1984 from another location. Moreover, within five minutes walking distance, in north direction, there is a high density of hotels, making the place easy to reach for eventual tourists.

The chosen area is a typical example of the housing approach adopted until few years ago in Singapore: an almost total separation of functions. In fact, there were only housing high rises, parking buildings, and an elementary school, until some shops opened some years ago, occupying the ground floor of one parking building. In this respect the area represents exactly what was mentioned on the chapter about the last masterplan, which almost completely forgot to address this issues in the city and concentrated mainly on novelty. This area offers an opportunity for a critical reflection through its improvement, with the injection of a diverse program.

Parking lots are partially empty, since the policies on cars made this property very expensive, and the number of car owners dropped. Furthermore, the architecture of the neighborhood is very standardized, in a seemingly Modernist approach, and some variety seems needed to make the place more livable.

The urban area, as in general in Singapore, presents many elevated passages for pedestrian traffic, which appear as a stimulating local characteristic, that can be integrated in the design as a positive element.

The exact plot has been chosen in the area by exclusion, finding the most visible and large place suitable for a building for the masses.
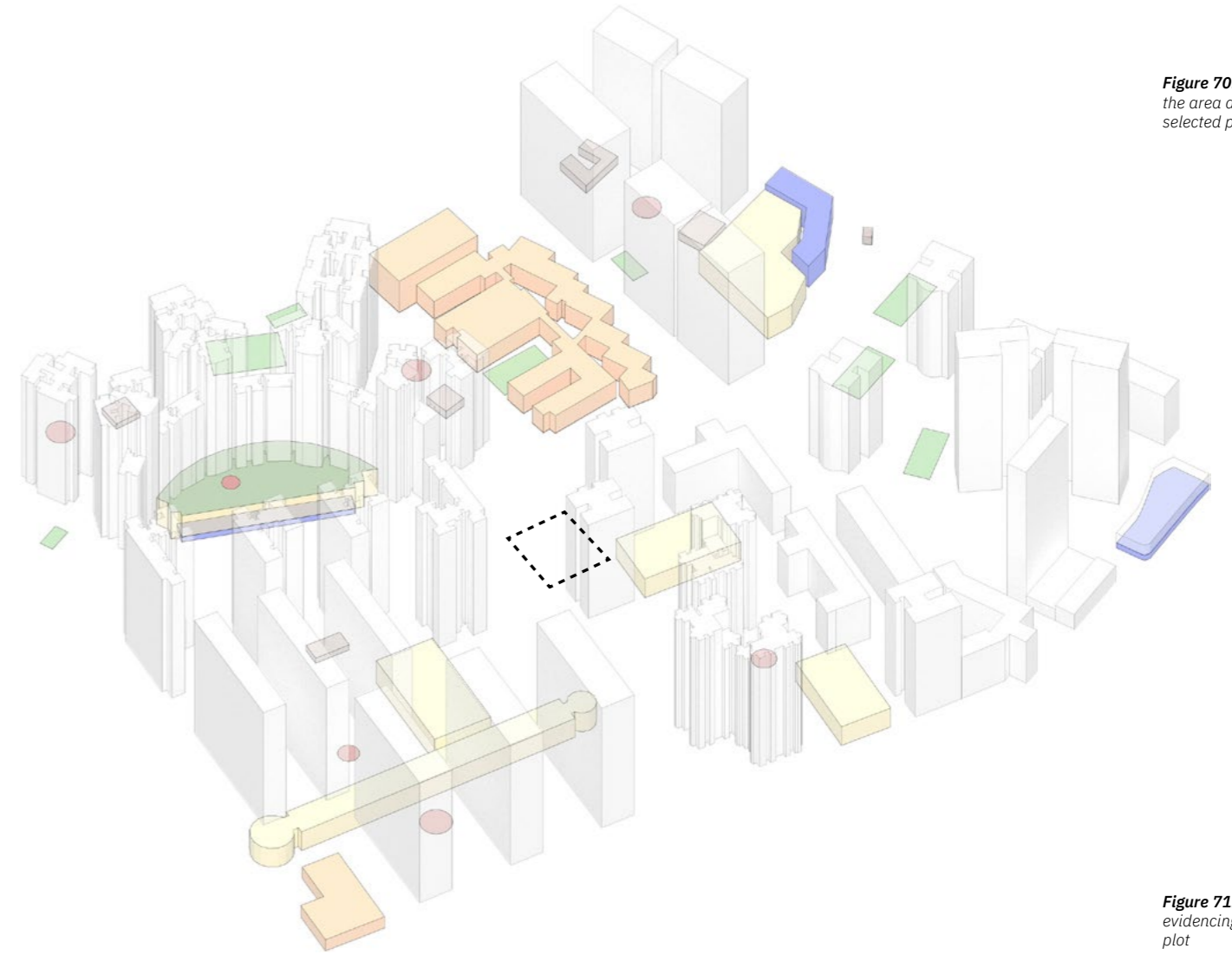
Figure 71. *Pictures evidencing the selected plot*

NEIGHBORHOOD FUNCTIONS

- ☐ Residential
- ☐ Shops
- ☐ Parking
- ☐ Education
- ☐ Sport pitches
- ☐ Garden roof
- ☐ Playground
- ☐ Services

KIM LAN BEO TEMPLE

Figure 72. Picture of Kim Lan Beo Temple, close to the chosen location

- Founded in **1830** at Tanjong Pagar's Narcis Street

- Refurbished in 1881

- In 1977 the government acquired Narcis Street

- In **1984** Kim Lan Beo was rebuilt at Kim Tian Road

OPTIONS

- move
- integrate

BAD PRACTICES   GOOD PRACTICES
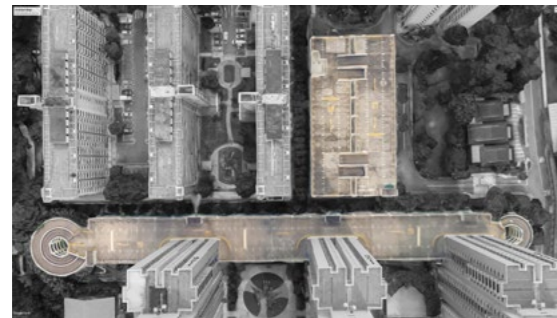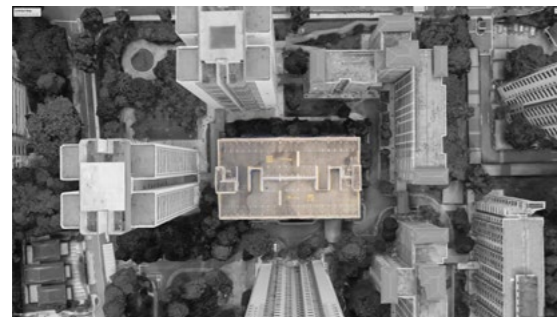
Figure 73. Top view pictures of good and bad practices in the neighborhood concerning parking buildings

Bukit Merah Flyover
lenght: 49 m
height: 7 m

Jalan Bukit Merah
lenght: 32 m
height: 5 m

Jalan Bukit Merah
lenght: 32 m
height: 5 m

Lower Deltra Rd
lenght: 48 m
height: 5 m

Tiong Bahru Rd
lenght: 25 m
height: 5 m

New Bridge Rd
lenght: 45-50 m
height: 5-7 m

Figure 74. Analysis of bridges close to the plot
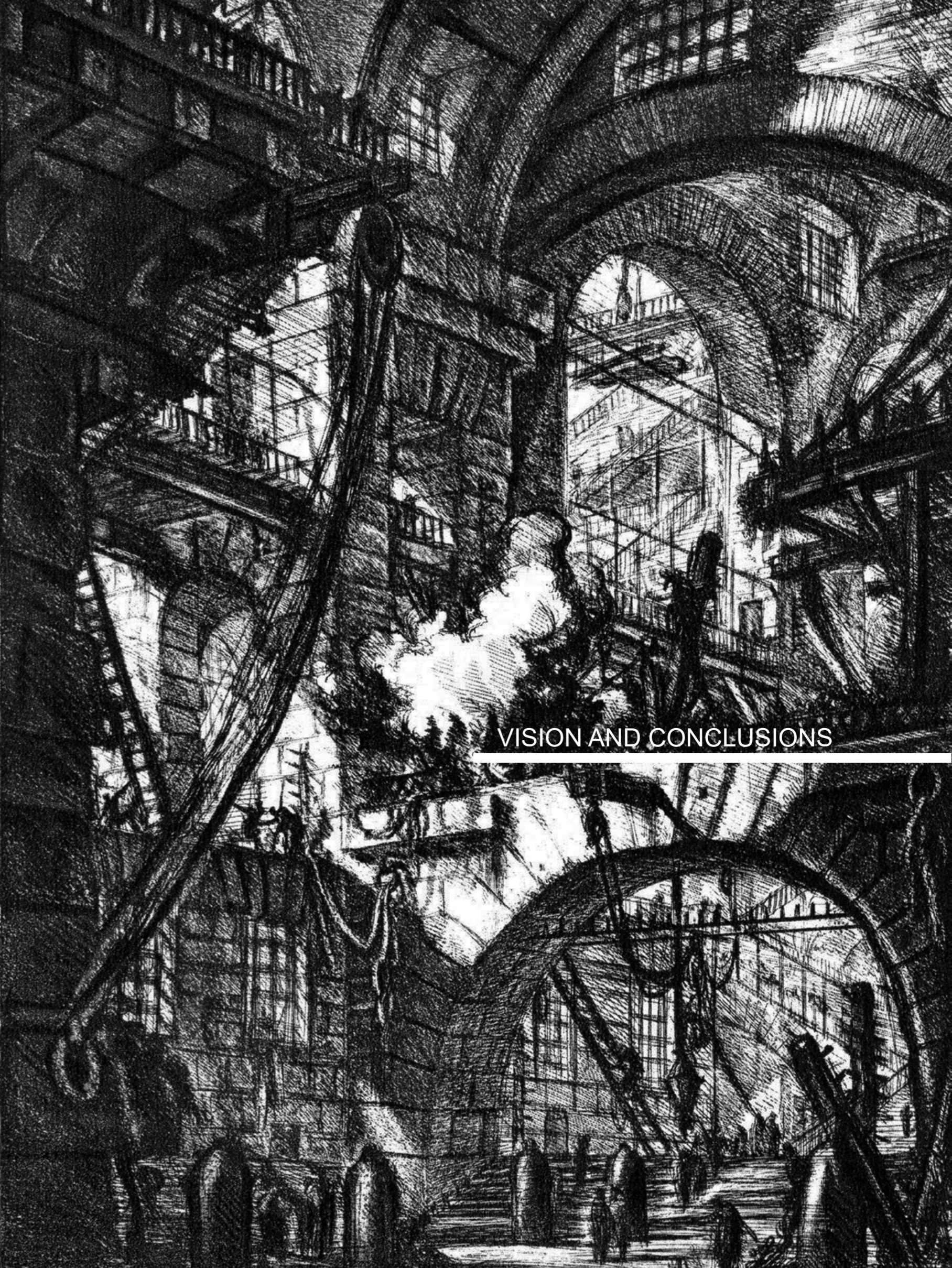
4.1 Research conclusions

The research brought to conclusions useful for the design.

The elaboration of the concept of tolerance can guide design decisions, in particular it leads to find a balance of differences and similarities among temples, conceptually mirroring the agreement and the disagreement implied between religions. Therefore, to preserve and stress the identities (the differentiating factor) and to arrange them in a unity (the agreement factor) is the challenge deriving from that.

The research on the five religions brought to many conclusions, and we will now follow the order in which it is organized and shown above to illustrate them.

It has been possible to identify colors with a special importance for each of the religions, which can be used in the design. Despite gold has been mentioned only for Buddhism, we must clarify that this color is abundantly and universally used by all the five religions. It can therefore represent a unifying color for the design.

A review of the religious holidays and weekly days of prayer shown that, despite many calculations are based on the lunar calendar and then every year the days can change, the overlapping is not very frequent, and therefore in a project which put together the five religions there will rarely be a huge congregation of people at the same time.

During the research the large amount of fascinating stairs leading or being part of spectacular temples brought to the conclusion that stairs could be employed as a unifying factor for its symbolic power, in a design perspective.

A scrupulous research of the trees most important in the religious traditions combined with a research of which ones could grow in the equatorial climate of Singapore brought to the identification of the trees that could be used in the design. In fact, the garden is part of the religious imagery, usually a picture of heaven (just think of Eden or the Jannah) and it is part of all the five religious traditions. Therefore, it can be another unifying tool for the design.

The precedents have shown that projects combining different religions in the same place are possible and quite successful, especially in Singapore, revealing also that there is a potential for the combination of museums and temples, as the Buddha Relics Temple and Museum best exemplifies in recent years. An analysis of museums concerned with religions showed that there is a global growing attention and popularity for similar cultural expositions, with the opening of many of them in the last years.

The case studies brought to very specific indication concerning the design. The important elements for each temple has been defined and will be used in the project, while the architectures constitute a source of inspiration that will be found in the formal part of it. This section of the research also brought to the identification of typologies for the spatial organization of the different temples, which provide options for design decisions, and that can be also synthesised in new hybrid forms. Another important indication derived is the direction of orientation for specific temples, which in some cases is traditionally respected.

The research on the location provided other key elements that need to be taken into account in the project. First, we have to observe that it is the ideal place for a project which wants to think new solutions in the relation between faithfuls of different faiths, between themselves and with tourists. In fact it is the most religiously diverse country in the world and one of the most visited at the same time, which is very appropriate for a building for the masses.

Moreover, its particular climate conditions and the scarce buildable land available provide a challenge that the design can transform in a locally specific strength. It has been observed that architectural solutions to this geographical condition has also been a recurrent theme in the history of architecture in the chosen island. Therefore, it represents also a possibility of creating a connection with history.

The project is also an occasion to translate the plurality of identities that characterize Singapore in a building capable of keeping them together, in a representative way, besides contributing to the continuous effort it is paid by citizens and government to keep and promote religious harmony in the city.

A closer look into the history of architecture revealed that the most local, and also interesting, attempts in the island have been done during the 70ies following an Asian Modernism inspired by the Japanese Metabolists. For a project that wants to be representative of the identities in Singapore, elaborating on that approach to architecture seems then the most logical thing to do. Another important source of local inspiration can be represented by the wide modern use of green terraces we mentioned. Both aspects can be integrated in the design.

The analysis of the last masterplan brought to understand the overall logic adopted for the near future development of the city, and to the possibility of isolating good and bad aspects for us. The so called "fenceless precinct" approach in the design of residential neighborhoods can be judged positively, especially if compared to the old approach. The absence of improvements for old residential areas instead seemed to reflect a forgetfulness of the authorities. A conclusion could be that a positive aspect of the new approach could be introduced in some form also in pre-existing neighborhoods. The choice of the location based on the four criteria mentioned in the previous chapters fell precisely on one of those mono-functional neighborhoods. Therefore, the research can produce a direct application in design decisions on the urban level.

From the observation of the close and benevolent relation between Buddhism and Taoism in Singapore we can conclude that their closeness can be reflected in the project.

Through a closer look at the plot selected for the project and its surroundings it appeared possible and useful to use the parking buildings' roofs for gaining the public space the neighborhood is missing at the moment. Another observation is that there are many pedestrian bridges in the area, as in general in Singapore, which can become a tool for creating a more interconnected urban area. The last conclusion is that it is possible and also common to move temples to new locations in the city, as it was the case with the precedents we saw in the previous chapters. Then also moving the Taoist temple already present in the nearby of the plot represents an option, which is further confirmed by the observation that it moved there only in the 80ies from a previous location.

In conclusion, the research brought to intuitive design solutions besides some fact based ones, and this will appear more clearly in the next pages.

4.2 Architectural vision

[1] Vitruvius. Ten Books on Architecture; p. 6

[2] Online Etymology Dictionary

[2] Shiner, L. (2003). The invention of art; The University of Chicago Press; p. 3

[4] Xenophon (1994), Memorabilia; Cornell University press, p. 93

[5] Carlo Sini (2009), L'uomo, la macchina, l'automa; Bollati Boringhieri, p. 116

THE DECATHLETE ARCHITECT

Architecture is a discipline in continuous evolution and the professional figure of the architect itself evolved and appeared in a recognizable form for us only quite recently in history, gaining an intellectual status especially starting from the Renaissance. And yet architects have designed an overwhelming minority of buildings also from then on, despite we consider these few as the most relevant for the history of the discipline. From that it is already evident that the architect doesn't have an exclusive power over its own discipline (I think for example to "Architecture without architects" by Rudofsky), but this is even clearer when we consider more closely the "outsiders" who designed some of the most important architectures in history: Brunelleschi, Leon Battista Alberti, Michelangelo, Bernini were all very involved in many other arts, Paxton was mainly a botanist, Wittgenstein and Steiner philosophers, and a great number of engineers like Eiffel or Nervi contributed significantly. Moreover, the necessity for this discipline to be intertwined with other fields of knowledge is explicit starting from Vitruvius:

The true architect will have to possess intellectual abilities and aptitude for learning [...] Therefore be competent in the field of letters and above all of history, skilled in drawing and good mathematician; take care of his philosophical and musical preparation; do not ignore the medicine, know the jurisprudence, and the laws that regulate the motions of the stars.[1]

The architect (a writer, historian, painter, mathematician, philosopher, musician, doctor, lawyer, physicist, and we could add today, an economist, sociologist, anthropologist and more) then needs an encyclopedic knowledge and he is therefore similar to a decathlete, who will always lose a race with a specialist of one discipline, with the difference that the architect also has its own specific discipline in view of which all the other training is directed.

TECHNE, NOT ART

We must therefore understand what is proper to our discipline and it is only through a theory (from the Greek verb *theōrein*: to look at [2]) that a vision of architecture can be sketched. In that respect, conceiving architecture as a fine art would be misleading, since this would place it eminently in the realm of aesthetic experience and contemplation.

The invention of art, as we now understand the word, can be attributed to romanticism as a reaction to the industrial society that was rising, with the corresponding ideal of the artist all genius and intuition, as Lerry Shiner and others have argued. "The modern system of art is not an essence or a fate but something we have made. Art as we have generally understood it is a European invention barely two hundred years old."[3]

It is implied in this modern concept the split of art and technology, breaking their long marriage in western culture, where artist and artisan were the same and a work of art was simply the useful product of skilled work. Architecture, more than others, can suffer this separation, and I believe that re-discovering the ancient concept of Techne would be fruitful, especially in our times. The coincidence of utility and beauty rooted in ancient Greek culture, and implicit in the mentioned concept, is very well expressed by Socrates, as reported by Xenophon, his disciple and historian:

*And when he said that the same houses are both noble and useful, he was educating, at least in my opinion, as to the sort that should be built. He examined it in the following way: "Ought one who is going to have the sort of house he should, contrive that it will be both most pleasant to live in and most useful?" [g] And this being agreed to: "Is it pleasant, then, to have one cool in summer and warm in winter?" When they would assent to this too: "Accordingly, in houses looking toward the south, does the sun shine into the inner rooms in winter, while in the summer when it travels over us and the roofs, it provides shade? If then it is noble that these things come to be thus, one should build a house higher on the southern side, so that the winter sun won't be shut out, and closer to the ground on the northern side, so that the cold winds won't burst in. "In sum, the most pleasant and most noble dwelling would plausibly be the one where one would have in every season the most pleasant refuge and where one would make one's belongings most secure. **Paintings and embroideries deprive one of more delights than they provide**." Moreover, the most becoming place for temples and altars he said to be that which, while being most visible, would be most untrodden; for it is pleasant for those who see it to offer prayers, and it is pleasant for those who are undefiled to approach it. [4]*

Here, on my opinion, we are in front of a simple and crucial point concerning our discipline and culture, a rational seed that is still flourishing in the thinking and writings of founders of the modern movement like Louis Sullivan, Adolf Loos and Walter Gropius, and which constitute the cornerstone also of my vision. Then, the necessary distinction from the artistic conception is for me to put aside any pretension of originality and to base design decisions primarily on rational thinking. This derives from a philosophical convincement. In fact, it is possible from a rational perspective to look at the whole of human culture as constituting an automaton in continuous motion through us, since, as the Italian philosopher Carlo Sini recently wrote: "the automaton is in general just the *human on its way* and to think the automaton to be the non-human is a misunderstanding worth to get rid of."[5]

If the self is a social and cultural construction (as it is maintained by many in the history of thought) then the contribution of the individual is in the relation with others and with culture, and originality becomes, in absolute terms, a concept as empty as the Cartesian ego. It is evident from this polemic, I believe, that I take position on the side of Spinoza concerning the negation of free will, starting from which the mentioned originality cannot be conceived. By applying this general picture to architecture I think it appears very important the relation with the past of the discipline, its discourse in motion, in order to position ourselves in the possibility of contributing to it. Important consequences are also that we need to find our masters, and we need to strive for making clear to ourselves our political thought and its consequences.

REALIST
base
inertia
conservative
superstructure
PROGRESSIST
utopia
dream
IDEALIST
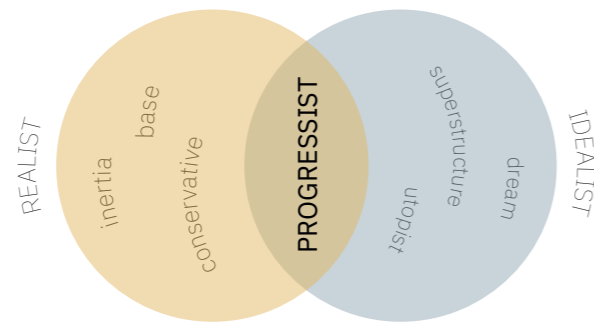
Architecture and social change

For this last point we need to reflect upon the very broad and debated issue of what really drives social change, and my (in progress) opinion is that it is determined by a very intricate web of complex factors such as economical forces, technological development on one side (so called *base*), political decisions and cultural phenomena on the other (so called superstructure), in a relation of reciprocal causation.

Architecture, insofar as it is involved in the generation of technological innovation, and in shaping customs and interactions, can trigger social change. However, its power should not be overestimated, since its dependence on exterior factors is remarkable. On the one hand, technological development generates a new architecture much more often than the reverse, as the revolution of the discipline by the introduction of steel, reinforced concrete, and, more recently, informatics has shown. On the other hand, architecture has always been a tool in the hand of the dominant classes to assert their prestige and influence social behaviours and opinions. Therefore, from the beginning, we must recognize its limits and dependency regarding technological constraints and socio-political and economic factors.

Moreover, the question of the limit already belongs to architecture in its paradox - in order to generate possibilities it must set (architectural) boundaries.

Nevertheless architecture, in the unavoidable intentionality of the design process, always carries the tension of projecting something as it could or should be, implying then an unescapable sphere of idealism. But it is

[6] Interview from: https://www.archdaily.com/170767/ad-interviews-peter-eisenman

[7] M. van den Bergen & P.Vollaard (2001), The Biggest Living Room in the Netherlands Frank van Klingeren 's Karregat in Eindhoven, 1970-1973; OASE 57

only by taking seriously into account the actual social conditions that the naivety of good intentions can become something meaningful and effective: this can distinguish a progressist approach from the conservative and from the idealist ones.

But to those who think that architecture doesn't need to be concerned with solving social problems or having a political impact (Peter Eisenman affirms this, for example [6]) I rebut that, even with all the limitations that the discipline has on this respect, it is still possible and advisable to do it. The social relevance of architecture was also an important point for John Habraken, the first dean of our faculty, and it was reflected by his interest in the study of the built environment and the ordinary in architecture. A close and extreme example of social impact is for me 't Karregat by van Klingerens, built in Eindhoven in the 70ies; the absence of walls to separate the different spaces created a very peculiar result of high interaction among the users, to a point in which a journalist was condemning the architecture and complaining in this terms on the pages of the Volskrant: "An abundance of activities, which the Karregat encourages, has led to a great many informal contacts whereby the family structure has come under pressure."[7]

Where architecture is capable of a similar impact I am fascinated at the highest degree, precisely because it is again in a relation, with the rest, with life, that the meaning of the discipline starts and appears. Without this tension, the mere replication and alteration of the architectural production would become self-referential and sterile.

Current issues

A definition of architecture today is to me extremely difficult: in the first place its boundaries are increasingly melting and blurring, and in second place, defining its true realm and mission would be pretentious and unpleasant to me, because it would imply that the question of its essence would have been solved once and for all, which contradicts its being in transit, in motion with culture and man, and could possibly stop our continuous research of its meaning. In fact, I limited myself to sketch an approach to the discipline above.

However, what can be noticed is that architecture is always more influenced by external factors and that architects often reinvent themselves in related professional fields, contributing to the mentioned blurring. The main implicit objective of architecture in our era is well described by Maurizio Gargano in the extremely synthetic formula of a shift from "amaze to subject" into "amaze to communicate"[8] which perfectly pictures the shift from the pre-industrial society to the industrial and post-industrial society. The present tendency to make of an architecture a marketing product is so evident that it is almost superfluous to elaborate on that, but at the same time we should remember that all the great and declaimed works of architecture such as Michelangelo or Palladio, were made for the glory of the popes in the first case and for the affirmation of the social status of the emerging classes in the second. Our era is preferable by far, on my opinion, and the commercialization of everything, included architecture, comes with a greatly superior degree of wealth and civil

rights when compared to past times.

The discourse leads to a last delicate point which is our relation to globalization and then to our position in the discussion there is in the discipline concerning generic and contextual design approaches. It must be acknowledged that globalization, despite the reactions it produced based on more or less valid concerns about its environmental sustainability or its eradication of traditional values, produced incredible results. I will mention only two: in 1990 there were 1,9 billion people living in condition of absolute poverty (less than 1,90$ per day) and the child mortality rate was 9,33% while today the first number dropped to 650 million people, meaning that in 28 years about 2/3 of them moved out of absolute poverty, while child mortality dropped to 4,5% in 2015, which means that in 25 years it halved[9]. These simple data show that the phenomenon cannot be reduced merely to its drawbacks, and I think we have reasons to criticize it, but we must first of all recognize facts and avoid ideological arguments.

Not rejecting globalization and its consequences, I believe that architecture doesn't necessarily need to be contextual, especially where the context is very recent and rapidly changing. Following the process of globalization and its Zeitgeist it can have the character of the "generic", or better global, but at the same time it would be silly to forget the implicit drawbacks of this approach, contributing to the disruption of local identities. In extreme synthesis I believe that an excessive attention to the preservation of the context implies a reactionary vision, while a complete endorsement of a generic approach implies an abdication of critical thinking.

[8] M. Gargano (2009), Forma e materia. «Ratiocinatio e fabrica» nell'architettura e nell'età moderna; Bollati Boringhieri, p. 116

[9] Data retrieved from: World Bank and UN population division

Figure 77. First diagrammatic section in a sketch
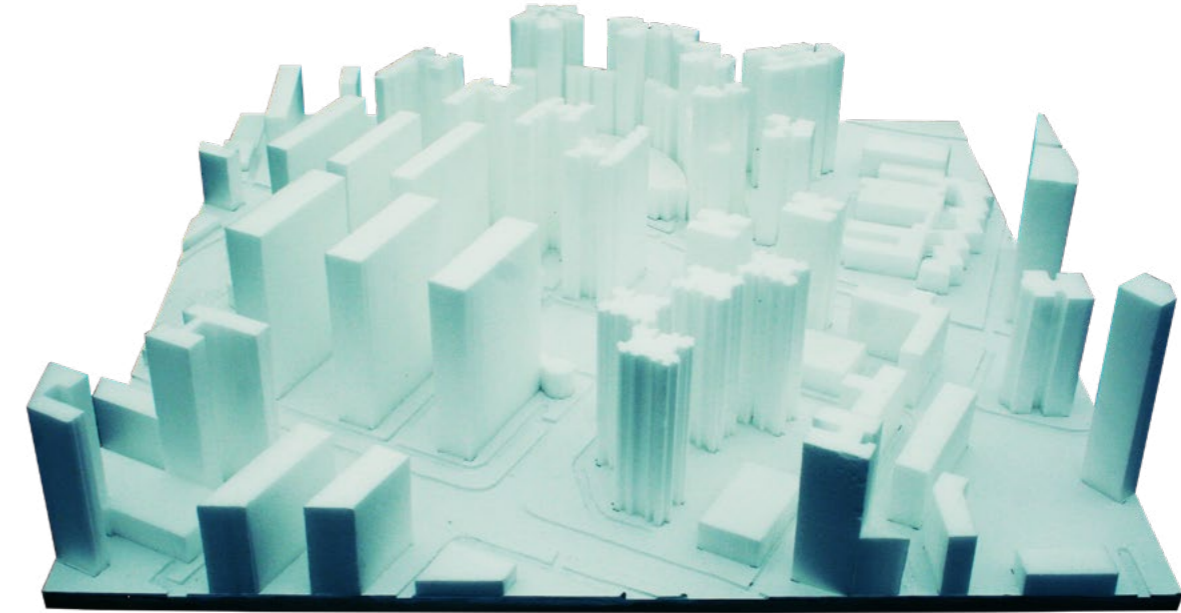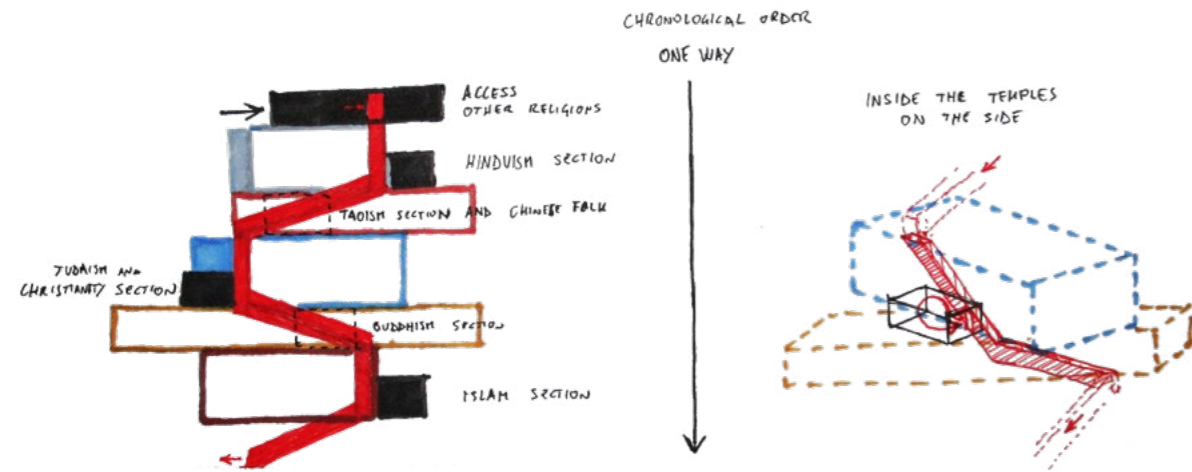
Figure 79. Model the context and models of the building in chronological order, with colors representing functions. 1:1000

5.1 Model making

The design has been developed by employing several tools, such as sketching and computer modelling, but the most important of all has been model making.

The idea of stacking the temples on top of each other came by considering the little space available on the plot, and it appeared as the best option for creating interaction. To organize the temples in a complex of independent buildings would have been both inconvenient in terms of space and in terms of possibilities for shared spaces, yet merging the different temples in one single space for all would have been extremely problematic. A temple for everyone can become very easily a temple for no one, because the identity of each religion is rooted in a long tradition, and it is precisely that which makes it unique and different from the others. The risk is that in order to accommodate every faith, no one is really represented, because the compromise makes it neutral. Therefore, the experimentation with models kept the blocks - representing the temples - separate while stacking them, in order to find a good solution that gives to each temple both its space and an exterior terrace as an entrance and a moment of possible interaction among faithfuls.

Figure 78. First foam models of some of the most simple options for the organization of temples
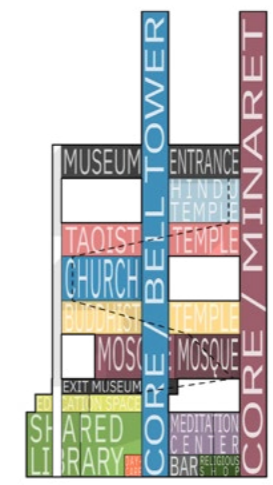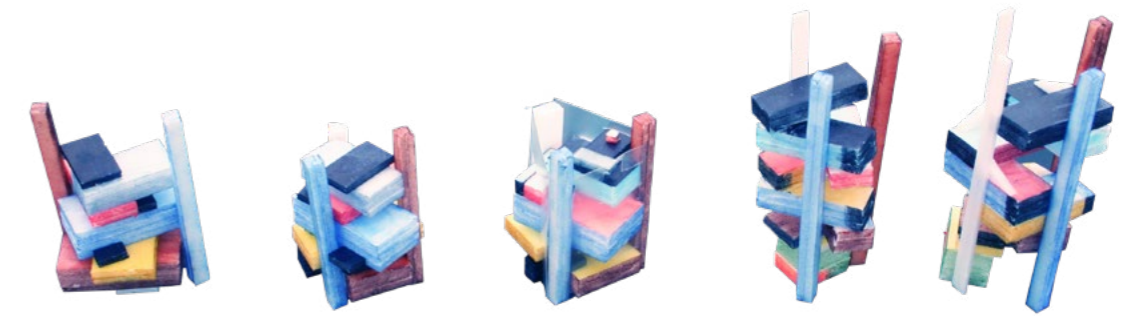
Figure 80. First programatic diagram of the functions

CONTEXT AND LAYERING

Horizontal layering   Vertical layering

Figure 81. Scheme of the conceptual relation with the context
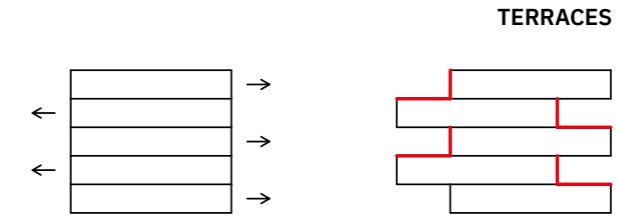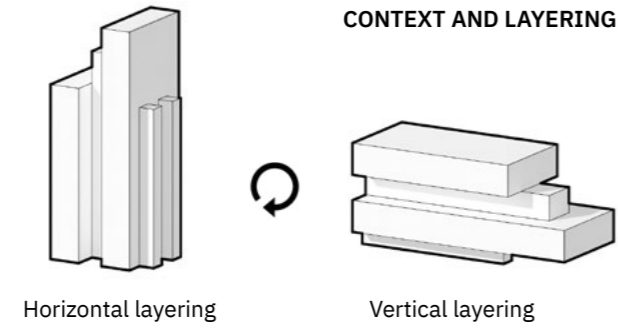
TERRACES

Figure 83. Scheme of the proposed used of terraces as key element

INITIAL PARAMETERS

Footprint

▪	Religion Museum	400 m² (top)
▪	Hindu Temple	600 m²
▪	Taoist temple	700 m²
▪	Church	1000 m²
▪	Buddhist temple	1000 m²
▪	Mosque	1000 m²

Figure 82. Representation of the parameters set in a first phase

Chronological order

Hinduism	XV BCE and before
Taoism and Chinese folk relgion	X BCE and before
Buddhism	VI BCE
Christianity	I CE
Islam	VII CE

Most common temple proportion

l > w > h

Orientation

Mecca

West ◄————————► East

EXTRA - Museum route

Route on the side and space for a pavilion of the museum

1.

Alterning along the two directions

+

Semplicity

-

Only some temples are exposed

Limited lenght due to the site

2.

Exposing all temples on the two main sides

+

One facade for each temple is exposed

larger terraces due to perpendicular disposition

-

Structural complexity

3.

Squared volumes stacking

+

Large terraces

Common geometrical principle

Easily fitting to the area

-

Squared plan is not always appropriate for all temples, even if still possible

Dark spot in the center and more rigidity in the possibility of combination

4.

Exploding the temples along the vertical axis

+

Big terraces

Verticality

-

More height also means greater distances for people

Floating entrances issue

More division conceptually

Figure 84. Analytical scheme of the options identifies in a first phase

Figure 85. *Cubic foam model in the process of shaping by subtraction from a block. 1:1000*
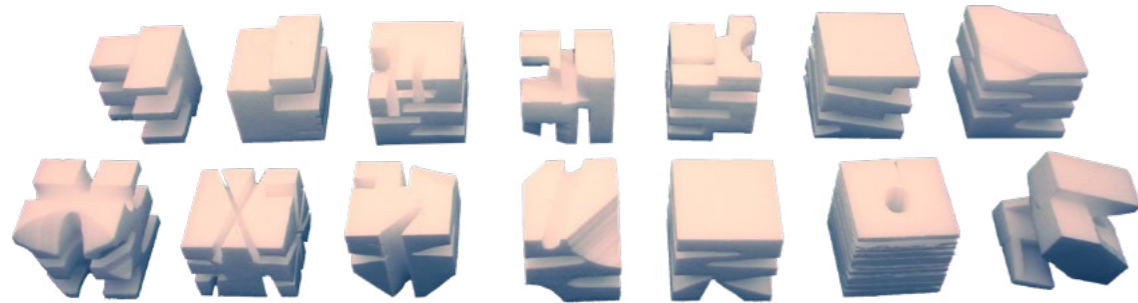
Figure 86. *Model synthesising the research of the subtraction from a block, with the introduction of an envelope. 1:500*
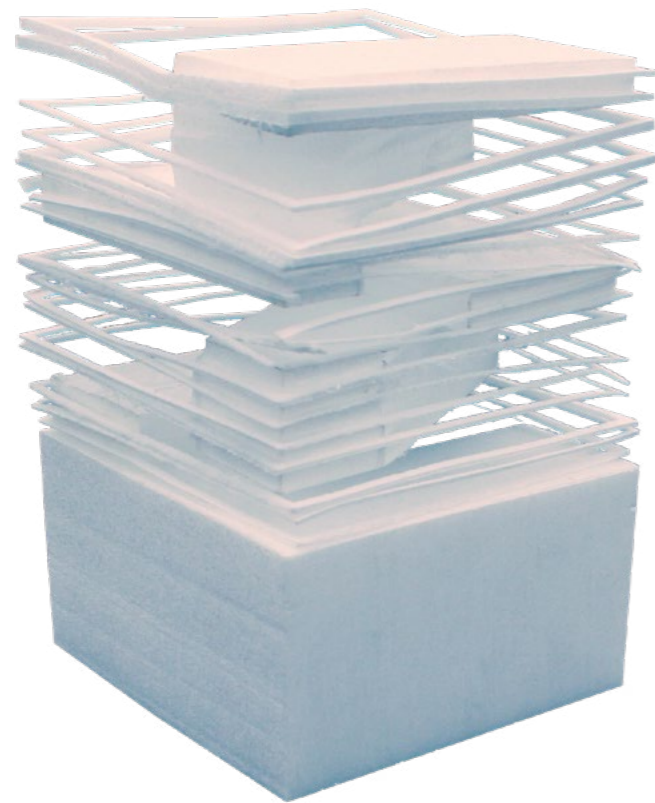
Figure 87. *Picture of model representing the interior of the Church with its glazed coloumns*

Figure 88. *Pictures of the five models of the five temples. 1:200*
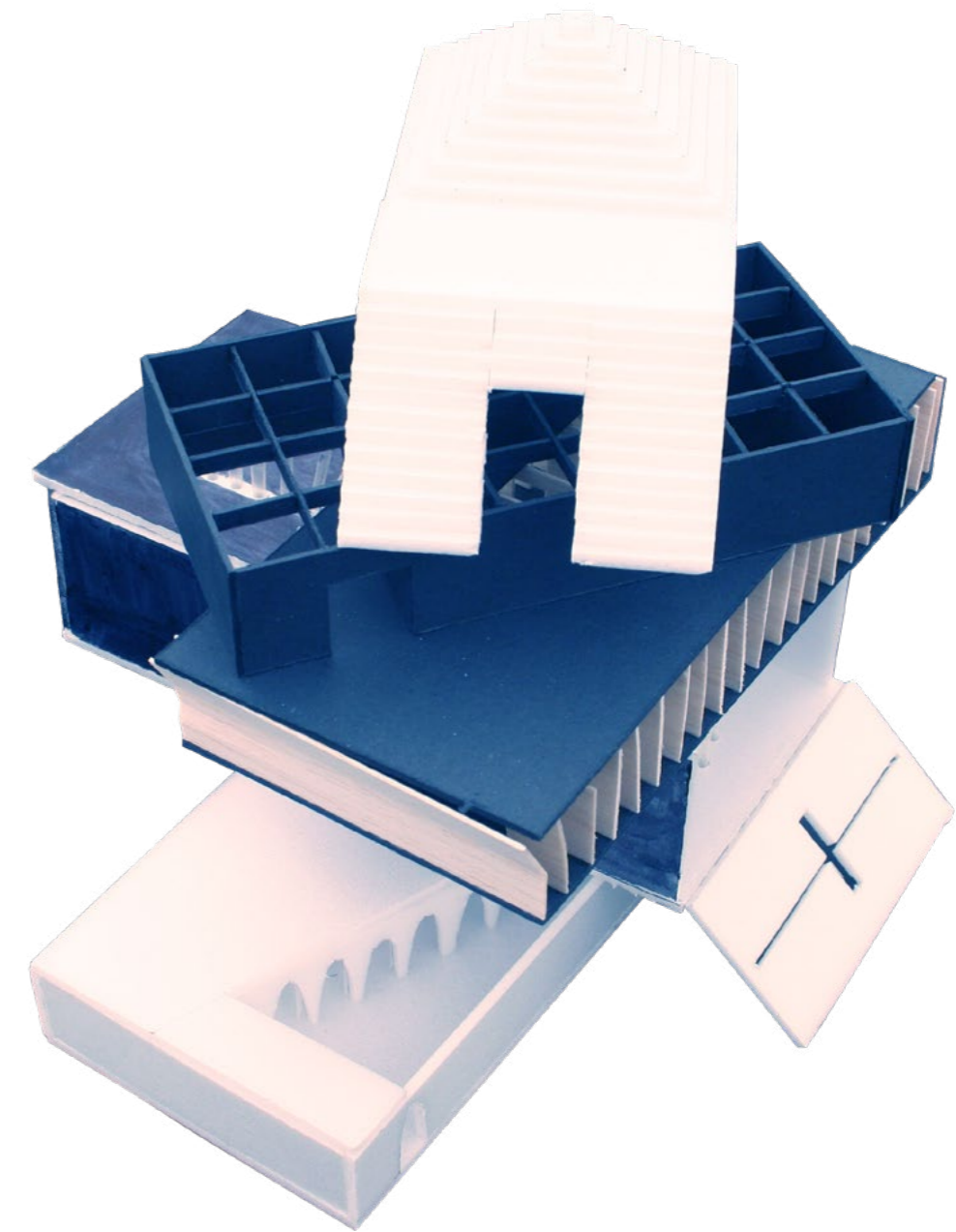
Figure 89. *Picture of a first combination of the five models of the five temples. 1:200*

1   2   3
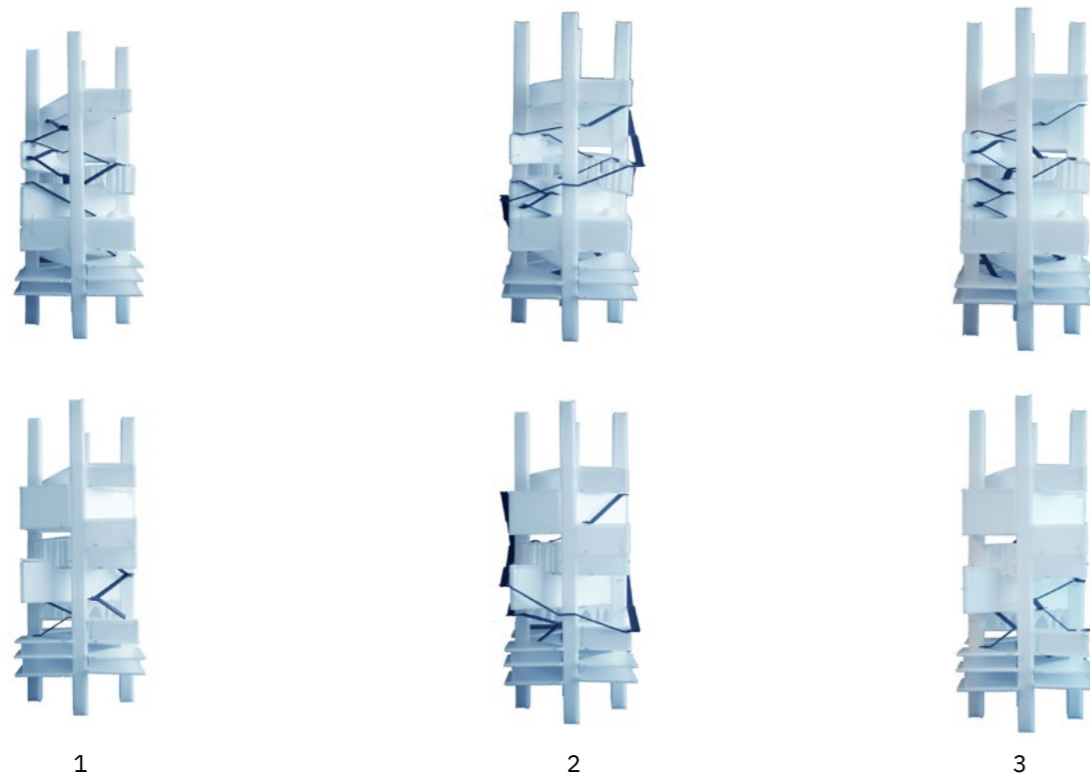
5.1 Double scale advancement

The experimentation started from the determination of parameters deduced from a preliminary research, with the orientation and the dimensions being the key factors.

In the first series of models the foam blocks have been colored according to functions, and organized to find both formal and programmatic solutions.

After this first phase it appeared necessary to change approach, while still integrating some observations derived from that. A double scale advancement in the experimentation has been practiced: models of the single temples and of the whole building have been made simultaneously. The formal approach for the design of the building shifted from the simple stacking of pieces to the attempt of finding a more sculptural result. Therefore, a process of subtraction from a single block started with cutting cubes of foam to find formally appealing solutions. The idea that came out of this process was to make visible the block from which the volume is sculpted, and, in combination with observations of the research concerning the climate and the history of architecture of Singapore, it seemed reasonable to use louvers for that purpose. Then with a larger model the previous research and the new intuition have been synthesised.

At the same time the experimentation with the single temples brought to discoveries of elements and solutions that have been used later, creating a sort of ingredients of the design. The glazed column, the arch, the element of the facade which becomes a separation wall, the beam which gradually becomes the wall and the pyramidal shape are indeed part of the final design.

The last discovery came from the attempt to create more interconnection and interaction between the temples, i.e. the volumes interpenetrated each other allowing the view from one temple to the other.

A bigger model was used in a later moment to determine how to connect the terraces with stairs, creating a double speed routing.
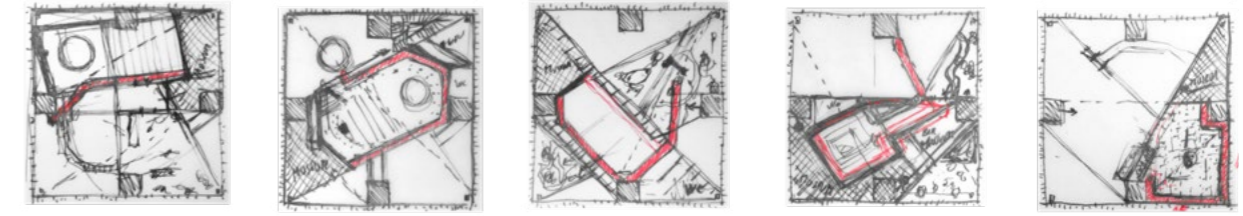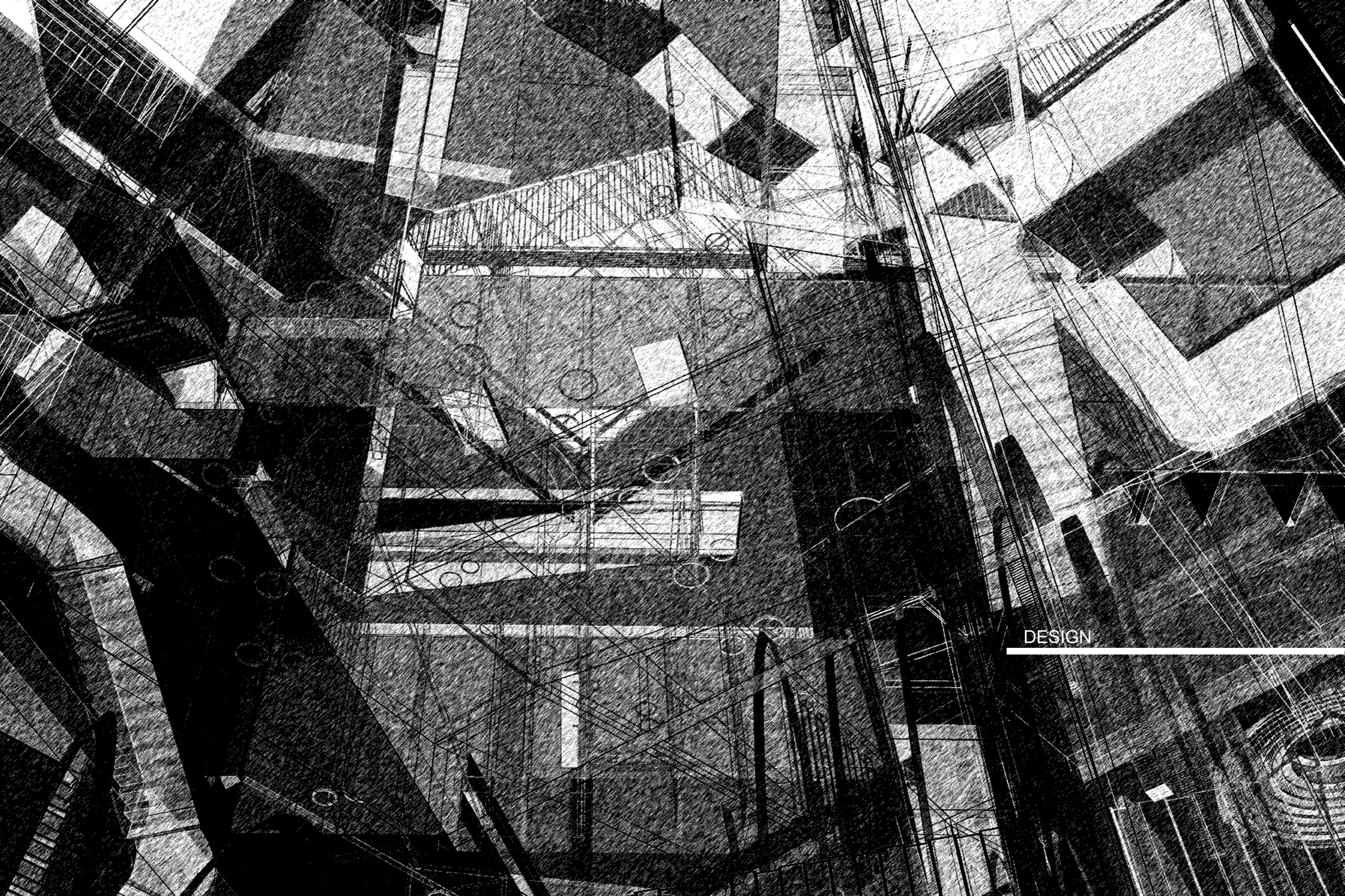
DESIGN

6.1 Design statement

The research question has been answered in first place with a programmatic choice: a multireligious building in the form of an intersection of temples crossed by a museum of religions, and a cluster of shared program, as a common ground for faithfuls of different religions and visitors.

Secondly, it has been answered with the choice of the right location for the project, being Singapore the most diverse city in terms of faiths, and a multireligious city from its modern foundation. This combination gives to the project a particular significance in terms of representativity of the history of Singapore and a symbolic value, not only in a religious sense, but also in the expression of the multiple nature in the identity of Singapore.

The plausibility of the idea has been confirmed through the research: the Loyang Tua Pek Kong Temple already unites three religions under one roof, and the combination of museum and temple can be observed in the Buddha Tooth Relic Temple.

Therefore, the idea is to bring the dialogue between religions one step further by mixing the two typologies mentioned and giving it a larger scale, with the five main faiths of the city coming together in one single building.

The concept of tolerance has been translated into architectural choices, such as the visibility from each temple of at least one other temple in determined points, the possibility to partially even open the windows that separate them, allowing part of the sounds and scents to pass from one to another. Interlocking the temples on top of each other also allows to have some elements that continue from one temple to the other, generating a mutual influence, and an architectural bond.

The dialogue between faithfuls has been encouraged also with the terraces that each temple is provided with, that everyone crosses when decides to walk the steps to its temple: an occasion to rest, observe and meet others. Some other platforms between the flights of stairs give further occasion for encounters, providing a more intimate space between one temple and the other, to rest, observe, read, meditate and even eat something.

The museum, which crosses all the temples, is designed to rethink the relation between tourists and faithfuls in modern times. Places of worship are among the most visited typologies of buildings for their representativity of a culture, and yet they were not designed for this purpose in the first place: this can sometimes create discontent both on the side of the tourist, who could be denied the access on particular occasions, or on the side of the faithful, most often, with tourists disturbing, by arriving in large numbers, a moment of worship. Especially when this encounter happens on a mass scale, the problem can become relevant.

The idea is therefore, anticipating the attractiveness that the temples could have for tourists (as it is already the case with Loyang Tua Pek Kong Temple, where guided tours are organized), to offer a new model for the benefit of both users.

Then, the possibility of entering every single temple from the faithfuls side is not denied to the visitor, but a more attractive route, to visit the places of worship from an unusual perspective, is offered through the museum, following a chronological order for the sequence of religions.

The exhibition room dedicated to each religion is adjacent to the temple of that specific religion: the wall separating them doesn't reach the ceiling, letting part of the sounds and scents pass, giving to the visitor part of the atmosphere present on the other side, while views of the temple are provided through the route connecting one room of the museum to the next one. This route is also insulated acoustically so that visitors crossing the temples don't disturb the faithfuls. This selective separation allows the visitors to have an unusual experience of places of worship and to the faithfuls to maintain a nice atmosphere of religious concentration.

The project is also defined by some other key elements, such as a high number of stairs, which can be observed as having a high importance for most of the religions (with the only exception of Islam, which is also the temple at the bottom, coherently), being both a symbol of the difficult path of spiritual growth and a place for a form of purification.

Terrace gardens are another important element borrowed from the rich tradition of gardens present in all the religions represented, as it is the case for the presence of water, a symbol of purification for all of them. The plants are mainly selected taking into account the symbolic relevance they have for each religion, creating a differentiation for each terrace in the limit of the Singapore weather, with a mix of all of them on the ground floor to represent all religions.

Green terraces are also very important in the past, present and future development of Singapore, and therefore also representative of one aspect of the identity of the city.

The choice of the squared plan on which all the temples are inscribed follows the geometrical shape which can be found in all the religions, in some of their very representative examples.

The challenges and constraints the city presents have been answered by designing a building which uses as little footprint as possible, developing vertically, and by choosing one of the most densely populated area of Singapore as a site an urban proposal has been necessary. In fact, the area is almost exclusively residential, and a large part is occupied by parkings that are becoming more and more empty. The proposal then introduces facilities that can help to strengthen the neighborhood cohesion and add diversity to the area, mainly using the empty rooftops of the parking buildings.

Creating connections and *city rooms* has been the strategy for this interventions, following the tradition of Singapore, influenced by the Metabolist movement. Fumihiko Maki wrote:

In terms of urban design we must create city corridors, city rooms *and transportation exchanges at strategic points in the city; and second we must realize that these new focal points become urban energy generators. The architect does not concern himself with the ways city corridors and rooms will be used[1]*

This reference has also been important for the choice of the architecture quality of the building itself. In fact, Metabolist architecture is still influential in the international landscape, and the project is an attempt to reinterpret the lessons of the movement. This choice is suggested in first place by the context, since Asian architecture has been influenced by it, and especially Singapore architecture, but it is also in consonance with the aims of the project, which require the composition of many units in a single building, and this is a speciality of the Japanese movement. Keeping separate the different identities appears as a necessity, since a single space to represent everyone becomes too easily a neutral space where no specific values are represented, and therefore a single temple for all would easily become a temple for no one.

[1] Koolhaas, R., Mau, B. (2002). S, M, L, XL; Monacelli Pr; p. 1049

SPORT
TEMPLE
POOLS
RESTAURANT
PARK
URBAN FARMING

SCHEME OF THE PROGRAM   SQUARES CONNECTION

6.2 Urban intervention

Based on the observations made during the research about the last city masterplan, the intervention wants to bring a contribution in terms of diversity and livability to one of the most densely populated neighborhood of Singapore.

The intervention introduces two new buildings, the *temple of tolerance* and a marriage center, which includes a conference hall, on two opposite sides of the street. Only the first has been developed in the architectural design.

Three rooftops of the car parking buildings in the nearby have been given new functions, since the car are less than expected in the original design today, and they can be observed empty since years from all the satellite images available online. Also part of the ground floor is transformed into shops, following a good tendency which can already be observed in the neighborhood with other car parking buildings.

The public space, which was very scarce, has been enriched, using the three pre-existing rooftops, with urban farming, that is something spreading rapidly in Singapore, with a park and a restaurant close to it, so that the agricultural products can be directly cooked and served there, and with sport facilities, which are also scarce in the neighborhood.

The rooftop of the marriage center is also used as another public space, with pools, creating a sequence of rooftops on the same level that are linked together by bridges and cross also the *temple of tolerance.*

On the ground floor another sequence of public space is provided with the creation of a *city room* under the *temple of tolerance* and a square in front of the marriage center, which is surrounded by shops.

The bridges can be crossed inside the buildings, linking the two new buildings and the car parking, or outside, linking the rooftops.

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Figure 97. Scheme
of the program of the
urban intervention

Urban circulation scheme

■	Urban farming rooftop
■	Garden rooftop
■	Restaurant
■	Square
■	Pools rooftop
■	Marriage center with conference hall
■	Shops, as transformation of parkings
■	Temples
■	Common ground activities
■	City room
■	Sport rooftop
■	Pedestrian bridges

Urban farming	2.850 m²
Garden roof	2.200 m²
Pool roof	800 m²
Sport roof	1.950 m²
Shops	830 m²
Marriage center	1600 m²

Restaurant with the
urban farming products

Direct access to car
park

Sequence of public
space

Figure 98. Scheme
of the functional con-
nections of the urban
intervention

Temples and marriage
center

Religious education
and sport facilities
+ car free access for
residents

Marriage center and
pools on top

Interior and exterior
connection

1. Multistorey car parks - actual condition; Kim Lan Beo Temple is moved away

2. Addition of Temple of Tolerance, marriage center with the creation of a new square, and transformation of part of the ground floor from parking to shops
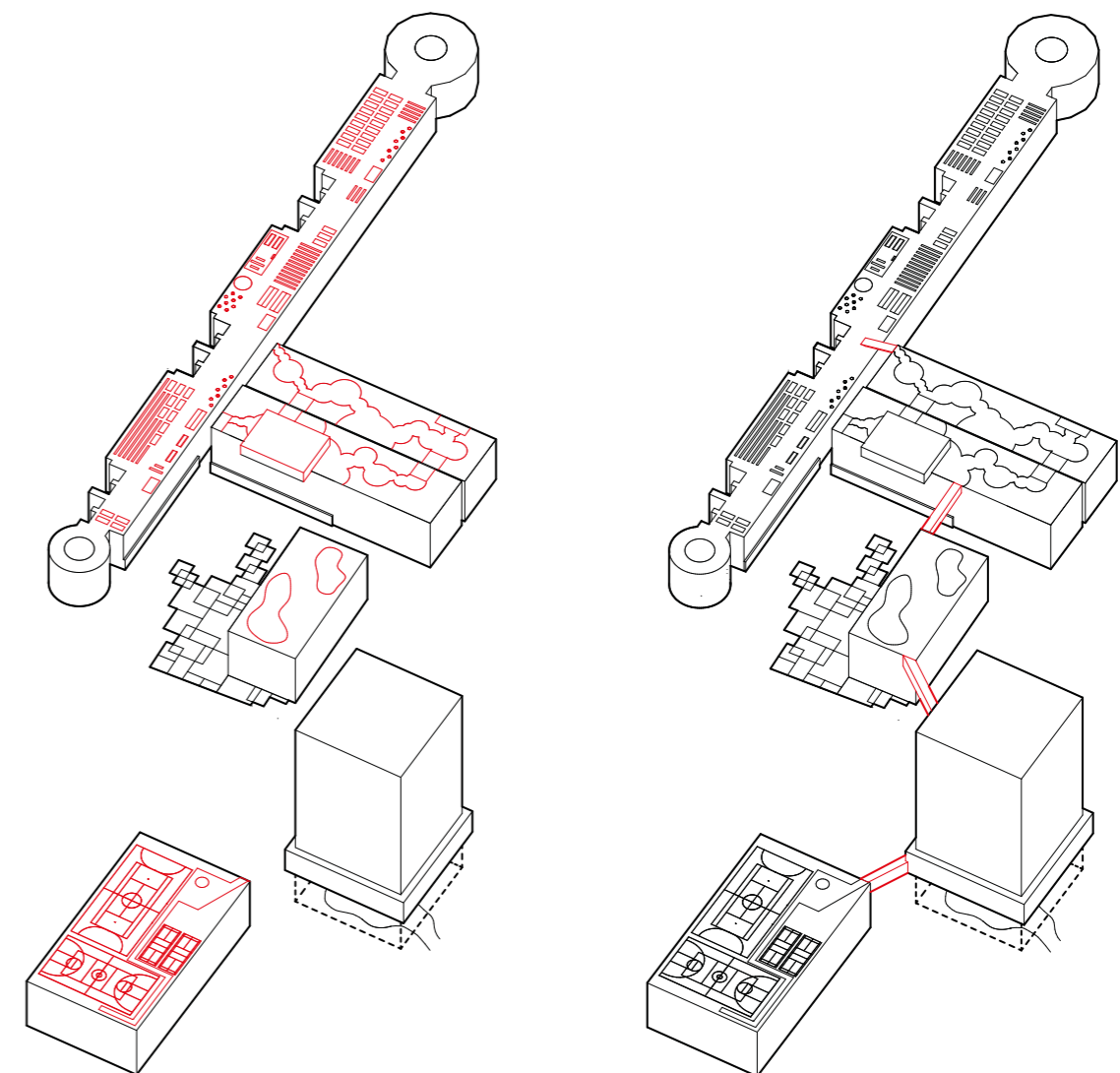
3. New program for the unused roofs of the car parks: urban farming, garden with restaurant, pools and sport facilities

4. Addition of four bridges connecting the rooftops and the car parking directly with the two new buildings
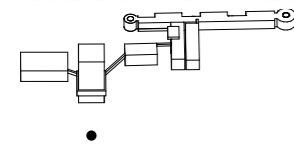
Figure 101. Bird eye view of the urban intervention
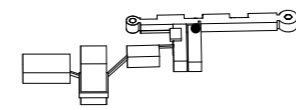
Figure 103. View from the garden with the restaurant rooftop

Figure 102. View from the urban farming rooftop
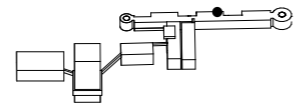
Figure 104. View of the sport facilities rooftop
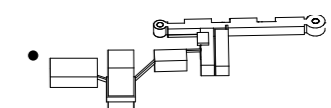
Figure 105. Schemes of the two parts constituting the program
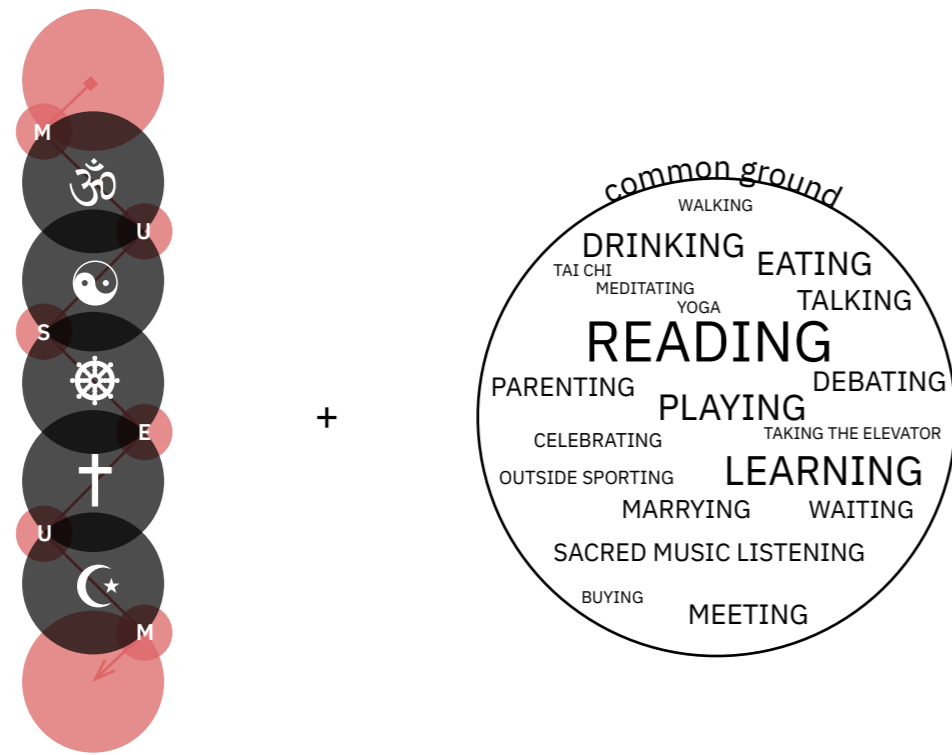
6.3 Program

The concept and the program are deeply connected to each other from the beginning, as we already saw in the first models, where the program was represented with colors.

The key idea is to intertwine a museum of religions with the five temples, so that the activity of the temple becomes part of the museum exhibition, and at the same time the faithfuls are not disturbed by the visits of the tourists, since they don't see or hear them. After crossing the temple from the passage visitors arrive to an exhibition room related to the history of that particular religion each time, following a chronological order.

A second part of the program is represented by a common ground, which is placed on the lower levels, so that everyone going to a temple, or leaving it, has to cross it, provided he takes the stairs. A second reason for placing it in the lower levels is that in this way the activities become more visible and inviting, and not only faithfuls feel encouraged to go

upstairs. On the ground floor there are only an information desk and ticket office for the museum and a daycare for faithfuls with children, so that the visitor can immediately find his way, and the children can be immediately left at the arrival by their parents, with a space for them also outside in the enclosed *city room*.

The elevator and emergency stairs shafts can be accessed from the ground floor, and two of them at the top become respectively the bell tower and the minaret.

The first two levels above the ground floor host a series of activities that can involve both faithfuls and visitors, and therefore generate dialogues. Moreover they all face each other on the interior side, so that curiosity is stimulated for the activities happening in the other visible spaces.

On the upper levels instead the interaction is encouraged by the moment of pauses along the routing, in the terraces.

Terraces

Religions museum
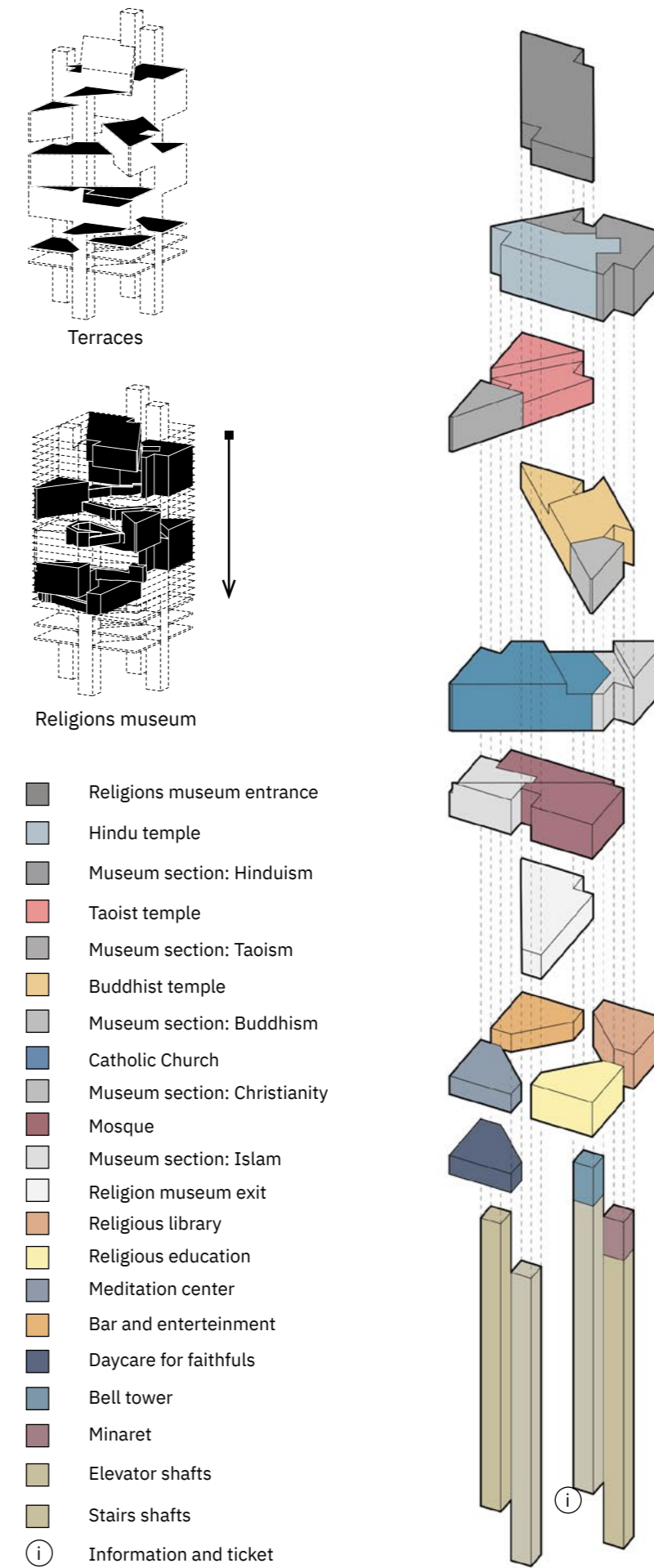
Figure 106. Illustration of the program

- ⬛ Religions museum entrance
- ⬜ Hindu temple
- ⬛ Museum section: Hinduism
- 🟥 Taoist temple
- ⬛ Museum section: Taoism
- 🟧 Buddhist temple
- ⬜ Museum section: Buddhism
- 🟦 Catholic Church
- ⬜ Museum section: Christianity
- 🟥 Mosque
- ⬜ Museum section: Islam
- 🟧 Religion museum exit
- 🟧 Religious library
- 🟨 Religious education
- 🟦 Meditation center
- 🟧 Bar and enterteinment
- 🟦 Daycare for faithfuls
- 🟦 Bell tower
- 🟥 Minaret
- ⬜ Elevator shafts
- ⬜ Stairs shafts
- ⓘ Information and ticket

Figure 107. Concep-
tual scheme of the
geometrical process

1. stacking blocks   2. interpenetrating   3. trimming

4. interpenetrating   5. slabs addition   6. enveloping
addition
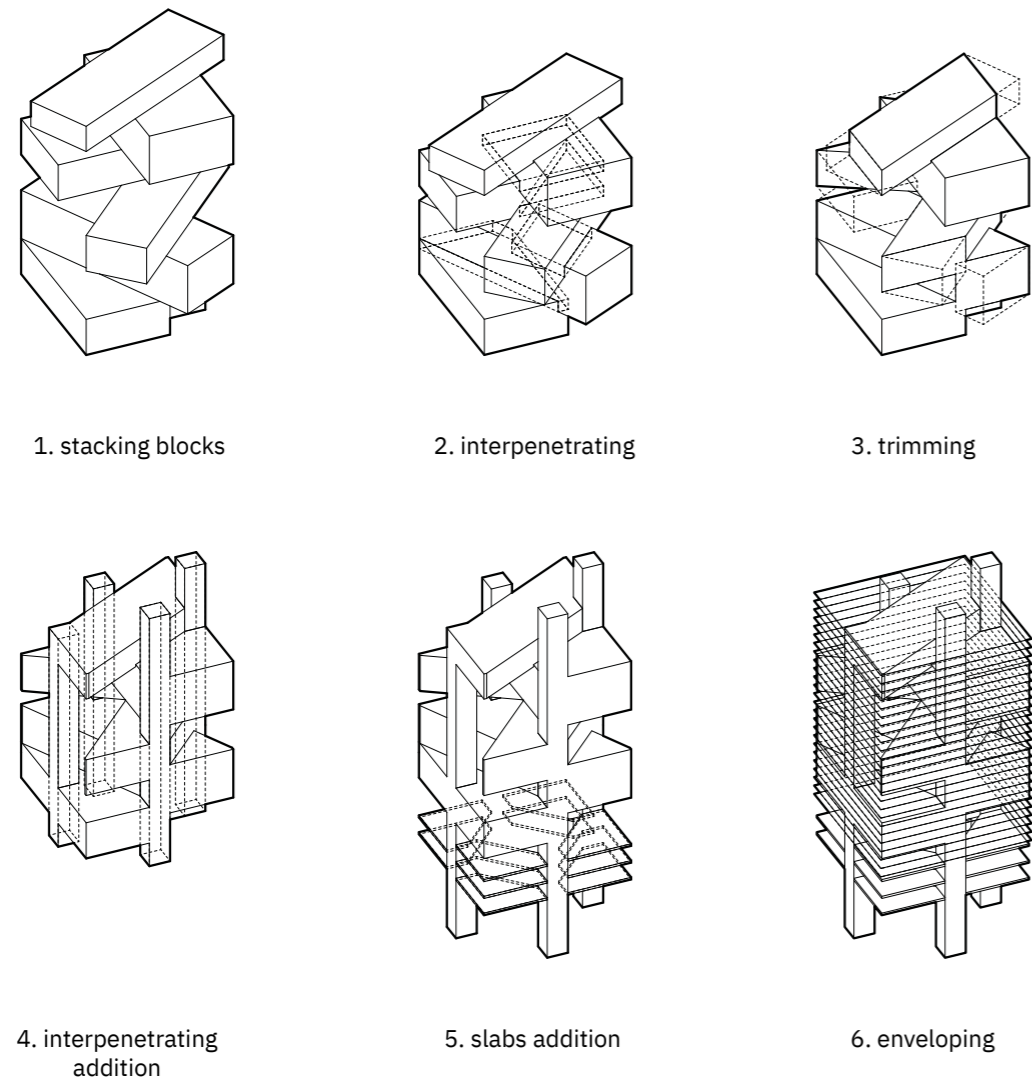
Figure 108. Concep-
tual scheme of the
volumetric idea

Positive   Negative
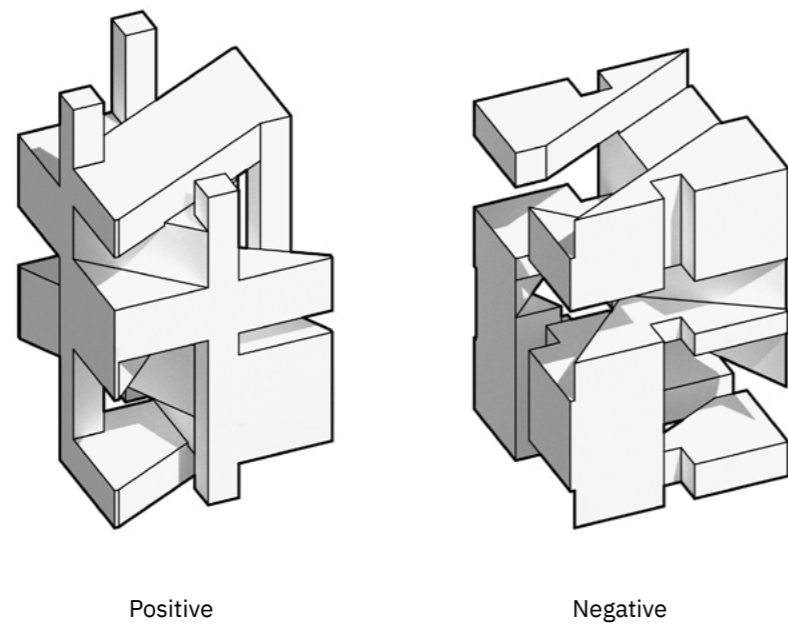
6.4 Circulation

The routing is a central part of this project, and it makes possible the intertwining of the program mentioned before.

There are two different options for the main circulation, besides the elevators: a fast route and a slow route. The slow one connects every single floor with flights of stairs, while the fast one connects one every two floors, also with stairs. In this way many different options are possible for people ascending and descending, in the combination they prefer. Along the slow route there are platforms distributed always between two temples' terraces, so that some shared activities can take place in this space of transition. Sometimes these consist in simple benches for resting, or in a table with a shelf of sacred books, or a small space for eating and drinking something. Sacred books can be distributed for free in this areas for example, as it happens in some multireligious rooms of airports (this happens also in the Eindhoven airport).

The other important routing is the museum ramp, which crosses all the temples, almost always on one side of them, and connects all the sections of the museum exhibition. Also in this route there are moments of pause, more precisely where the passage enlarges and the position is good for observing the activity inside each temple. This space is the ideal one for informing the visitor of the typical rituals and activities taking place in each religion, and it represents also an occasion for resting. The order in which the museum is structured is chronological, from top to bottom, therefore the entrance of the museum is on the top floor and the exit on the bottom. The interior of this routing is insulated acoustically from the temple, and the glass is transparent on one side, for tourists observing, and reflective on the other, in order to avoid annoying the faithfuls.

The access to the building is immediately recognizable from the ground floor, with the elevators facing the two entrances from the streets and the stair visible in the center when coming from the two directions.

Figure 109. Axonometric illustration of the routings
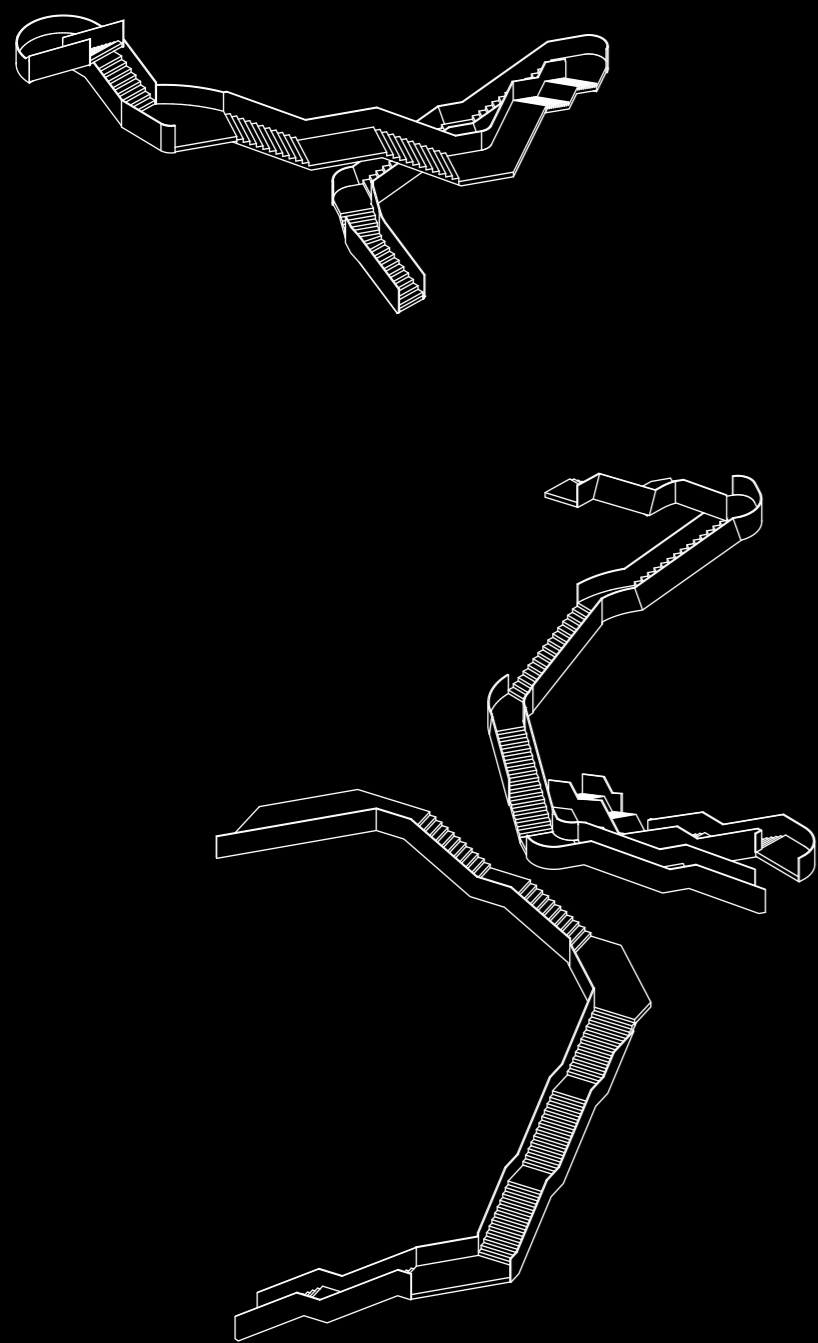
FAST STAIRS
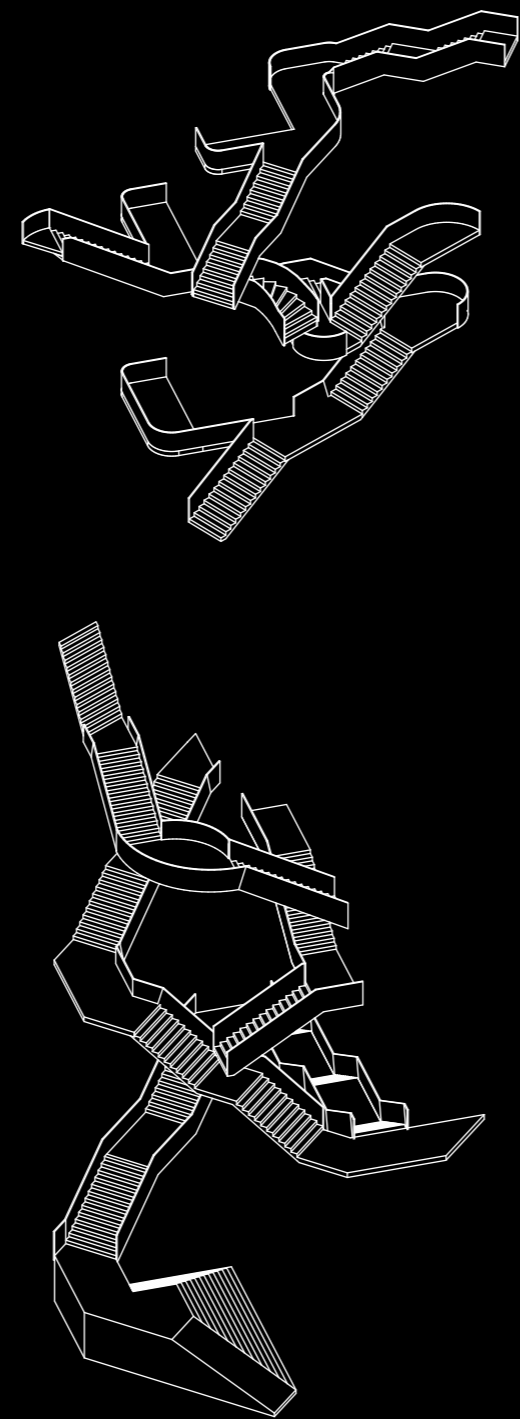
SLOW STAIRS
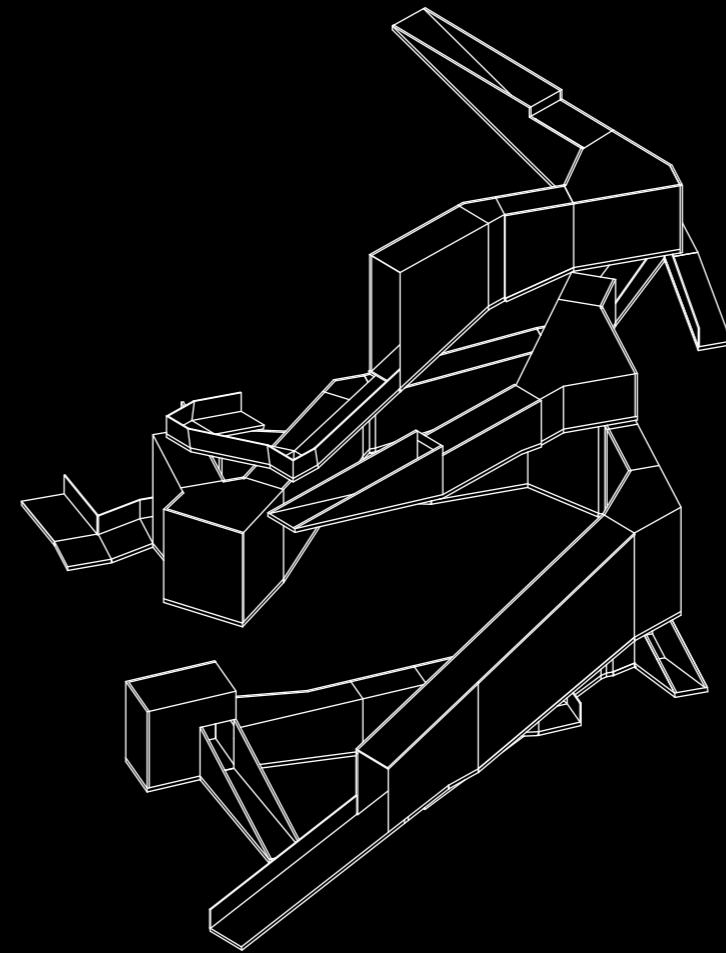
MUSEUM ROUTE

ALL ROUTINGS
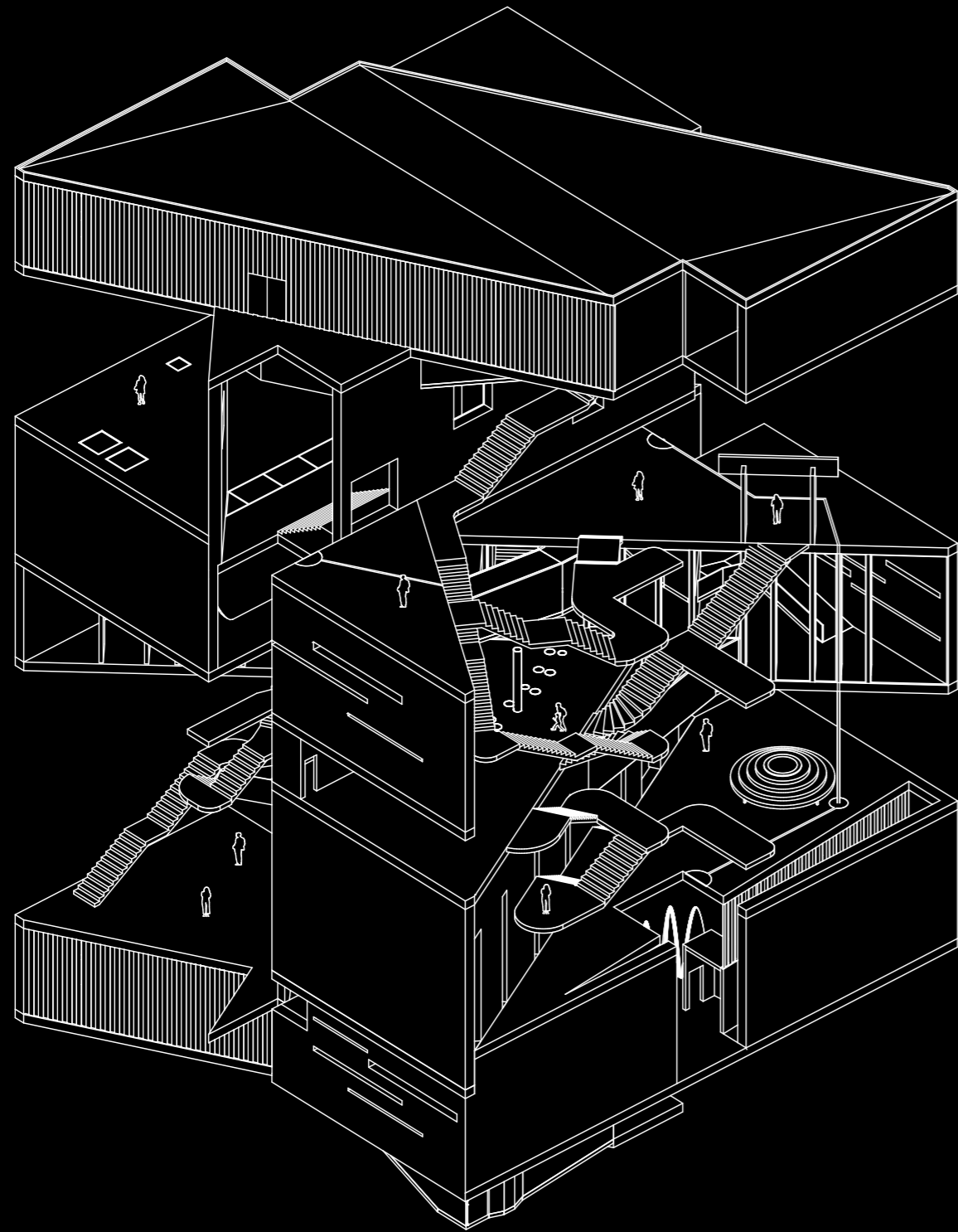
Figure 110. *Axonometric illustration of the five temples and the museum*
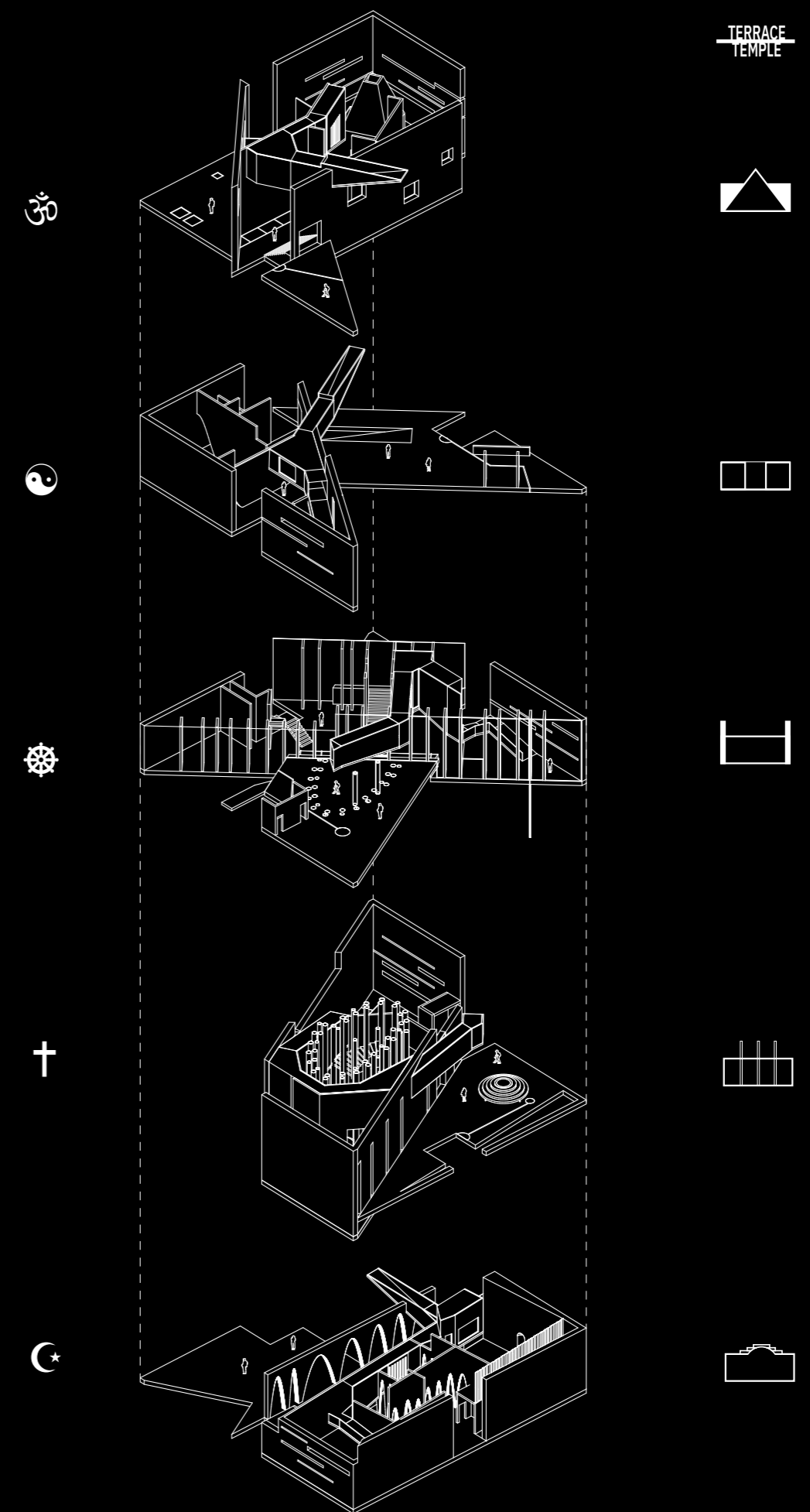
Figure 111. *Exploded axonometric view of the five temples*

Figure 112. Tangram, chinese puzzle, source of inspiration for the plan

6.5 Plans and sections

In the combination of plans and sections the complexity of the puzzle solving exercise appears. The irregular arrangement of the intersecting volumes provides sections that variate on every position and allows to get a terrace for each temple in correspondence of the entrance. The voids so generated make visible one terrace to the other and provide the space for the stairs connecting all of them. Between one terrace and the other there are the already mentioned platforms for shared activities from which there are privileged points of view on the terraces, often in the middle of the void.

While the composition of the temples and museum of religions follows an apparently irregular disposition which resembles the tangram Chinese puzzle, the lower part is regular and, in plan, the subtraction of a square from a bigger one, in which triangles are obtained. The squared plan of the whole derives from the research, being the square the geometrical form most universally used in important buildings, and it represents a symbolic unity of which the different temples are a portion.

The exhibition rooms of the museum are included in the same Euclidian geometry of each temple floor plan, and from the section it can be observed that the wall separating temple and museum doesn't reach the ceiling to let sound and smell pass from each temple to the museum, in order to bring part of that atmosphere to the visitors. In the section it can be observed the visual connection from one temple to the other through long windows, with a maximum visibility of the next three temples in one case.

It is also visible the architectural variation from one temple to the other, in order to stress different identities, while on the terraces there are unifying factors, such as continuation of elements coming from the lower levels, or the gardens and their narrow stream of water that unite them all.

The ground floor is brought to the same level of the street by digging the small hill already present in the plot to make it become part of the city life, and it is enclosed by vegetation on top of sloping soil to create an atmosphere of inclusion and a safe area for children.
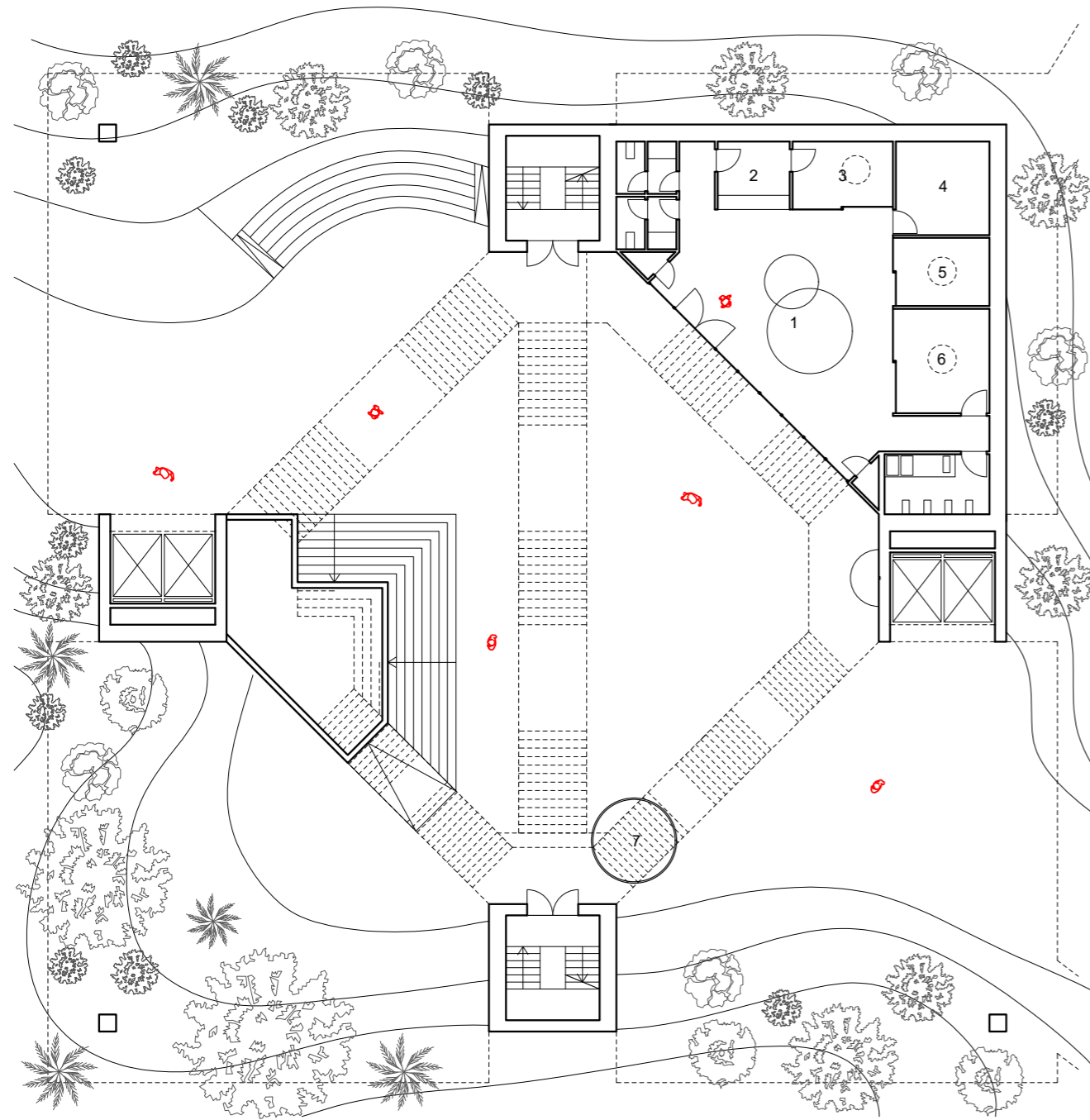
0.

1 - play area
2 - secretary
3 - staff
4 - sleeping area
5 - dressing area
6 - kitchen
7 - tickets and info
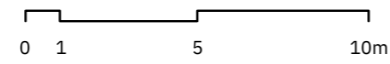
Figure 113. Plan of the ground floor level
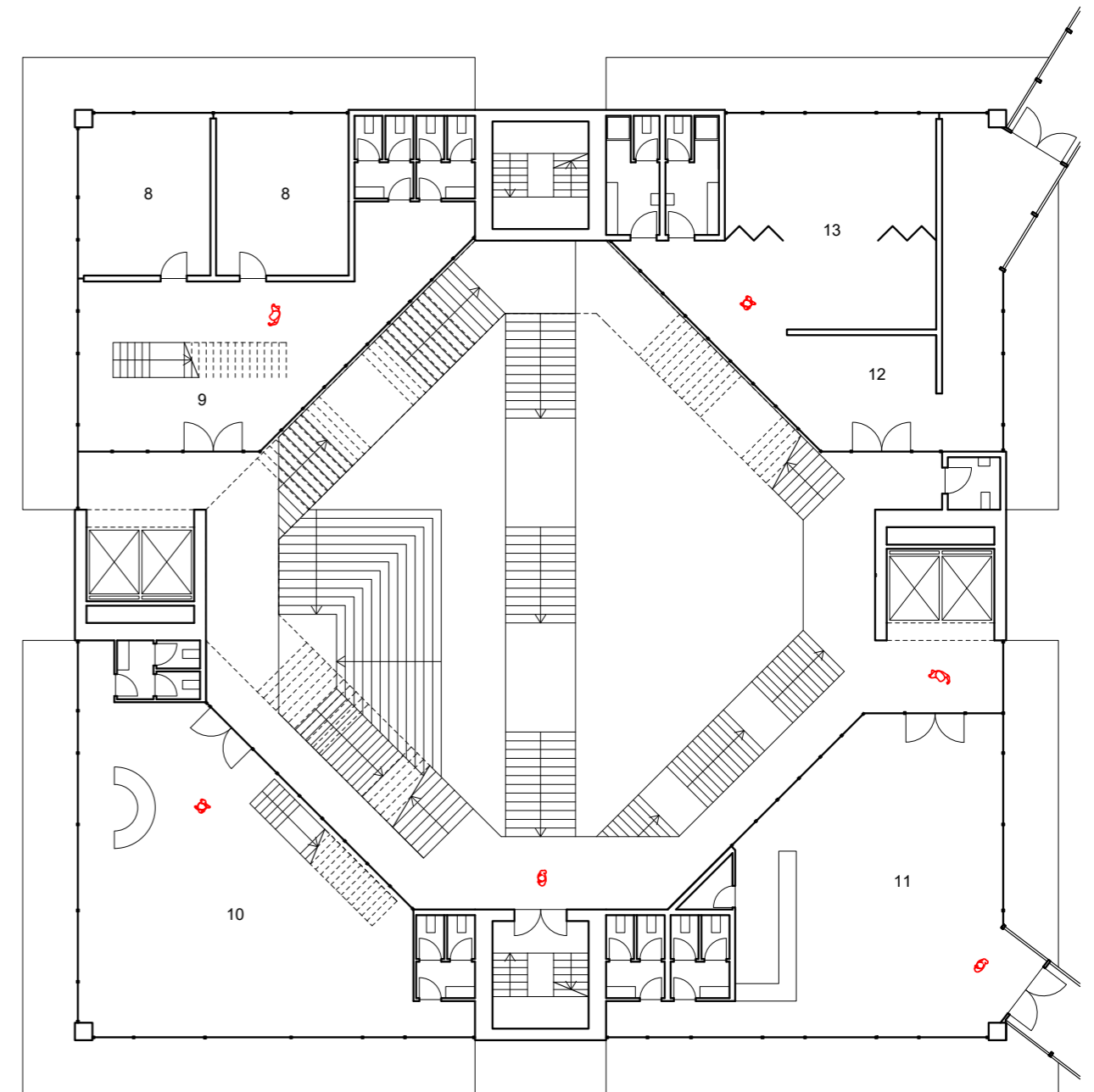
1.

8 - classroom
9 - entrance religious education
10 - religious library
11 - bar
12 - entrance meditation centre
13 - flexible meditation room
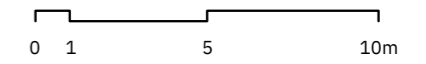
Figure 114. Plan of the first level

0 1   5   10m

0 1   5   10m
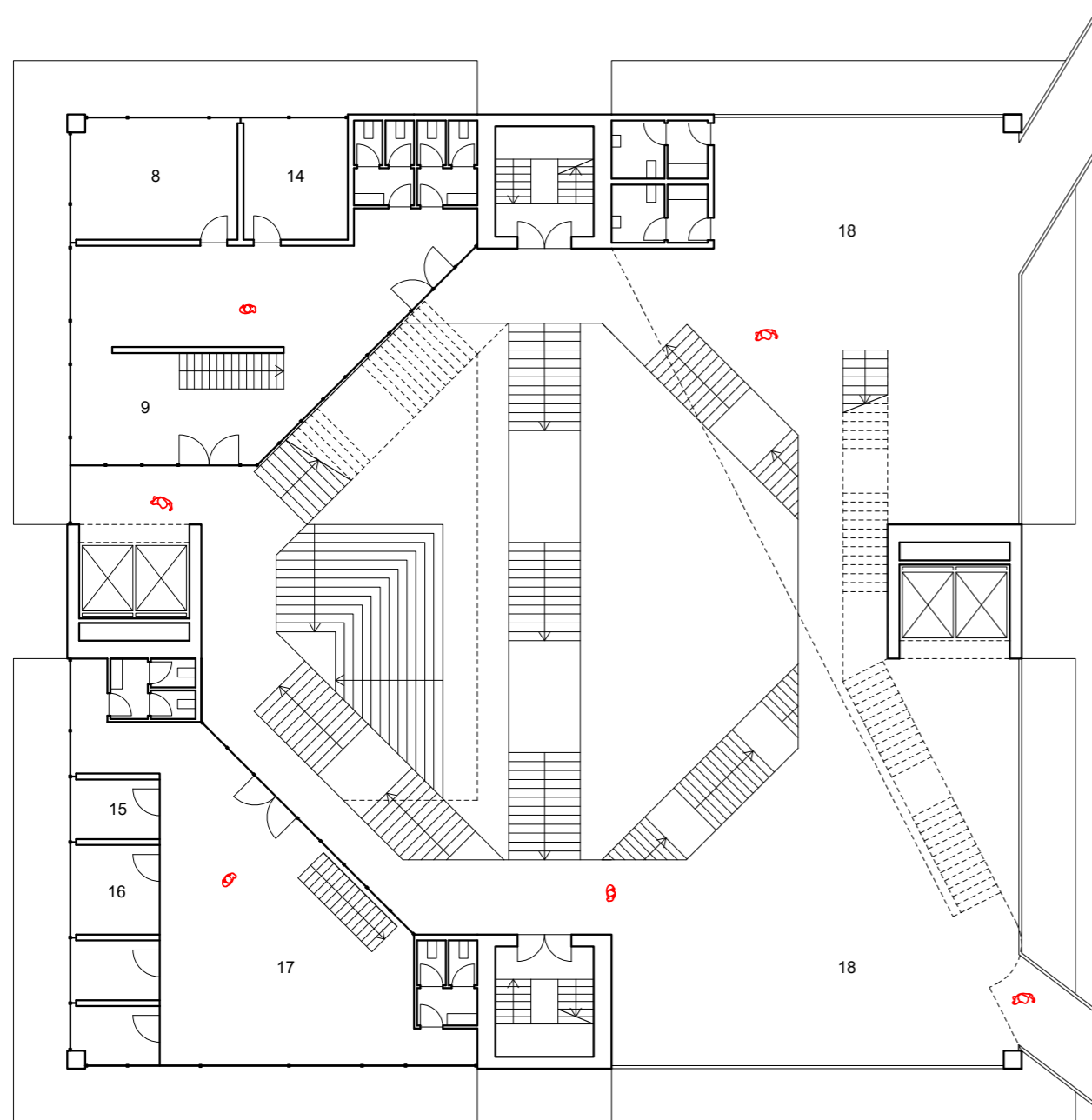
2.

8 - classroom
9 - entrance religious education
14 - teachers office
15 - single study room
16 - double study room
17 - religious library
18 - terrace
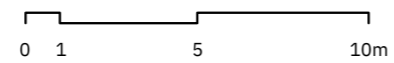
Figure 115. Plan of the second level

0 1   5   10m
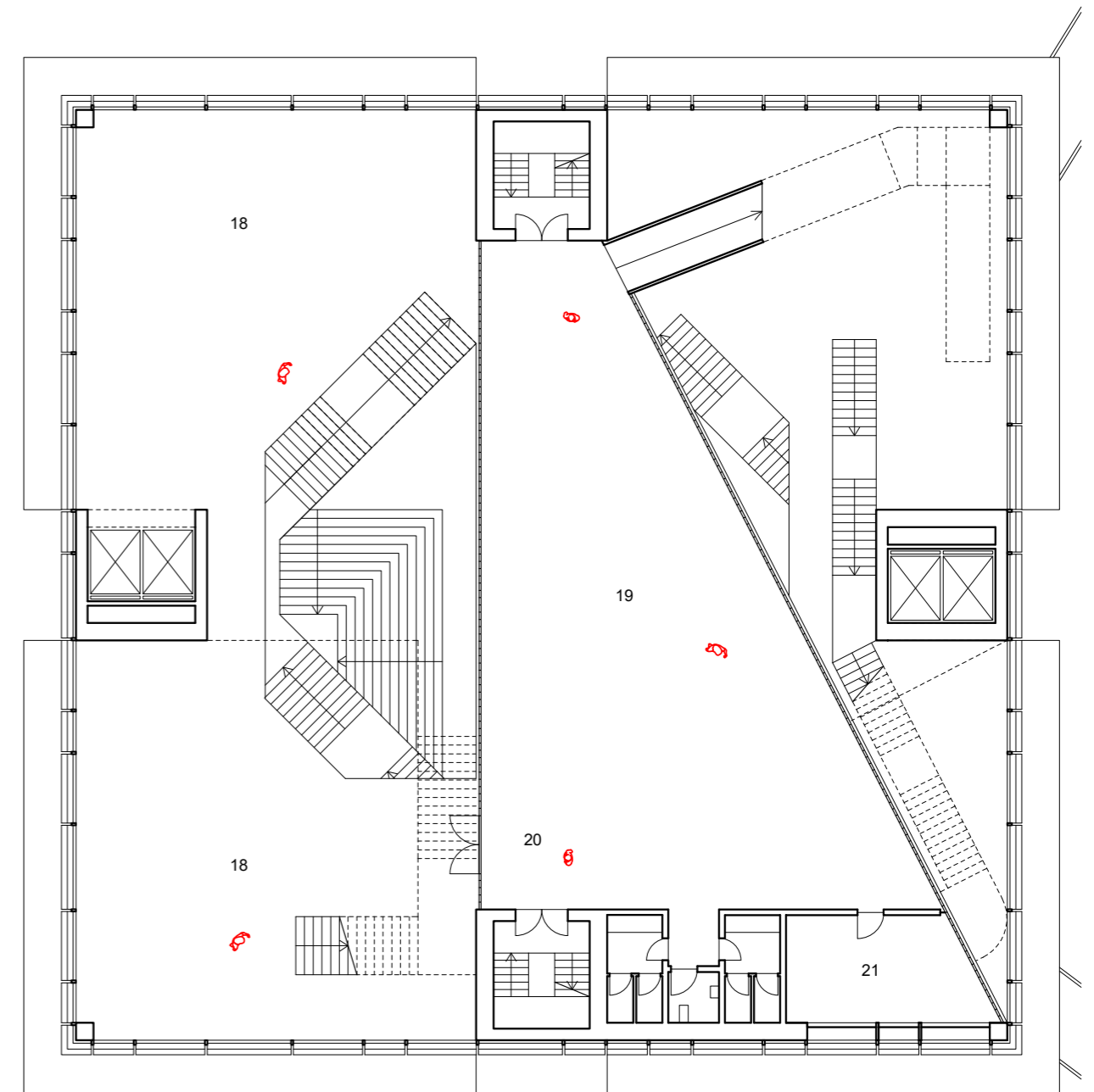
3.

18 - terrace
19 - museum exhibition: Singapore and other faiths
20 - exit of the museum of religions
21 - museum director office
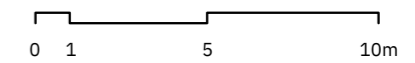
Figure 116. Plan of the third level

0 1   5   10m
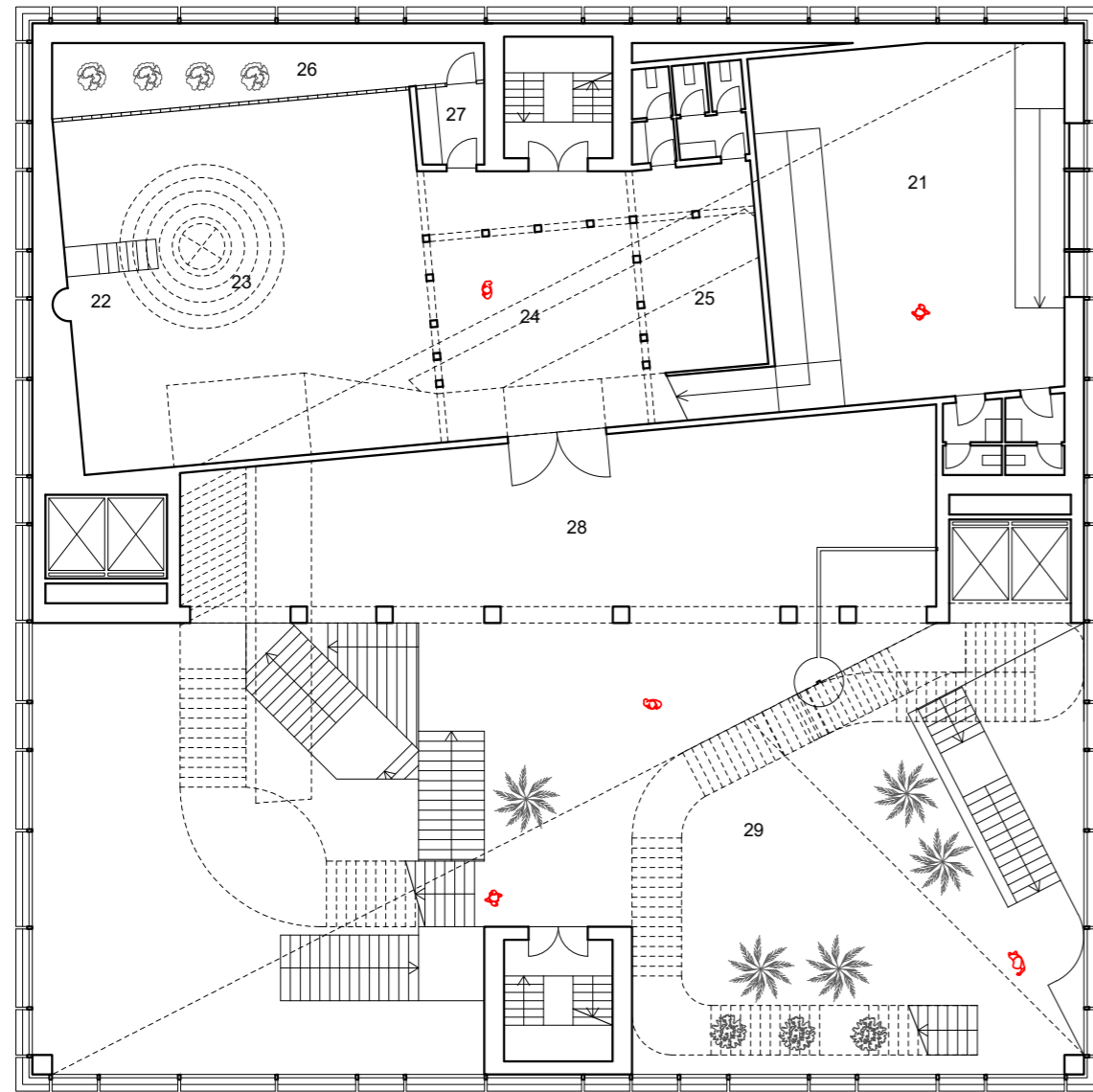
4.

21 - museum exhibition: Islam
22 - mihrab and minbar
23 - main room
24 - Mosque entrance
25 - women gallery
26 - garden
27 - changing room
28 - sahn
29 - garden terrace
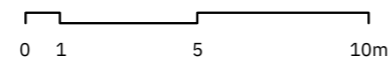
Figure 117. Plan of the
fourth level
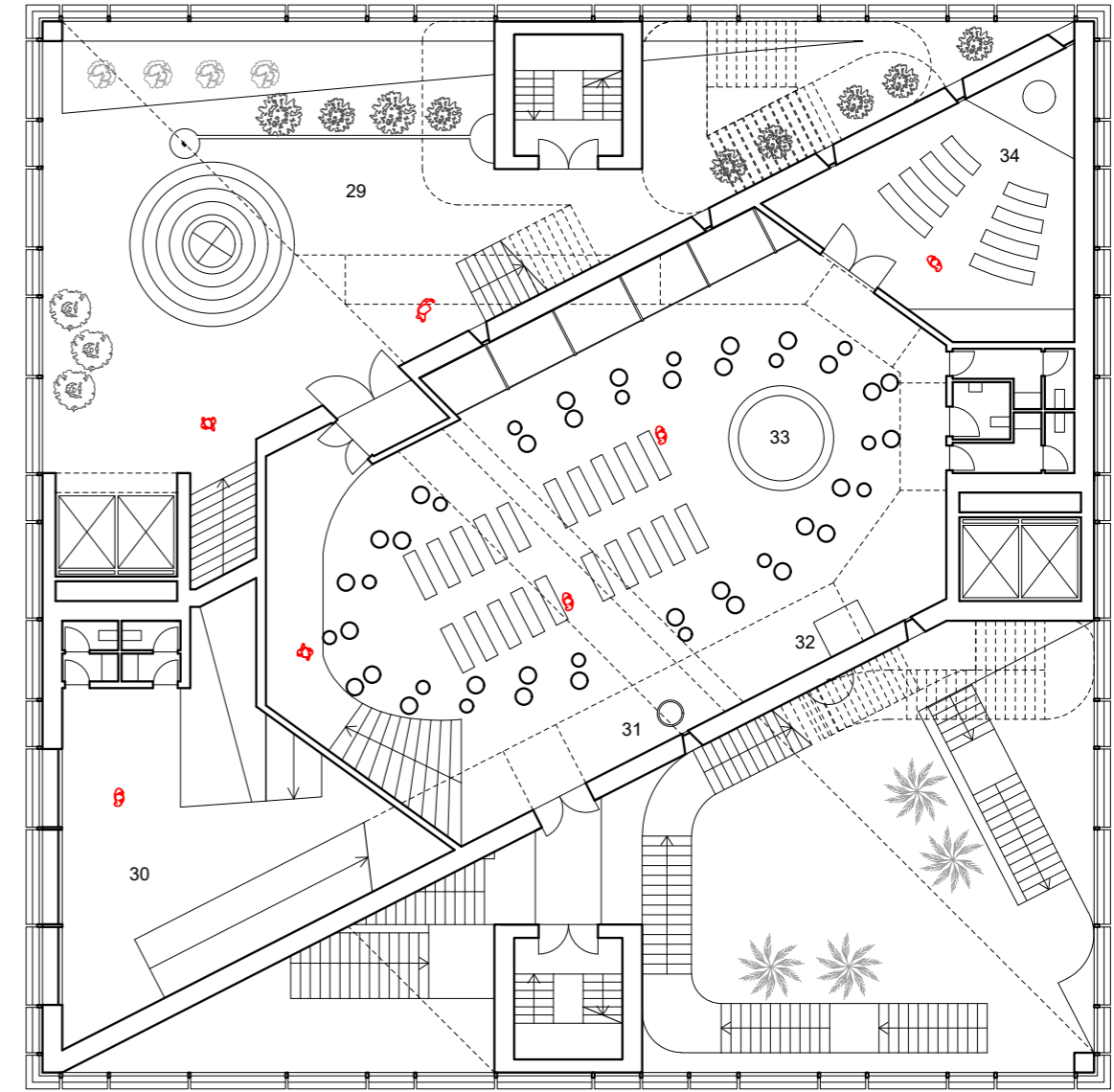
5.

29 - garden terrace
30 - museum exhibition: Christianity
31 - baptismal font
32 - reconciliation chapel
33 - altar
34 - chapel
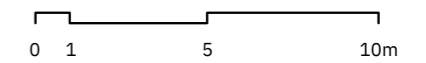
Figure 118. Plan of the
fifth level

6.
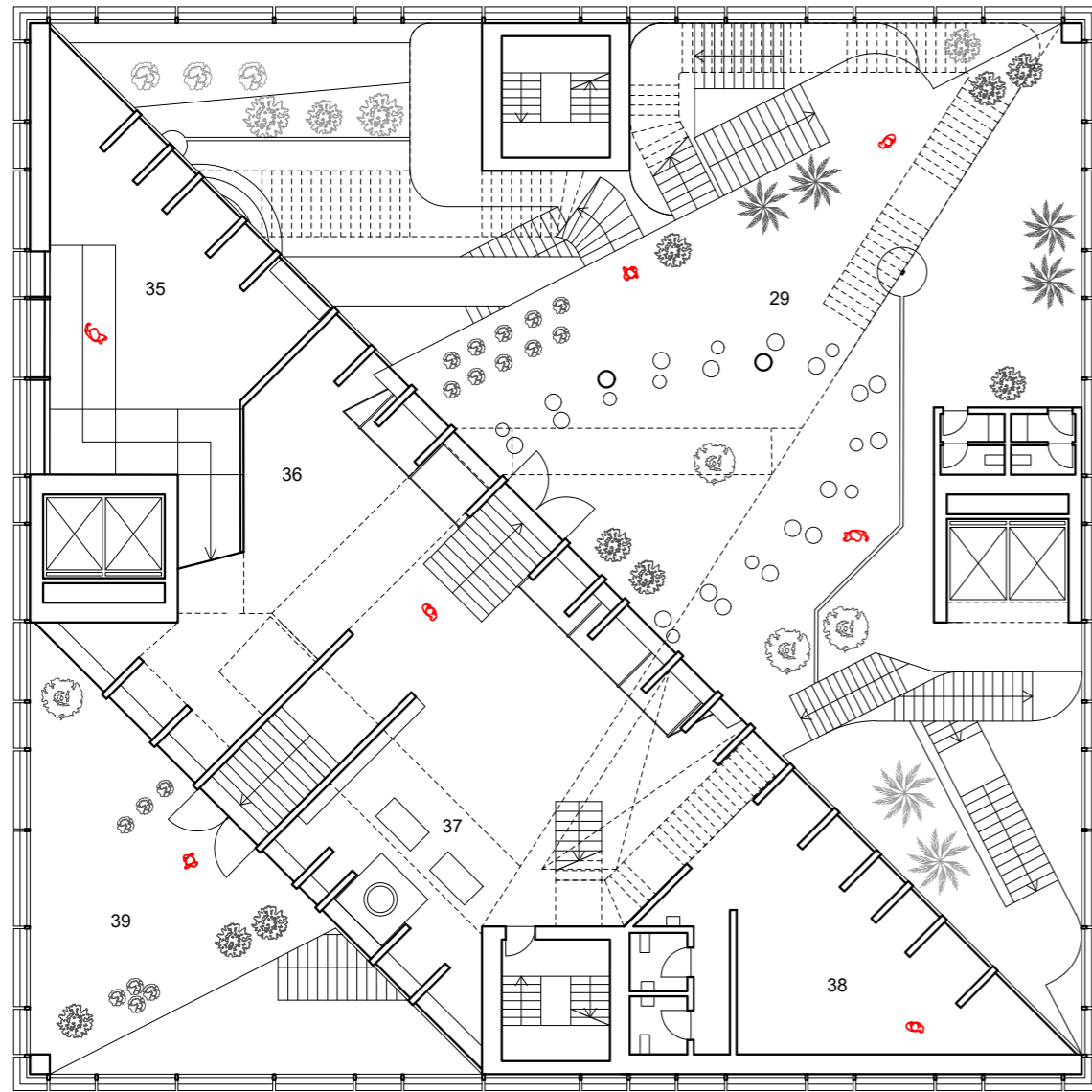
29 - gerden terrace
35 - museum exhibition: Buddhism
36 - Buddhist temple, Bodhisattva hall
37 - main shrine, with buddha statue
38 - meditation room
39 - temple garden

0 1   5   10m
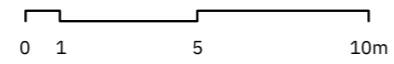
Figure 119. *Plan of the sixth level*
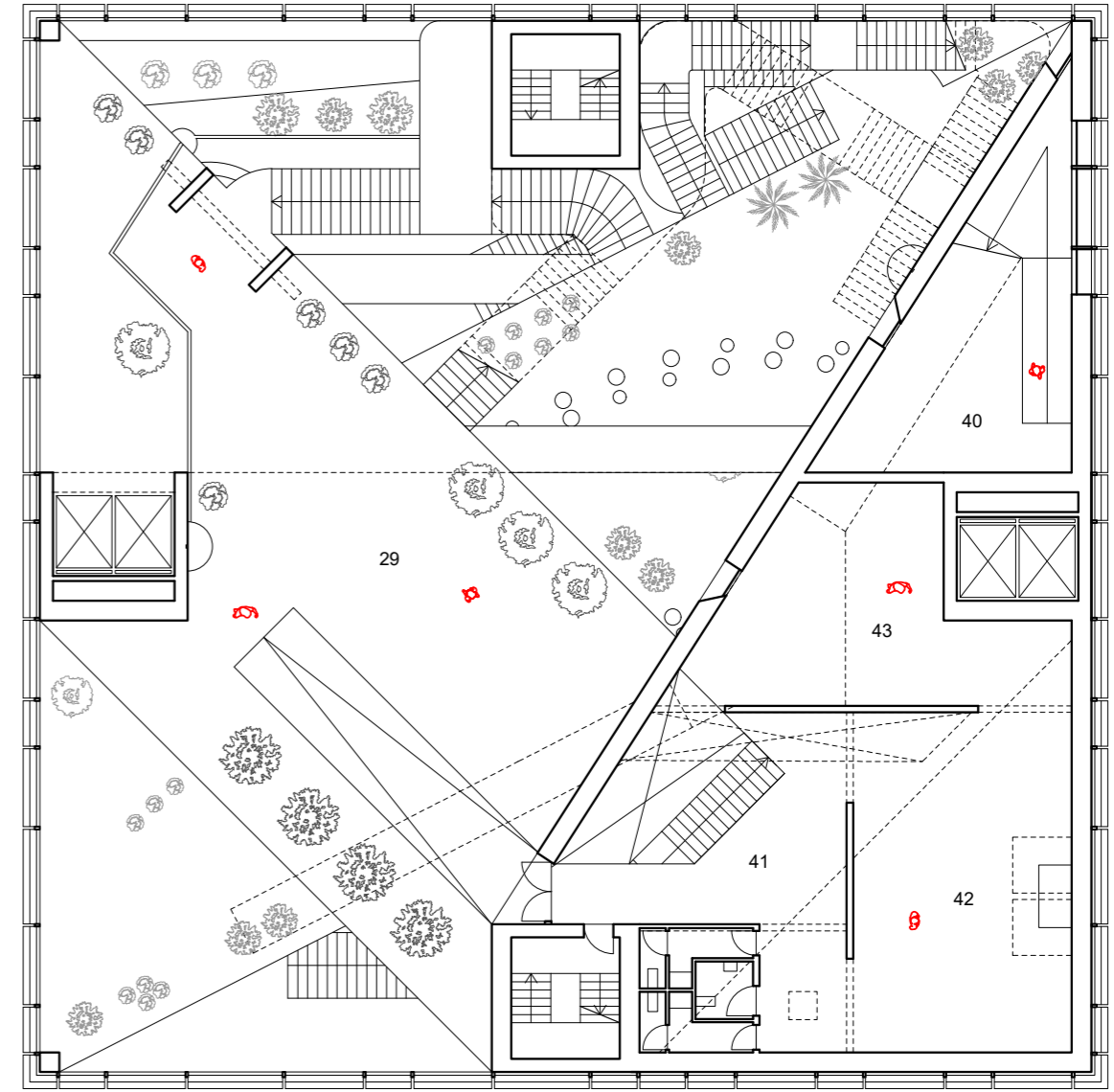
7.

29 - garden terrace
40 - museum exhibition: Taoism
41 - Taoist temple entrance hall
42 - Taoist temple, gods altars
43 - Taoist temple, ancestors tablets

0 1   5   10m
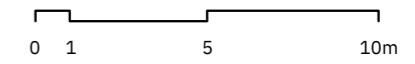
Figure 120. *Plan of the seventh level*
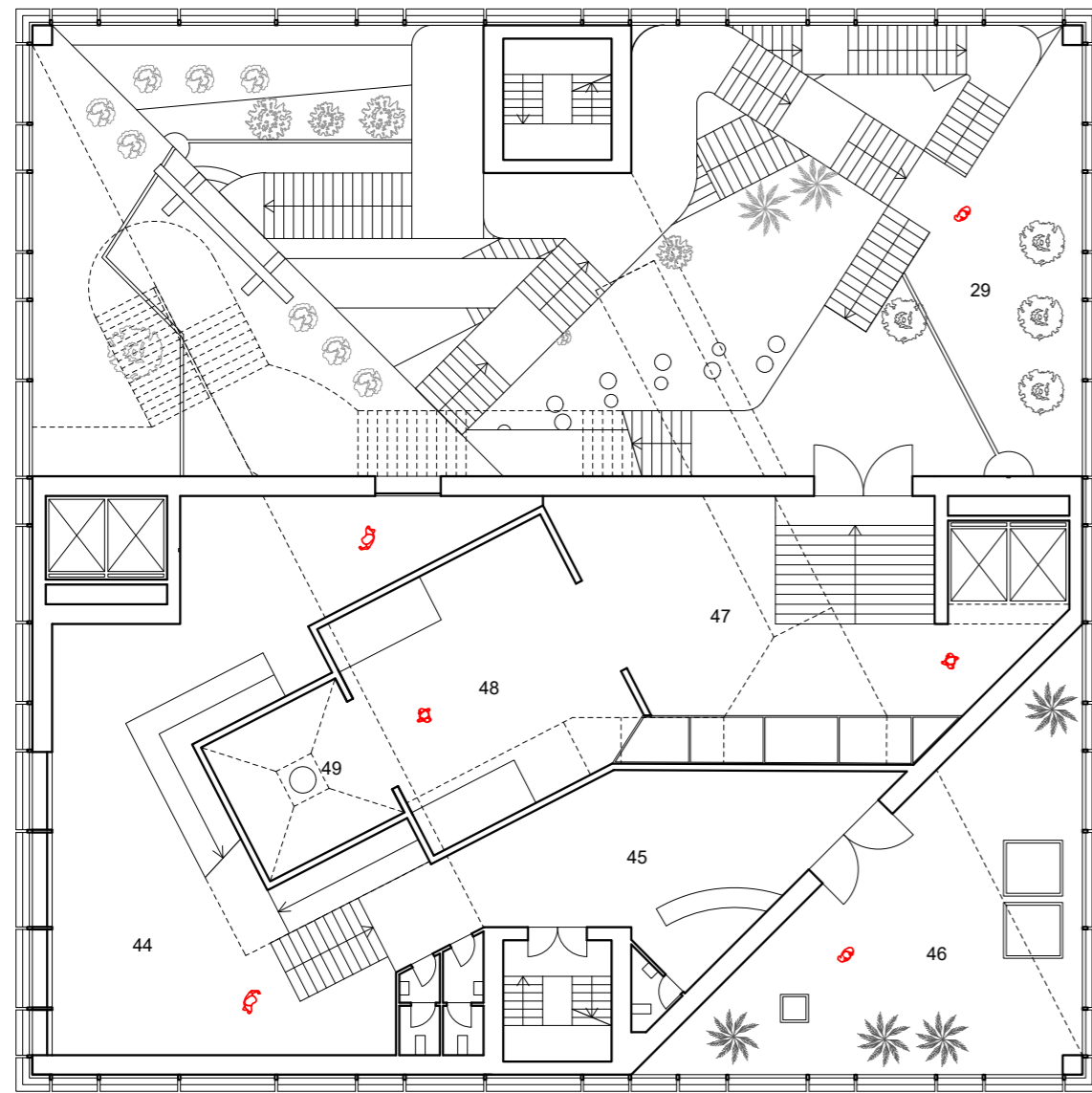
8.

29 - garden terrace
44 - museum exhibition: Hinduism
45 - bar of the museum
46 - bar terrace
47 - Hindu temple, entrance hall
48 - Hindu temple, mandapa
49 - Hindu temple, garbagriha and sikhara
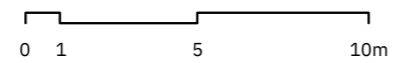
Figure 121. Plan of the eighth level
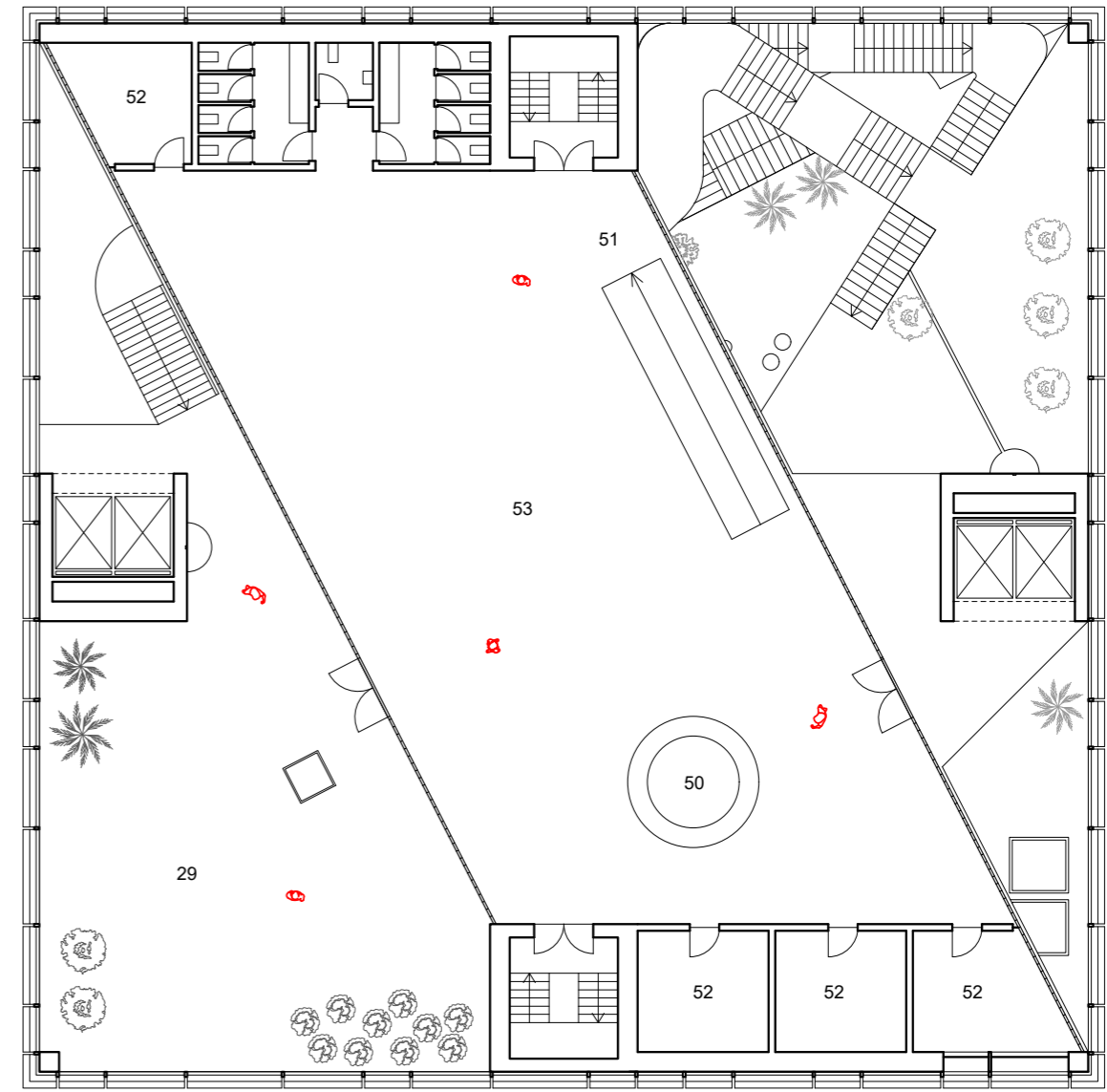
9.

29 - garden terrace
50 - reception
51 - start of the route
52 - office
53 - museum exhibition: ancient religions
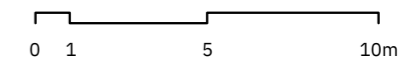
Figure 122. Plan of the ninth level

Figure 123. Section A-A'

SECTION A-A'

1 - city room
2 - daycare
3 - meditation center
4 - bar and entertainment
5 - museum exhibition: Singapore religions and other faiths.
6 - museum exhibition: Christianity

7 - Mosque
8 - Catholic church
9 - Buddhist temple
10 - Taoist temple
11 - Hindu temple
12 - museum bar
13 - museum exhibition: ancient religions
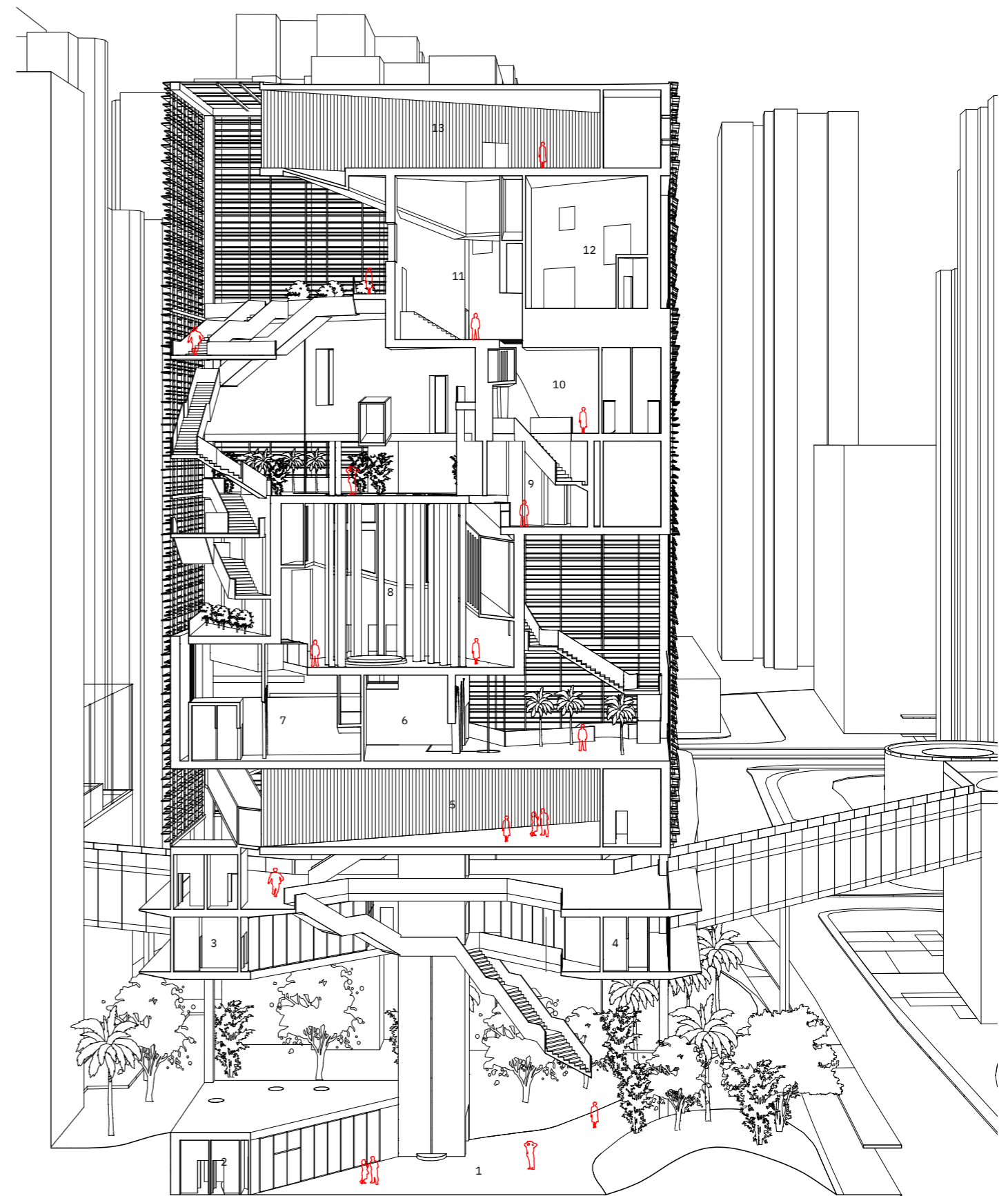
Figure 124. Section B-B'

SECTION B-B'

1 - city room
2 - religious library
3 - bar and entertainment
4 - study room of religious library
5 - museum exhibition: Singapore religions and other faiths
6 - museum exhibition: Christianity
7 - Catholic church
8 - Buddhist temple
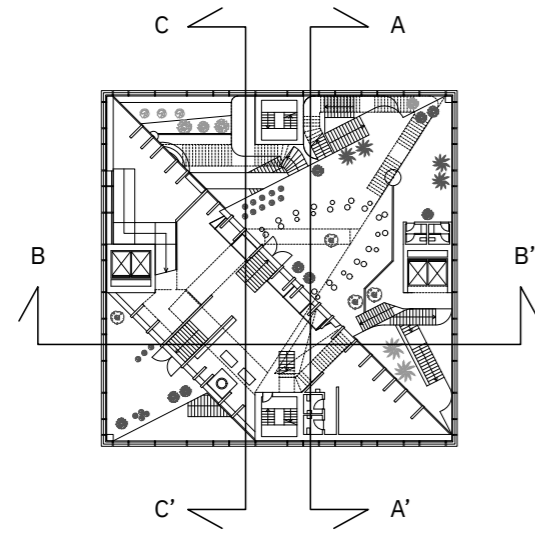
9 - Buddhist meditation garden
10 - Taoist temple, entrance room
11 - Taoist temple, gods altar room
12 - museum exhibition: Hinduism
13 - Hindu temple, garbagriha and sikhara
14 - Hindu temple, mandapa
15 - bar of the museum
16 - museum exhibition: ancient religions
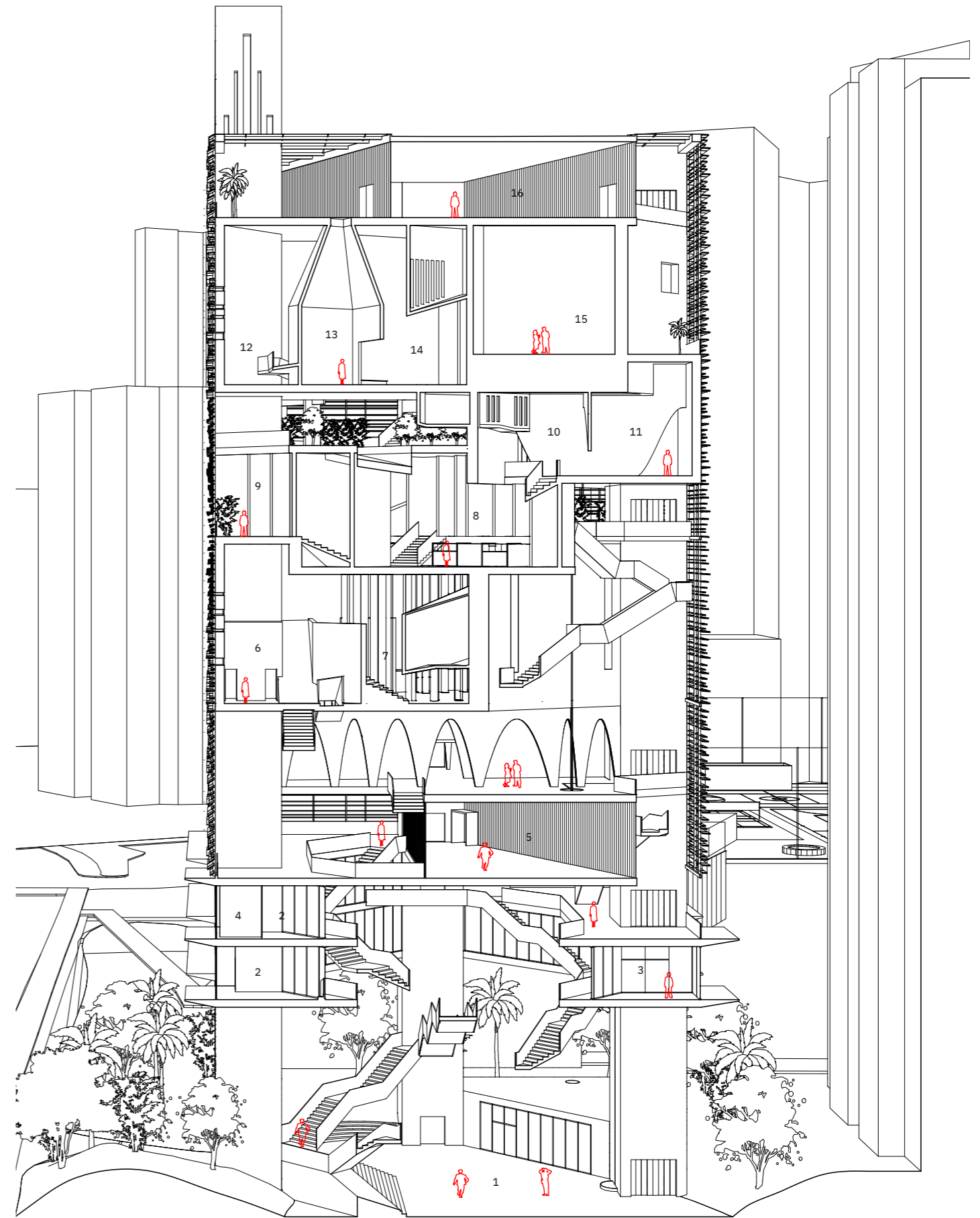
0 1   5   10m

Figure 125. Section
C-C'
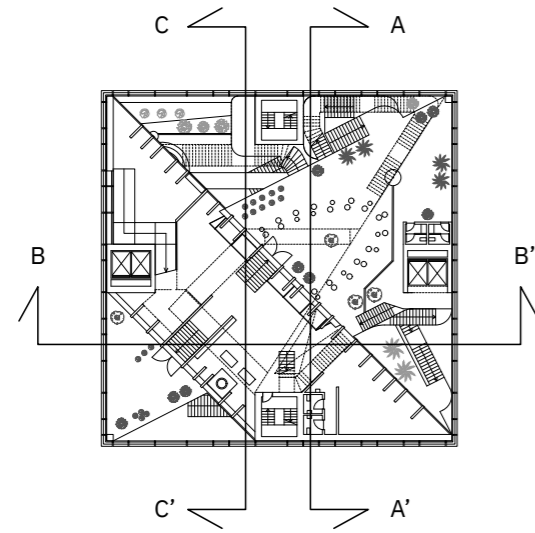
SECTION C-C'

1 - city room
2 - religious library
3 - religious education
4 - sahn
5 - Mosque
6 - Catholic church
7 - platform between one terrace and the
other for shared activities

8 - Buddhist temple
9 - Hindu temple, mandapa
10 - museum exhibition: ancient religions
11 - Taoist temple, gods altar room
12 - museum exhibition: ancient religions
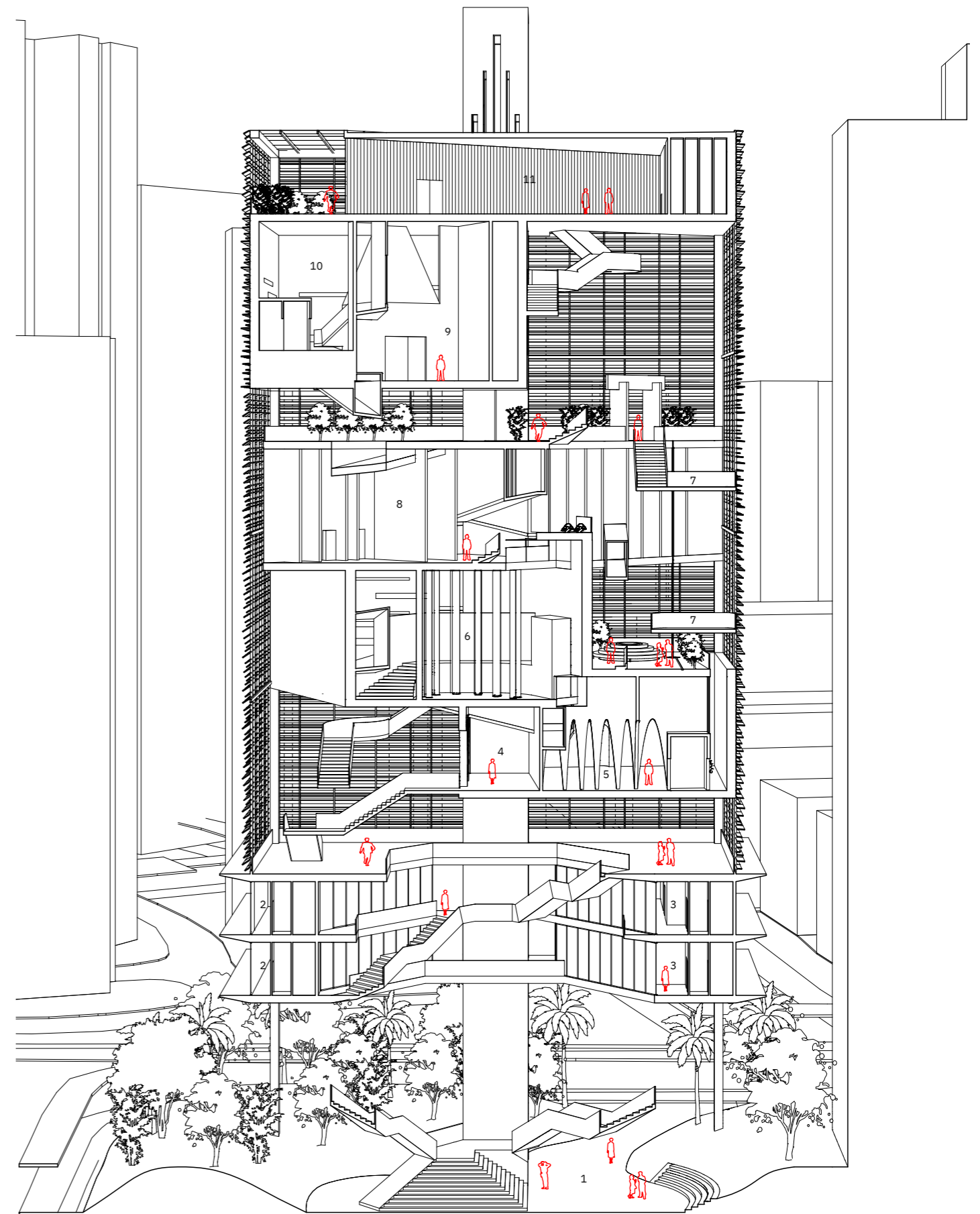
0 1   5   10m
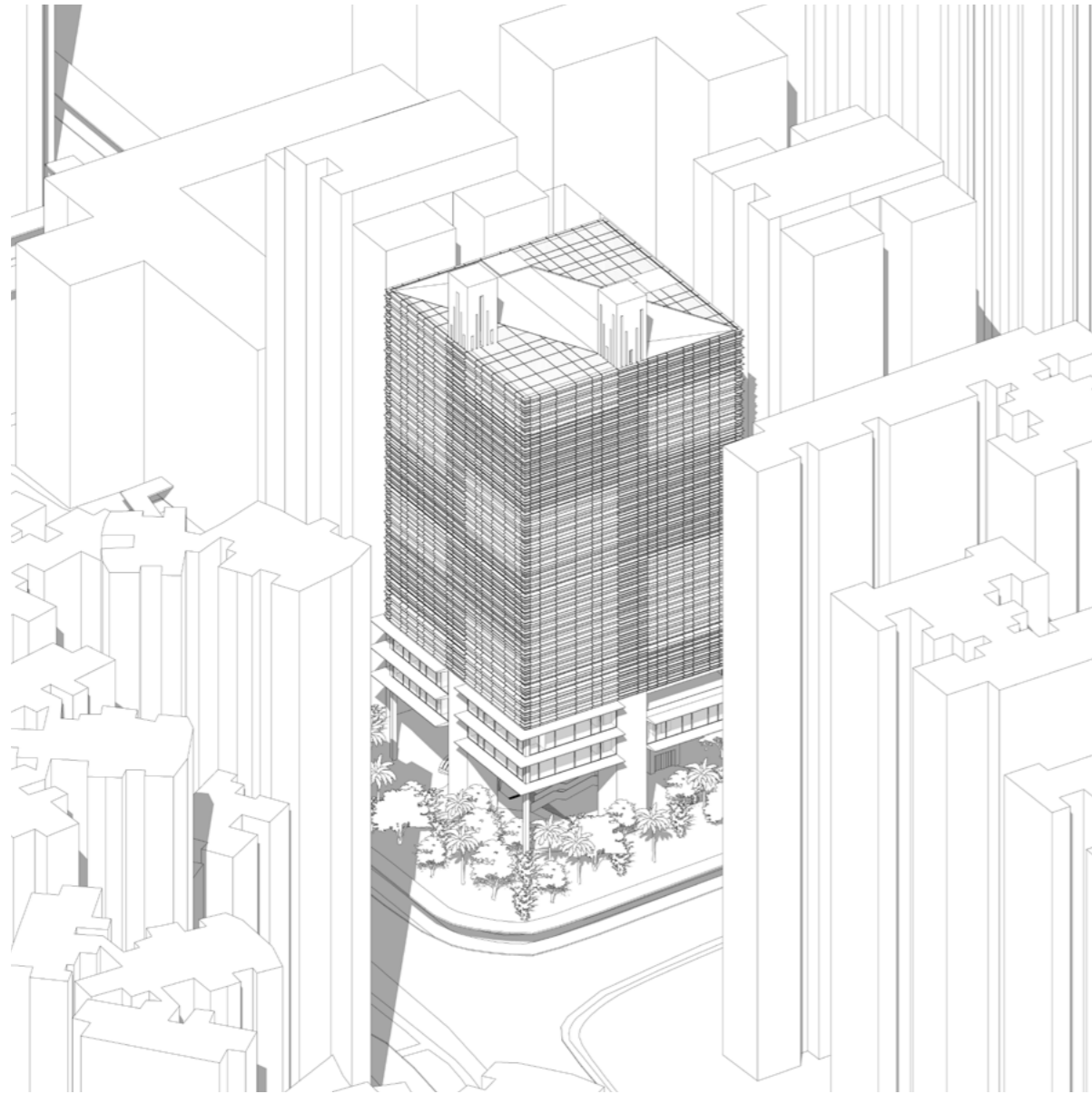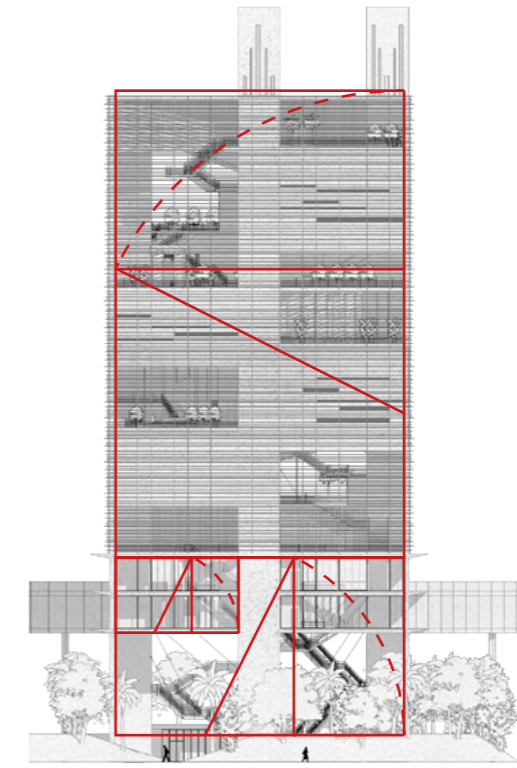
6.6 Facade

The facade of the building is conceived to respond on the one hand to the tropical weather of Singapore, and then to provide protection from the sun and from the rain, and on the other to create a visual effect of transparency that changes according to the perspective and that provides the desirable privacy for the residential high rises close to it. From a long distance the volumes of the temples are visible through the facade skin, to symbolize visually the plurality of identities which is enveloped in a unity, recalling the double nature of unity and division we saw it is implied in the concept of tolerance. From a closer perspective, looking from the street, the louvers of the skin block the view of the interior, making the upper part of the building a single block. The interior facades that are also visible from the terraces and from the stairs present different openings for each temple, to stress the plurality, and are made by the same material, concrete, to stress a unity.

The lower part, which constitutes the common ground of the program, is glazed and protected from sun and rain by a jutting slab. The two parts are treated in different ways to respond to the different programmatic needs: in the lower part the presence of daylight is more appropriate while the temples require more introversion and a treatment of light which creates special atmospheres, also through skylights. Moreover, in the lower part the transparency makes visible the activities taking place inside the other programmatic blocks through the central void of the *city room* and partly from the exterior, stimulating the user to curiosity and exchange.

The horizontal stripe windows on the exterior facade of the higher part are always providing light to the different sections of the museum, and are placed inside the skin rhythm (which has three different distances horizontally and four vertically). The lowest of these stripes is always higher than a person in the interior, to have exhibition space on the wall.

The golden ratio has been followed for determining some proportions.

Figure 128. *South facade*
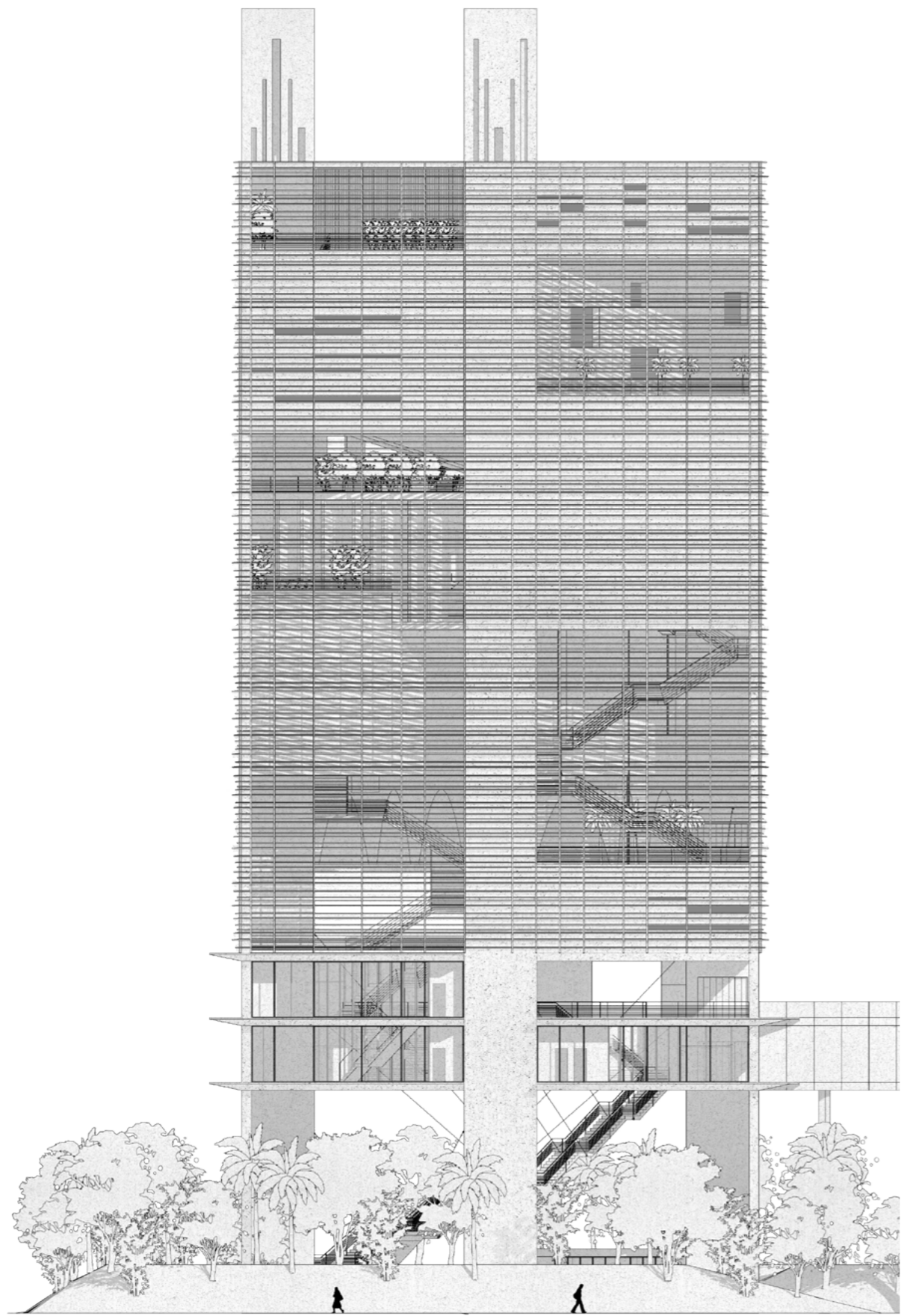
Figure 129. *West facade*
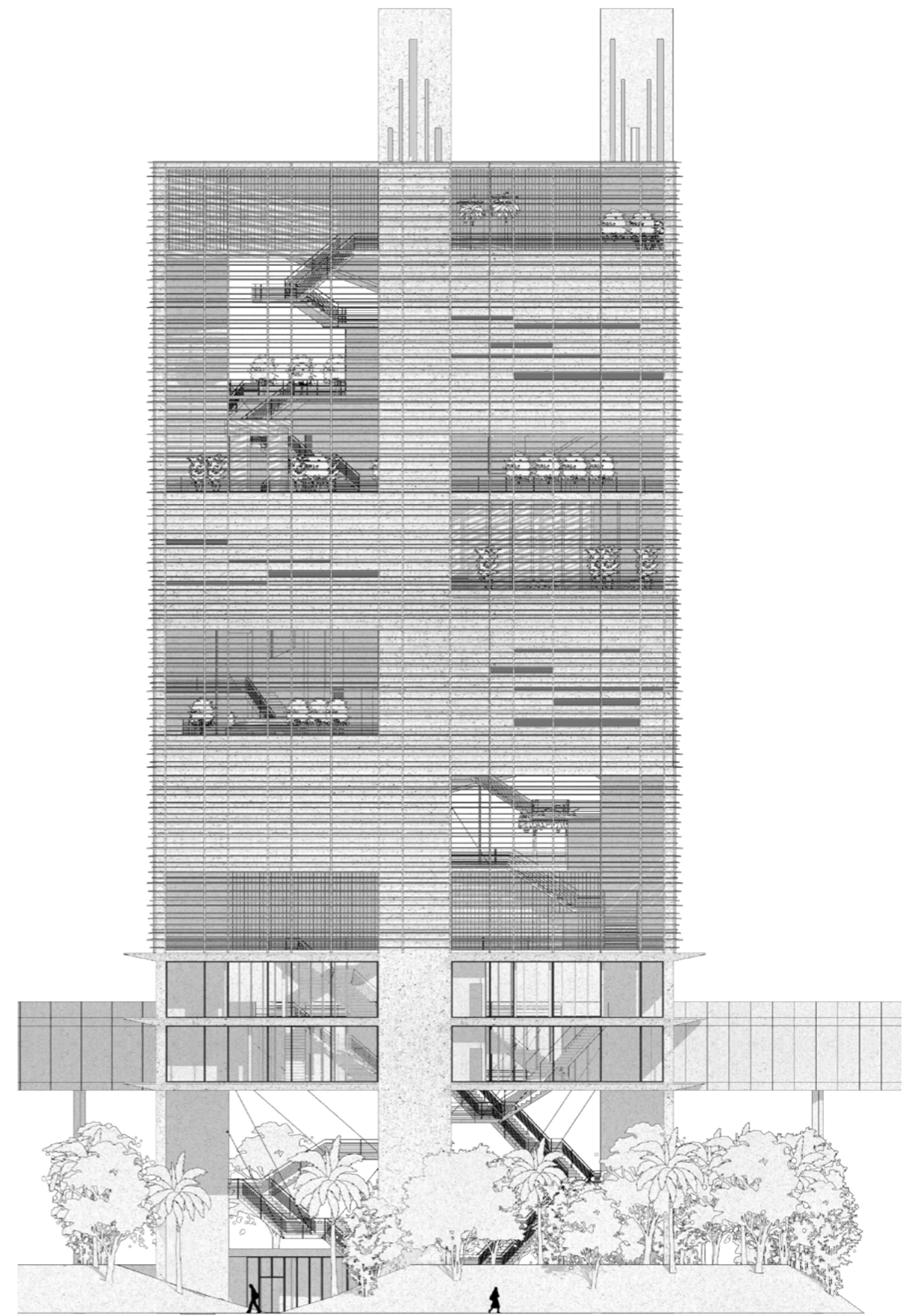
0 1   5   10m

0 1   5   10m

6.7 Impressions

Figure 130. *Sketch style view from the terrace of the Hindu temple, with the golden water stream evidenced*
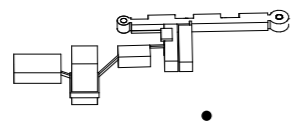
Figure 130. View from the main street
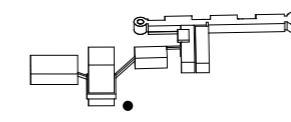
Figure 131. Exterior view from below
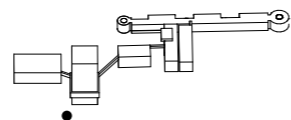
Figure 132. *View of the city room coming from the main street*
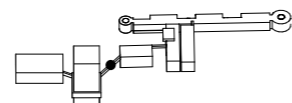
Figure 133. *View from the bridge connecting the temple of tolerance to the marriage center*
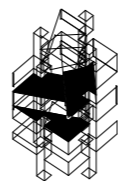
Figure 134. *View from the terrace of the Taoist temple to some platforms between the temples.*
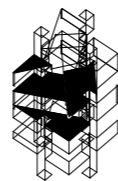
Figure 135. *View from the terrace of the Hindu temple*
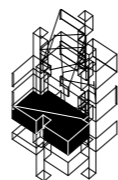
Figure 136. *Interior view of the mosque*

* inscription above the arches in arabic from the Quran 109:6, "For you is your religion, and for me is my religion"
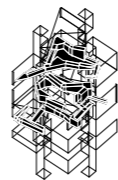
Figure 137. *Interior view from the museum passage into the mosque*
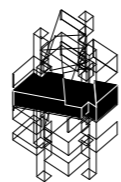
Figure 138. *Interior view of the Catholic Church*
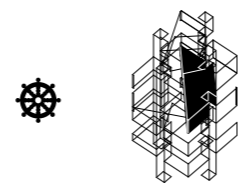
Figure 139. *Interior view of the Buddhist temple*
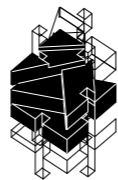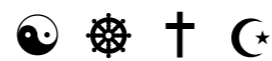
Figure 140. *Interior view across the temples, from the Taoist temple are visible: Buddhist temple, church and mosque*

聖人之道，為而不爭。
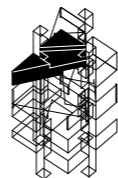
Figure 141. *Interior view of the Taoist temple*

* inscription on the table from Tao Teh Ching, 81: "The Way of a saint is to act naturally without contention."
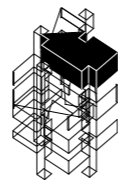
Figure 142. *Interior view of the Hindu temple*

Figure 143. *Materialisation of the facade*
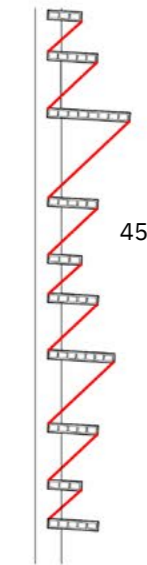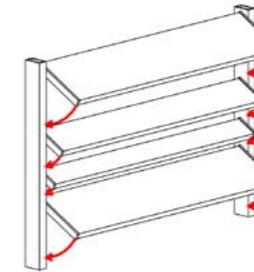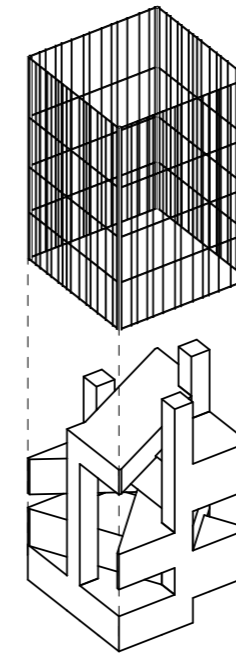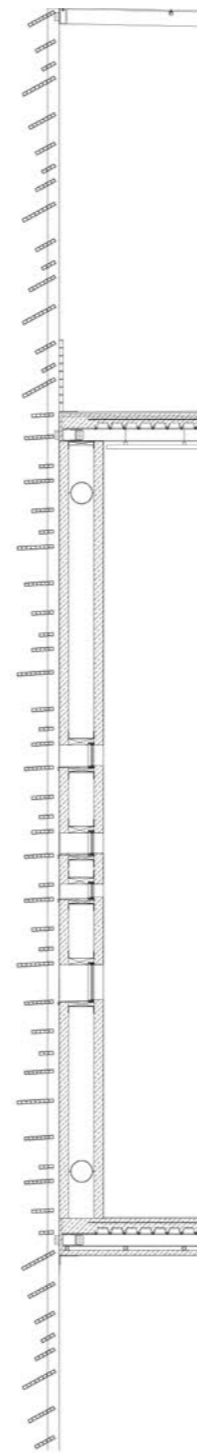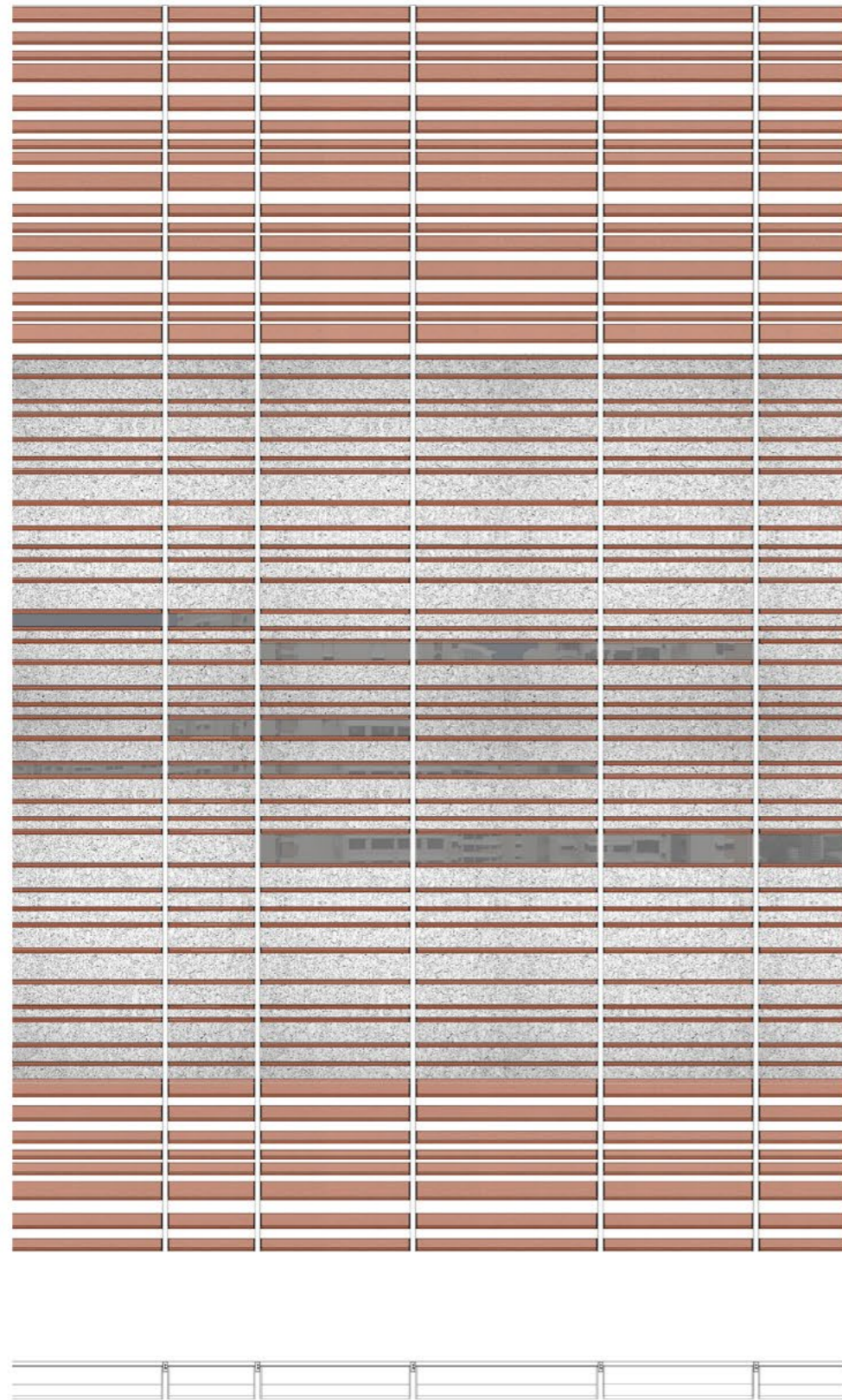
Figure 144. *On the left: scheme of the facade structure*

45°

Figure 145. *On the right: illustration of the movable facade and the distancing criteria*

6.8 Materials and solutions

The main material of the building is white concrete, reinforced by a steel structure. The floors stand on four concrete cores and on four pillars on the corners, and a steel structure supports the facade and connects the slabs.

The facade is made of terracotta louvers that are movable only on the open parts, where the sun could reach the terraces. The distance between one element and the other varies, with four different measures, but it is always in combination with the width of the elements themselves, so that they can be completely closed and that if they are horizontal there is still a 45° angle of protection from the sun and the rain. This is sufficient to shade completely the facade, where the louvers are not movable, for the hottest hours of the day, and partially for the rest of the day.

Thermal insulation is usually avoided in Singapore construction practice, being con-crete sufficient for the purpose. The thick walls of the temples and the museum are actually empty, conceived as precast twin walls where a ventilation system can be placed in between.

The materials chosen for the floors of the temples try to establish a relation with the respective religious traditions, following their most typical and sometimes sacred colors, or also their traditional materials.

On the other hand, the museum route has a more modern appearance, and the openings towards the temples are glazed with a one-way mirror, in order to make the visitors observing and walking invisible to the faithfuls. Thin covering layers on both sides of the route's wall leave the space in between for a layer of acoustic insulation.

The concrete stairs of the main routing are strongly reinforced with steel and the critical points, where there is the split landing, is hanged with suspension cables to the cores.
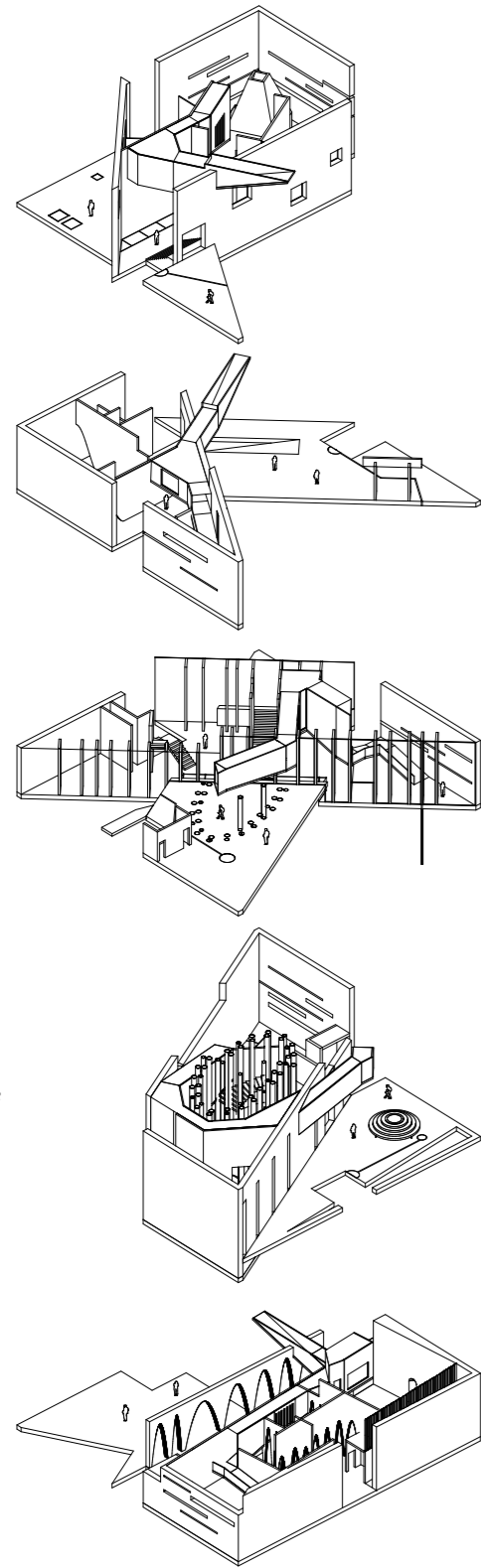
Figure 146. *Floors materialisation of the temples*

Onida orange granite

ॐ

saffron

Black oak paquet

☯

Black and white (yin and yang)

Japanese cedar parquet

☸

golden

Blue Bahia marble

✝

Lapis lazuli blue

Green moquette

☪

Islamic green

Epoxy resin floor, grey

Galvanized zinc sheets (interior)

Cherry wood laminate sheets (exterior)
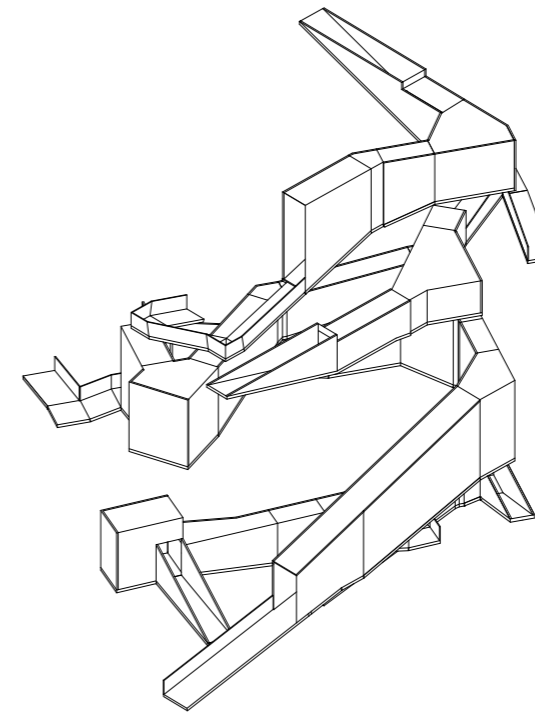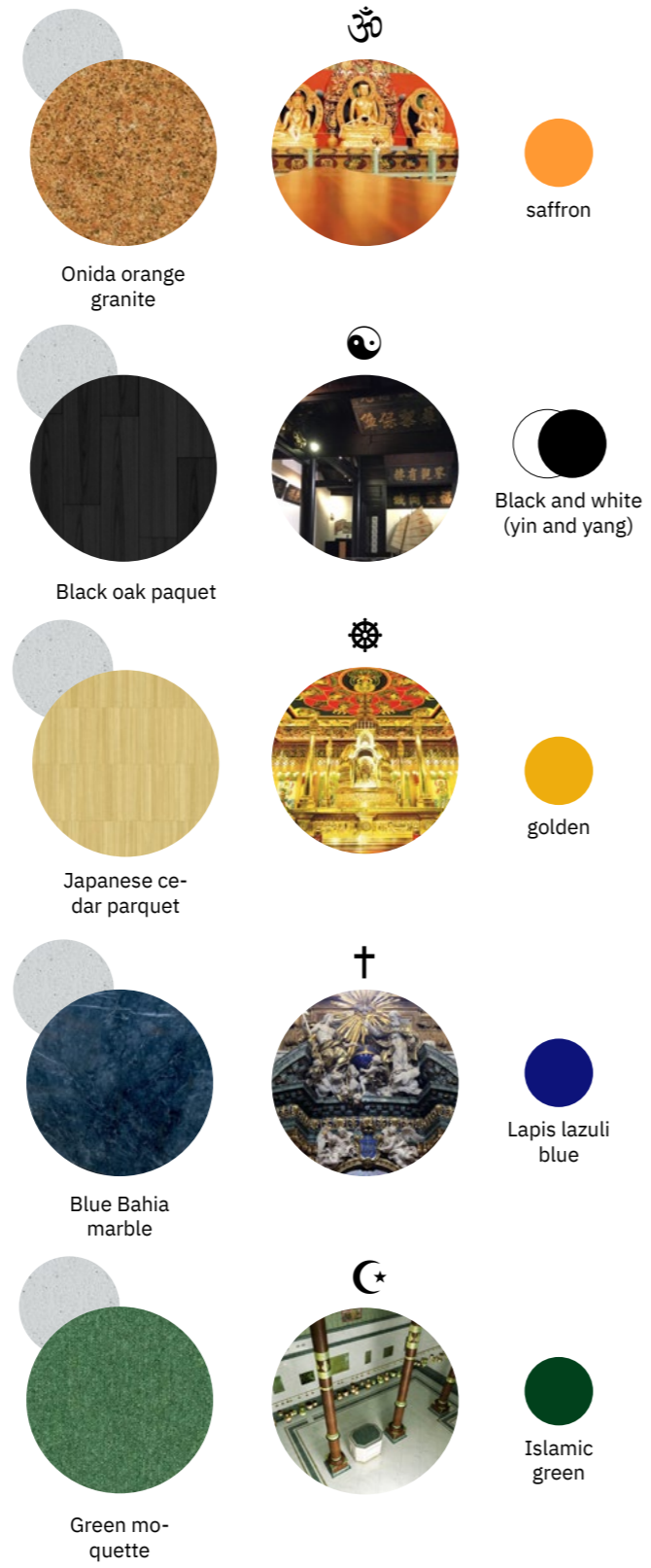
Figure 147. *Materialisation of the museum route*

One-way mirror, transparent from inside and reflective outside

7. Personal reflections

I believe this graduation studio has been very fruitful for my growth as an architect: it made me understand better my strengths and my weaknesses. The ambitions I set at the beginning for the project were high, despite I didn't have any experience with designing big buildings for large numbers of people. But it is the method I handled the challenge that I am most happy with, because I had to find a different approach from what I was used to, trying to conciliate different scales in a single project. In fact, it is the first project in which study model making has been so important for the development of the design, being used to focus more on the floor plan - probably a legacy of Italian universities.

Many different sources of inspiration influenced the project, and it also is in that sense a bit an eclectic work, but this was fitting with the chosen theme, in which plurality needed to be interpreted for an intrinsic reason.

At the beginning of the graduation studio I was asked what I would have liked to learn from it. I answered that the best thing possible would have been to understand, among the different fascinations in architecture, what was really mine, what I would have liked to concentrate on also in the future. Among the many things, my thing. However, after one year, I arrived to a different conclusion: it is probably more important to continuously look for it than to find it. It is out of the perception of our own ignorance or inadequate knowledge that we feel the compulsion of researching and the urge of curiosity. To think of having obtained it could stop the research, and it would lead us to assume a conservative approach focused on preserving the findings from any risk of being fal-

sified by the experience. Therefore, my first aspiration is not to stop the experimentation in architecture.

The hardest challenges of the project have been related to the big dimensions of it: trying to balance the amount of time needed by any single aspect, giving it as much detail as possible, and solving it technically.

I am aware of the margin of improvement the project has, even if I am quite satisfied. The hard work has been a painful joy, as it often happens with designing, and I perceive an improvement of my skills in architecture. I enjoyed the complexity of the work, the evaluation of architecture decisions that have a symbolic value in a religious building, something I never faced before, and even the eclecticism of the research and the design, yet I also feel the need to improve in simplicity.

The back of the altar in S. Maria del Priorato in Rome, designed by Piranesi (represented in the picture on the left), well expresses my feelings in this urge of more simplicity. As one of the very few works realized by the architect, here it can be noticed an incredible richness of details with symbolic references to the religious order which commissioned the project. However, in the back of the altar the decoration is intentionally interrupted, as if a moment of *tabula rasa* was reached. I feel the need for a similar *tabula rasa*.

In conclusion, I wish to thank my tutors for pushing, encouraging, and helping me when that was needed, and for the nice environment they contributed to create in the graduation group. The travel to Istanbul and the OMA week have been something unique, which the tutors were not required to propose us, then a special thank for these exceptional initiatives.

Figure 148. On the left: back of the altar of Santa Maria del Priorato by Piranesi

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Images

Fig. 6: picture of Pura Penataran Agung Lempuyang in sketchy style; modified from: https://wanderersand-warriors.com/wp-content/uploads/2018/05/Pura-Lem-puyang-Bali-The-Gateway-To-Heaven-4.jpg

Fig. 8: World map of religion affiliation in pie charts; modified from: https://assets.rbl.ms/19303520/origin.jpg

Fig. 10: Exemplification of clothing for Buddhist monk, priest, imam, daoshi and guru; modified from: (1) https://i.etsystatic.com/17553434/r/il/98552c/1666893363/il_794xN.1666893363_fllm.jpg ; (2) https://www.heritage-costumes.com/images/products/3807.jpg ; (3) https://previews.123rf.com/images/paulprescott72/paulprescott721404/paulprescott72140400220/27267882-sarajevo-bosnia-and-herzegovina-aug-13-muslim-man-with-cell-phone-stands-on-street-on-august-13-2012.jpg ; (4) https://ae01.alicdn.com/kf/HTB15XQ7LFXXXXa-EXpXXq6xXFXXXO/Taoist-clothing-taoist-clothes-taoist-robe-taoist-priest-Wear-halloween-costumes-for-men-ancient-chinese-danza.jpg ; (5) https://writepath.net/img/Monks_of_Kauais_Hindu_Monastery_2012_for_Kauai_Stories.jpg

Fig. 11: Some important colors in the religions' traditions: retrieved from: (1) https://www.btrts.org.sg/img/relicsutra1.png ; (2) https://i.pinimg.com/originals/7f/17/60/7f1760494a380ba9c4728881759b9682.jpg ; (3) https://i.ytimg.com/vi/KLtapKRTg_k/maxresdefault.jpg ; (4) https://upload.wikimedia.org/wikipedia/commons/3/3c/Interior_of_the_former_Fuk_Tak_Chi_Temple%2C_Singapore_-_20151010-02.jpg ; (5) https://www.eurasiareview.com/wp-content/uploads/2017/03/c-31-800x445.jpg?ezimgfmt=ng:webp/ngcb2

Fig. 13: First row of very long stairs leading to places of worship around the world; retrieved from: (1) https://upload.wikimedia.org/wikipedia/commons/7/74/泰山_南天门.jpg (2) https://www.tripsavvy.com/thmb/HXmN-A3Qe1N7ouXzZxMqW3zWuCWo=/2121x1414/filters:no_upscale():max_bytes(150000):strip_icc()/GettyImages-146276587-4542811553864e09804ab7dda84e1fdb.jpg ; (3) https://i.pinimg.com/originals/fd/0d/1e/fd-0d1e8188faf6f23a510915c7df35ba.jpg ; (4) http://www.krabiview.com/wp-content/uploads/2015/05/tiger-cave-temple-krabi-7.jpg ; (5) http://www.thetravelboss.com/userfiles/image/Places/El-Penon-de-Guatape1.jpg

Fig. 14: Second row of very long stairs leading to places of worship around the world; retrieved from: (1) https://www.topchinatravel.com/pic/city/pingyao/attractions/mianshan-mountain-02.jpg ; (2) https://commons.wikimedia.org/wiki/File:Underground_Mosque_at_Taman_Sari,_Yogyakarta,_2014-05-07.jpg ; (3) https://i.pinimg.com/564x/5c/dd/59/5cdd59e9abe5e99f33b6ed5e19f06ed2.jpg ; (4) https://1.bp.blogspot.com/-YXGQmxYsFos/XK8aKR-jPcTI/AAAAAAAAewQ/8cWjhKmZyT8yD5Zi5SpsyL9euyz-inSkxQCLcBGAs/s1600/fanjingshan-1.jpg ; (5) https://www.luxuryromemag.it/wp-content/uploads/2018/08/i-tesori-di-piazza-di-spagna-1920x1180.jpg

Fig. 15: pictures of stairs in world religions; (in order of rows, left to right) retrieved from: (1) https://

img2.tgcom24.mediaset.it/binary/fotogallery/ansa/74.$plit/C_2_fotogallery_3097417_4_image.jpg?20190413143915 ; (2) https://i.pinimg.com/originals/36/05/fd/3605fdba1a00b280a9b2620b816ae311.jpg ; (3) https://www.worldreligionnews.com/wp-content/uploads/2015/04/Dhammakaya-temple.jpg ; (4) https://i.pinimg.com/564x/37/65/93/376593e5906ad-26514d908c3b4f4ff77.jpg ; (5) https://infinitediaries.net/wp-content/uploads/2017/02/wwwP-W1_9641_2000px-Pietrusiewicz.jpg ; (6) https://scontent-frt3-1.cdninstagram.com/v/t51.2885-15/e35/s1080x208842_1725734642006321103_n.jpg?_nc_ht=scontent-frt3-1.cdninstagram.com&oh=38c7bfdc755ff3282601c947f177dab-f&oe=5E070D23&ig_cache_key=MjExNjY5NDUzNTc5N-jE1NDI0Mg%3D%3D.2 ; (7) https://www.pasionviajes.it/wp-content/uploads/2016/07/Propilei-908x1024.jpg ; (8) https://i.pinimg.com/originals/6e/88/43/6e-884334752742fa3767aa2aa4e8de27.jpg;(9)https://live.staticflickr.com/3663/3379500656_d95baf7b0c_b.jpg ; (10)http://www.generationword.com/jerusalembook/67_files/small_23149.jpg ; (11) https://www.turkeycentral.com/uploads/monthly_2016_12/large.6eab0b6572d-3d9199297e31d4e9f1d65.jpg.72c7fc80674ca3506f-d875cfdae18a6f.jpg ; (12) https://i0.wp.com/www.travelingthruhistory.com/wp-content/uploads/2015/07/IMG_8993t.jpg ; (13) https://i.pinimg.com/564x/81/39/11/81391181ce759c8e56b9921e-88d755e9.jpg ; (14) https://i.pinimg.com/564x/f1/9c/c6/f19cc6192d55fdc6c11ba4770156601f.jpg ; (15) https://i0.wp.com/www.omanobserver.om/wp-content/uploads/2016/12/rio-de-janeiro-vaca-tion-1813384.jpg?fit=1500%2C1125&ssl=1 ; (16) https://i.pinimg.com/564x/32/c4/2d/32c42d93a-136949c801a5f2fb4129a21.jpg ; (17) https://static.independent.co.uk/s3fs-public/thumbnails/image/2018/03/24/22/20776369-1517798961589075-8810514358734941679-o.jpg ; (18) https://miviaje.com/wp-content/uploads/2019/03/monte-huashan.jpg ; (19) https://scontent-cdg2-1.cdninstagram.com/vp/fe04e145fab364aa7b31d6dc4f8b98cb/5DC778FE/t51.2885-15/e35/64687595_2456620084569612_7652957598132135727_n.jpg?_nc_ht=scontent-cdg2-1.cdninstagram.com&se=7&ig_cache_key=MjA3ODI1M-jY4MjgxMzY0NDEyNg%3D%3D.2 ; (20) https://www.photodharma.net/Malaysia/Batu-Caves/images/Batu-Caves-Original-00012.jpg ; (21) https://trailchew.com/wp-content/uploads/2018/12/Kyoto-Fushimi-Inari-Red-Gates-Trail-Hike-e1548558701172.jpg ; (22) http://www.loiredailyphoto.com/wp-content/uploads/2018/10/img_1625.jpg ; (23) http://thewanderingscot.com/photos/2012%20Middle%20East/Mesopotamia/midis/IMG_7818.jpg ; (24) https://1.bp.blogspot.com/-iW6m-mAwfNLo/UC4GeBEb-3I/AAAAAAAAFDY/4GVBrlOnDSg/s1600/New+Picture.jpg

Fig. 16: Botanical illustration of trees relevant in religious traditions (left page); (in rows, from left to right) modified from: (1) https://c8.alamy.com/comp/T00AWT/date-palm-tree-phoenix-dactylifera-dattier-handcoloured-steel-engraving-by-oudet-after-a-botanical-illustration-by-edouard-maubert-from-pierre-oscar-reveil-a-dupuis-fr-gerard-and-francois-her-incqs-la-regne-vegetal-planets-agricoles-et-fores-

tieres-l-guerin-paris-1864-1871-T00AWT.jpg ; (2) (3) (4) Bourdo Jr. (2001), The Illustrated Book of Trees, Salamander Books Limited, London ; (5) https://www.treefolks.org/wp-content/uploads/2015/10/punica-granatum-pomegranate-ro-e1444062401772.jpg ; (6) https://i.pinimg.com/564x/10/8f/77/108f77b7b-26ce558744f29ecdf28760e.jpg ; (7) https://selectree.calpoly.edu/images/1100/73/original/prunus-persica-peach-ro.jpg ; (8) https://pngimage.net/wp-content/uploads/2018/06/ficus-carica-png-2.png ; (9) https://www.etsy.com/au/listing/502537510/1967-weeping-willow-babylon-tree-print ; (10) https://i.pinimg.com/564x/41/7f/b2/417fb239e8382887575ee96afd-54bef3.jpg ; (11) https://i.pinimg.com/564x/60/37/0b/60370b14b07a96793cf83c670f8c891d.jpg ; (12) https://c8.alamy.com/comp/T00AFD/almond-tree-prunus-dulcis-amandier-commun-hand-coloured-steel-engraving-by-oudet-after-a-botanical-illustration-by-edouard-maubert-from-pierre-oscar-reveil-a-dupuis-fr-gerard-and-francois-herincqs-la-regne-vegetal-planets-agricoles-et-forestieres-l-guerin-paris-1864-1871-T00AFD.jpg

Fig. 16: Botanical illustration of trees relevant in religious traditions (right page); (in rows, from left to right) modified from: (1) https://s3.amazonaws.com/thumb-nails.illustrationsource.com/huge.102.510281.JPG ; (2) https://images.fineartamerica.com/images/artworkimag-es/mediumlarge/1/plum-tree-german-botanical-artist.jpg ; (3) https://i.pinimg.com/564x/5a/80/ea/5a80eaa-f54948ead4c5cc6edbf665e21.jpg ; (4) https://i.pinimg.com/236x/55/f7/10/55f710a9f168e78fab9ad19ad-932ca15.jpg ; (5) https://i.pinimg.com/564x/64/81/fa/6481fa1464f75387541e03526d7e0594.jpg ; (6) https://i.pinimg.com/564x/f7/9f/f7/f79ff7a05be-111da2a838e0d72b221f6.jpg ; (7) https://media.is-tockphoto.com/illustrations/gum-arabic-botanical-en-graving-1857-illustration-id678326116 ; (8) https://i.pinimg.com/564x/d3/19/bc/d319bc2e6a90f29a1e-00844ba008d88f.jpg ; (9) https://previews.agefotostock.com/previewimage/medibigoff/831fa5c276b2733b-927367670d446e15/dae-15007491.jpg ; (10) https://www.gettyimages.nl/detail/illustratie/bengal-fig-ficus-benghalensis-sacred-fig-ficus-stock-afbeeld-ing/130410653 ; (11) https://i.pinimg.com/564x/f4/29/de/f429de9267a5e663b5df029337ca6a49.jpg ; (12) https://previews.123rf.com/images/drpnncpp/drpn-ncpp1307/drpnncpp130700052/21056973-streblus-as-per-tree-isolated-on-white-background.jpg

Fig. 18: pictures of gardens related to places of worship; (in order of rows, left to right) retrieved from: (1) https://tiptoeingworld.com/wp-content/uploads/2016/11/Bamboo-Grove-at-Adashino-Nenbutsuji.jpg ; (2) http://thegardenvisitor.co.uk/wp-content/uploads/2017/12/a-1000x750.jpg ; (3) https://irohapress.files.wordpress.com/2015/11/img_1800.jpg ; (4) https://live.static-flickr.com/3380/3493979678_d5a810929e_b.jpg ; (5) https://i.pinimg.com/originals/1d/a0/3a/1da03ad-831d9e4d1b65883cee138dfa3.jpg ; (6) https://st2.depositphotos.com/1562606/6483/i/950/de-positphotos_64831293-stock-photo-buddha-un-der-the-bodhi-tree.jpg ; (7) https://georgewbush-white-house.archives.gov/news/releases/2008/06/

images/20080613-3_p061308cg-0253-706v.jpg ; (8) https://i.pinimg.com/originals/3f/71/6a/3f716ae5e14884fdf9bdbe2ff5305756.jpg ; (9) https://fr.wikipedia.org/wiki/Mosquée_du_Chah#/media/File:Naghsh-e-jahan_masjed-e-shah_esfahan.jpg ; (10) https://live.staticflickr.com/826/39980389750_e492cf-c188_b.jpg ; (11) https://afar-production.imgix.net/uploads/images/post_images/images/BX39yySP8W/original_9ecab4bc992d7627d019741da47d8c20.jpg?1506105661?ixlib=rails-0.3.0&auto=format%2Ccom-press&crop=entropy&fit=crop&h=719&q=80&w=954 ; (12) https://upload.wikimedia.org/wikipedia/commons/7/70/Jerusalem_Gethsemane_tango7174.jpg ; (13) https://i.pinimg.com/564x/ef/92/71/ef9271981936286419118a613c0ba559.jpg ; (14) https://www.travelure.in/wp-content/uploads/2017/01/The-steps-leading-to-Besakih-Temple.jpg ; (15) https://whitemagickvibes.files.wordpress.com/2015/06/img_1380-1024x768-dosa.jpg ; (17) https://www.2ghumakkar.com/wp-content/uploads/2019/06/Kan-war-Lake-2Ghumakkar-33-of-92.jpg ; (18) https://i.pinimg.com/originals/03/a7/92/03a792fd732498f-4084940be5b0ea29f.jpg ; (19) http://cpreecenvis.nic.in/WriteReadData/UserFiles/image/Gardens/Madurai%20Temple%20Graden.jpg ; (20) https://i.pinimg.com/originals/2b/1a/27/2b1a27fa3d0a1d409fee1a11e2ea95ab.jpg ; (21) http://cpreecenvis.nic.in/WriteReadData/UserFiles/image/Gardens/char-bagh%20Humayun%20Tomb.jpg ; (22) https://www.travelogyindia.com/blog/wp-content/uploads/2019/02/Bodhi-Tree-at-Mahabodhi-Temple-1024x682.jpg ; (23) https://commons.wikimedia.org/wiki/File:Temple_de_Mînâkshî01.jpg ; (24) https://3.bp.blogspot.com/-6zE38EazE-c/WsCnFuz123I/AAAAAAAASz0/vLrT53D9i30jNDlTMPgbQ8SXDljwllL-fQCLcBGAs/s1600/2018.03.16%2B-%2BRitan%2B-Park%2B%2582%2529.jpg ;

Fig. 19: Plan, section and wooden model of the House of one; retrieved from: https://scielo.conicyt.cl/scielo.php?script=sci_arttex-t&pid=S0717-69962016000100014&lng=en&nrm=iso&tlng=en

Fig. 20: View of Loyang Tua Pek Kong Temple from Loyang Way: modified from: Google Maps Street View, 2018.

Fig. 21: Main facade of Fuk Tak Chi Museum and Buddha Tooth Relic Temple and Museum; modified from: (left) Google Maps Street View, 2018. (right) https://images.fineartamerica.com/images/artworkimages/mediumlarge/2/buddha-tooth-relic-temple-singapore-tomml.jpg

Fig. 22: Plans of the Museum of world religions; modified from a document received directly from the Museum of World Religions by email.

Fig. 23: Schematical plan of the permanent exhibition of the Museum of the history of religions; modified from: http://www.gmir.ru/eng/virtual/

Fig. 24: First row - Loyang Tua Pek Kong Temple; second row - Buddha Tooth Relic Temple and Museum and Fuk Tak

Chi Museum; third row: Museum of World Religions; fourth row: Museum of the history of religions; (in order of rows, left to right) retrieved from: (1) (2) (3) (4) (5) (6) http://www.lytpk.org.sg/about.htm ; (7) https://a.cdn-hotels.com/gdcs/production107/d741/f677ce0a-3f97-42ac-89e8-2e44cacf59b5.jpg (8) https://upload.wikimedia.org/wikipedia/commons/6/63/Praying_monks_and_nuns_in_the_Buddha_Tooth_Relic_Temple_of_Singapore.jpg (9) https://www.google.it/maps/place/Buddha+Tooth+Relic+Temple/@1.2812661,103.844676,3a,75y,90t/data-=!3m8!1e2!3m6!1sAF1QipMHYnWKnudR5CF6DRE237A-2JeD0dVfkB2ZfFWBc!2e10!3e12!6shttps:%2F%2Flh5.googleusercontent.com%2Fp%2FAF1QipMHYn-WKnudR5CF6DRE237A2JeD0dVfkB2ZfFWBc%3Dw203-h270-k-no!7i3024!8i4032!4m5!3m4!1s0x-31da1972ce26bcd1:0x19202d08368ce010!8m2!3d1.2813361!4d103.8445218 ; (10) https://images.squarespace-cdn.com/content/5be172e38f513032e-447734b/1565408467827-1Z5PH1V5G46XSKCADV8Y/Fuk-Tak-Chi-Museum.jpg?content-type=image%2Fjpeg ; (11)https://www.google.it/maps/place/Fuk+Tak+Chi+Museum/@1.2829118,103.8487344,3a,75y,90t/data-=!3m8!1e2!3m6!1sAF1QipNI-GJn39xwTOKecci2JSEr-7Zis3ndAZdljO_GQ!2e10!3e12!6shttps:%2F%2Flh5.googleusercontent.com%2Fp%2FAF1QipNI-GJn39xw-TOKecci2JSEr7Zis3ndAZdljO_GQ%3Dw203-h270-k-no!7i2736!8i3648!4m5!3m4!1s0x31da190d7af80b49:0xf-b744023f8f76b73!8m2!3d1.2829118!4d103.8487344 ; (12) https://c1.staticflickr.com/3/2321/2218282825_b18bcf6153_b.jpg ; (13) https://www.nickkembel.com/wp-content/uploads/2019/02/museum-of-world-religions-taipei.jpg ; (14) https://www.mwr.org.tw/files/file_pool/1/0I057586210623812533/01.jpg ; (15) https://media-cdn.tripadvisor.com/media/photo-s/0a/db/94/74/taipei-museum-of-world.jpg ; (16) https://www.mwr.org.tw/files/file_pool/1/0I057613099024490900/12_1.jpg ; (17) https://images.myguide-cdn.com/taipei/companies/museum-of-world-religions/large/museum-of-world-religions-224830.jpg ; (18) https://www.mwr.org.tw/files/file_pool/1/0I057597500164866355/5.jpg ; (19) http://www.russianmuseums.info/imgB.asp?2126 ; (20) http://cityguidespb.ru/uploads/posts/2014-04/1397032286_dsc01771.jpg ; (21) https://s.inyourpocket.com/gallery/188460.jpg ; (22) https://s.inyourpocket.com/gallery/5865.jpg ; (23) https://s.inyourpocket.com/gallery/188457.jpg ; (24) https://s.inyourpocket.com/gallery/188458.jpg

Fig. 26: Bird eye view drawing and floor plan of Saint Peter's square and Basilica; retrieved from: http://polinice.org/wp-content/uploads/2015/11/falda-san-pietro.crop.jpg ; https://i.pinimg.com/originals/0b/b0/7b/0bb07b-91de9fd02432f01d1af82af31b.jpg.

Fig. 27: Modern Render and original floor plan of the Danteum; retrieved from: http://archeyes.com/wp-content/uploads/2016/07/The-Danteum-Giuseppe-Terragni-ArchEyes-7.jpg ; https://66.media.tumblr.com/5edecb29057b245ff13f159042ed7542/tumblr_p8fj9kenbn1utp73so1_400.jpg

Fig. 28: Pictures of "reading between the lines" project; retrieved from: https://images.adsttc.com/media/images/50b5/0489/b3fc/4b16/3400/0084/slide-

show/024_RbtL.jpg?1413939751 ; https://live.static-flickr.com/5603/15718324786_be1e0bbb4c_b.jpg

Fig. 30: on the lefts: interior and exterior pictures of Dubai Mosque; on the right: floor plan and section; retrieved from: https://www.archdaily.com/787633/al-warqaa-mosque-ibda-design

Fig. 31: Pictures of Namaz Khaneh prayer room; retrieved from: https://66.media.tumblr.com/631dd-45558ba9f4736c9c8000e6c085f/tumblr_mhpyr9Ksen-1r4kdjco1_640.jpg

Fig. 33: On the left: pictures of the exterior of Buddhist temple in Tokyo; on the right: its floor plans and section; retrieved from: https://www.dezeen.com/2019/04/24/shoraku-ji-toru-kashihara-architects-buddhist-temple-tokyo/

Fig. 34: On the left: section and floor plan of Center of Gravity Hall; on the right: picture from the exterior: https://predockfrane.files.wordpress.com/2012/09/center-of-gravity-10.jpg?w=1200 ; https://predockfrane.files.wordpress.com/2012/10/2004_10_arch_7.jpeg ; https://predockfrane.files.wordpress.com/2012/09/center-of-gravity-01.jpg?w=848

Fig. 36: On the left: pictures of interior and exterior of Wong Dai Sin Temple; on the right: section and floor plan; retrieved from: https://www.archdaily.com/878269/wong-dai-sin-temple-shim-sutcliffe-architects

Fig. 37: On the left: axonometric section and axonometric view of Temple of the God of Wealth in China; on the right: exterior and interior pictures; retrieved from: https://www.archdaily.com/901936/temple-for-the-god-of-wealth-cnrpd-fuyingbin-studio

Fig. 39: On the left: floor plan and facade of Tejorling Radiance Temple; on the right: exterior picture; retrieved from: https://www.archdaily.com/896923/tejorling-radiance-temple-karan-darda-architects

Fig. 40: On the left: exterior and interior pictures of Temple in Stone and Light in Barmer; on the right. section and floor plan; retrieved from: https://www.archdaily.com/786983/temple-in-stone-and-light-spacematters

Fig. 48: Illustration of the double soul of Singapore; modified from: http://www.insecula.com/Photos-New/00/00/12/43/ME0000124367_3.jpg

Fig. 51: comparison of pictures of Singapore over time: present in color, black and white old pictures. (in order of rows, left to right) retrieved from: (1) (7) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#central-clarkequay ; (2) (8) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#clementi ; (3) (9) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#-fullerton ; (4) (10) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#kallang-rvr ; (5) (11) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#laupasat ; (6) (12)

https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#central-marina ; (13) (19) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#ndp ; (14) (15) (20) (21) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#orchard ; (16) (22) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#orchard ; (17) (18) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#st-joseph ; (18) (24) https://graphics.straitstimes.com/STI/STIMEDIA/2015/slider/microsite/index.html#temple-st

Fig. 52: Fumihiko Maki's drawing of city room; retrieved from: R. Koolhaas, B. Mau (1994), s,m,l,xl, Monacelli Press, p. 1048

Fig. 53: Section of People's Park Complex; retrieved from: https://i.pinimg.com/originals/6a/b9/7a/6ab97a73e-a25769c37fcf0a4761a7ae6.jpg

Fig. 54: Section of Golden Mile Complex; retrieved from: https://66.media.tumblr.com/28f16547cb904047efe-522191ae78778/tumblr_nj47syFGMw1qe0nlvo1_1280.jpg

Fig. 55: Timeline of architecture in Singapore; all pictures retrieved from: Google Maps Street View, 2017-2019.

Fig. 56: Timeline of architecture in Singapore; all pictures retrieved from: Google Maps Street View, 2017-2019.

Fig. 57: Masterplan of Singapore 2014; retrieved from: https://www.ura.gov.sg/maps/?service=MP

Fig. 58: URA diagram explaining the approach for the new residential development Marina South; modified from: http://www.centroestero.org/FTP/Forum_Asia_MasterPlanSingapore-Zulkiflee.pdf

Fig. 59: URA diagram of the key strategies of the masterplan 2014; retrieved from: http://www.centroestero.org/FTP/Forum_Asia_MasterPlanSingapore-Zulkiflee.pdf

Fig. 62: Selection of representative temples of Singapore; retrieved from: Google Maps Street View, 2017-2019.

Fig. 64: Masterplan of Singapore of 1958, zoom on the proximity of the plot; modified from: https://www.ura.gov.sg/dc/mp58/mp58map_index.htm

Fig. 65: Masterplan of Singapore 1980, zoom on the proximity of the plot; modified from: https://www.ura.gov.sg/dc/mp80/mp80map_index.htm

Fig. 66: Masterplan of Singapore 2014, zoom on the proximity of the plot; modified from: https://www.ura.gov.sg/maps/?service=MP

Fig. 71: Pictures evidencing the selected plot; modified from: Google Maps 2019

Fig. 72: Picture of Kim Lan Beo Temple, close to the chosen location; modified from: Google Maps 2018

Fig. 73: Top view pictures of good and bad practices in the neighborhood concerning parking buildings; modified from: Google Maps 2018

Fig. 74: Analysis of bridges close to the plot; modified from: Google Maps 2018

Fig. 75: Le Carceri d'Invenzione by Piranesi, plate 6 and 7; retrieved from: https://upload.wikimedia.org/wikipedia/commons/f/f6/Giovanni_Battista_Piranesi_-_Carceri._Folder_7_-_Google_Art_Project.jpg ; https://upload.wikimedia.org/wikipedia/commons/c/cf/Piranesi01.jpg

Figure 112. Tangram, chinese puzzle, source of inspiration for the plan; retrieved from: https://www.logicagiochi.com/media/catalog/product/cache/3/thumbnail/1200x1200/9df78eab33525d-08d6e5fb8d27136e95/t/a/tangrambig.jpg

Fig. 148: Back of the altar of Santa Maria del Priorato by Piranesi, modified from: https://arquitecturaacontrapelo.files.wordpress.com/2015/04/piranesi-santa-maria-del-priorato-roma-1764_7-altar.jpg