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Introverted and Extroverted Architecture

Ahmet Hadrovic
Faculty of Architecture, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

* Corresponding Author: **Ahmet Hadrovic**

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Abstract
In accordance with the author's theory of 'architecturally defined space' (ADS), according to which architecture consists of four basic elements - environment, man, boundaries and perspectives - the topic of 'introverted and extroverted architecture' is a topic immanent to architecture, since the terms 'introversion' and 'extroversion' are one of the main characteristics of the personality of every human-individual. The personality of the human-individual, both the client for whom architecture is created, and its creator - a trained architect or an anonymous craftsman - is directly reflected in the physical appearance of architecture. Introversion or extroversion in architecture is also a more or less direct consequence of the influence of other fundamental elements of architecture - the natural and social environment and the element of perspective. Just as an individual human cannot be classified exclusively as an introvert or extrovert, architecture can also, at the same time, have the characteristics of introversion and extroversion. In this regard, it is not possible to prefer introversion or extroversion, neither in the individual human nor in architecture. The world is full of extraordinary architectural achievements that are predominantly introverted or predominantly extroverted, as well as those that are both. Also, the terms introversion and extroversion cannot be tied only to one (any) architectural program, nor to one historical period or culture. Since the house (or rather the house complex) is the closest and most immediate framework of human life, extroversion or introversion can be read most clearly in this architectural program. The treatment of the topic 'introversion and extroversion in architecture' will further shed light on the complexity and controversies in architecture and be another contribution to the explanation of the author's theory of architecturally defined space.

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Keywords: Introverted, Extroverted Architecture

1. Introduction

This work is the result of the author's experience from numerous trips around the world and personal acquaintance with architecture on the spot. That experience resulted in numerous books [1- 8] and scientific papers [9-33] which the author has already published.

Extroversion is a personality trait that is typically characterized by openness, high energy, and talkativeness. In general, the term refers to a state of being in which someone is 'charged' or draws energy from contact with other people; the opposite - drawing energy from solitude - is known as introversion. Since ancient times, scientists have attempted to classify people according to their psychological profile. The first written traces on the subject were left by Hippocrates (c. 460-c. 370 BC). His teachings were developed by the Greek physician Claudius Galenus (129-216). He sought to classify each person into one of 4 groups: sanguine (full of hope), phlegmatic (completely indifferent and reacts very slowly and infrequently), choleric (a lively, impulsive type), and melancholic (depressed, slow).

In September 1909, Carl Jung (1875-1961) used the term 'introvert' in a lecture at Clark University [34]. A transcript of this lecture was then published with two others in the journal in 1910 [2], when the term first appeared in print. In the lecture, he mentions that love that is 'introverted' is „turned inside the subject and produces increased imaginative activity“ [35]. His 1921 book Psychologische Typen [36] was published as Personality Types in English in 1923. It described 'introverts' in detail for the first time. In his later work, Psychologische Typologie, he gives a more concise definition of the introverted type, writing: „He keeps himself aloof from external events, does not get involved in them, has a marked aversion to society as soon as he finds himself among too many people. In a large gathering he feels lonely and lost. The bigger the crowd, the greater his resistance. He is not in the least 'with it' and does not like enthusiastic socializing. He is not a good mixer. What he does, he does in his own way, shielding himself from outside influences. He is prone to seem clumsy, often seems inhibited, and it often happens that by some rudeness, or by his dark inaccessibility, or by some kind of malapropism, he unconsciously offends people... For him, self-communities are a pleasure. His own world is a safe haven, a carefully tended and walled garden, closed to the public and hidden from prying eyes. His own company is the best. He feels at home in his own world, where the only changes are made by himself. He does his best work with his own resources, on his own initiative and on his own initiative. his own way... The crowd, the majority views, public opinion, popular enthusiasm never convince him of anything, but only force him to retreat deeper into his shell. His relationships with other people become warm only when security is guaranteed and when he can put aside his defensive distrust. Too often he cannot, and therefore the number of friends and acquaintances is very limited” [35]. In the 1950s, British psychologist Hans Eysenck (1916-1997) theorized that the trait of introversion-extraversion could be explained in terms of Clark Hull’s (1884-1952) theory of drive motivation. He later developed his own theory of arousal to explain individual differences in traits, suggesting that the brains of extraverted people are chronically under-arousal, leading them to seek stimulation from their environment“ [37]. The trait of introversion-extraversion would become one of the three central traits in Eysenck’s PEN theory of personality [38]. The term 'extroversion' was first proposed by the renowned psychiatrist Carl Jung (1875-1961) in the 1920s [36]. People who identify as extroverts tend to seek out new experiences and social connections that allow them to interact with other individuals as much as possible. Someone who is highly extroverted is likely to feel bored, or even anxious, when forced to spend too much time alone. Although many psychologists argue that extroversion and introversion exist on a sliding scale and that very few people are 'pure' extroverts, a person's degree of extroversion is a key factor in their personality and is generally difficult (though not impossible) to change. True extroverts are often seen as 'the life of the party', but they may clash with more introverted types, who may find the extroverted energy and enthusiasm overwhelming or hard to handle. Many people are significantly more extroverted than introverted, or vice versa. But a large number of people can be more accurately classified as 'ambiverts', whose personalities are relatively evenly split between introverted and extroverted traits. While shyness is commonly thought of as an introvert, it is possible to be a shy extrovert, that is, someone who draws energy and enjoys the company of other people but becomes nervous around strangers or has difficulty speaking in a group setting. The term extroversion itself comes from the Latin language and means 'openness'. Namely, this term is used for an individual whose personality type is characterized by an outward flow of libido, an interest in the people around them, and a relationship with them. According to research, the extroverted personality type fares better in life, because they are very social, resourceful, self-confident and feel good in a foreign environment. Although extroverts and introverts represent two different personality types, experts believe that a clear division cannot be made. Most people have features of both types, i.e. is located in the middle. In certain life circumstances or under the influence of family and environment, the characteristics of one type prevail. And while introverts are turned towards their inner being, extroverts tend towards the social field. This means that an introverted personality is withdrawn, difficult to start a conversation with people, shy and almost inconspicuous in society. She prefers to be alone rather than in a large group. The biggest misconception when defining an introverted personality is that she doesn't like company. Namely, these people do not like a large number of superficial friendships, but have a smaller circle of people with whom they get along very well. They are very caring and excellent listeners. Therefore, their love problems are rare. Also, it is a misconception that extroverted people are superficial and focused only on their own needs. In fact, by hanging out with introverts, they can learn how to adapt to people who need more time to relax. Extroverts and introverts have different attitudes towards work. Because of their openness, extroverts have no problem expressing their opinion or disagreement at work. They easily acquire new knowledge, they are oriented towards teamwork and jobs that require constant action. They are characterized by great self-confidence, and are sometimes prone to business risks. While eloquence makes them exceptional speakers. Namely, these people enjoy public speaking, presentations, as well as meetings and constant circulation of clients. This means that management jobs suit them, then in the field of diplomacy and politics. Unlike them, introverts like to work in peace and quiet. They are not quick to speak, but express their opinion only when they have checked all the information. They find it difficult to get out of their comfort zone, so they prefer expert positions and working with data. Extraversion and introversion are usually viewed as a continuum, so that being higher in one requires being lower in the other. Jung offers a different perspective and suggests that everyone has both an extraverted and an introverted side, with one being more dominant than the other. Almost all comprehensive models of personality incorporate these concepts in various forms. Examples include the Big Five model, Jung’s analytical psychology, Hans Eysenck’s three-factor model, Raymond Cattell’s 16 personality factors, the Minnesota Multiphasic Personality Inventory, and the Myers-Briggs Type Indicator. A Harvard study found that the brains of introverts work differently and have thicker gray matter compared to extroverts. In people who are highly extroverted, the gray matter was consistently thinner. Introverts also showed more activity in the frontal lobes, where analysis and rational thinking take place. Since each of the future readers of this paper is either an ‘introvert’ or an ‘extrovert’, the following content will be easy and familiar to readers (Figure 1).

Source: https://thewrightinitiative.com/misc/introverted-child-at-school.html, Accessed: May 19, 2025.

Fig 1: Introverts and extroverts

Introversion and extroversion in the world of plants and animals, the scope of defining the terms 'introversion' and 'extroversion' extends from humans to other living beings – plants and animals (Figures 2, 3).

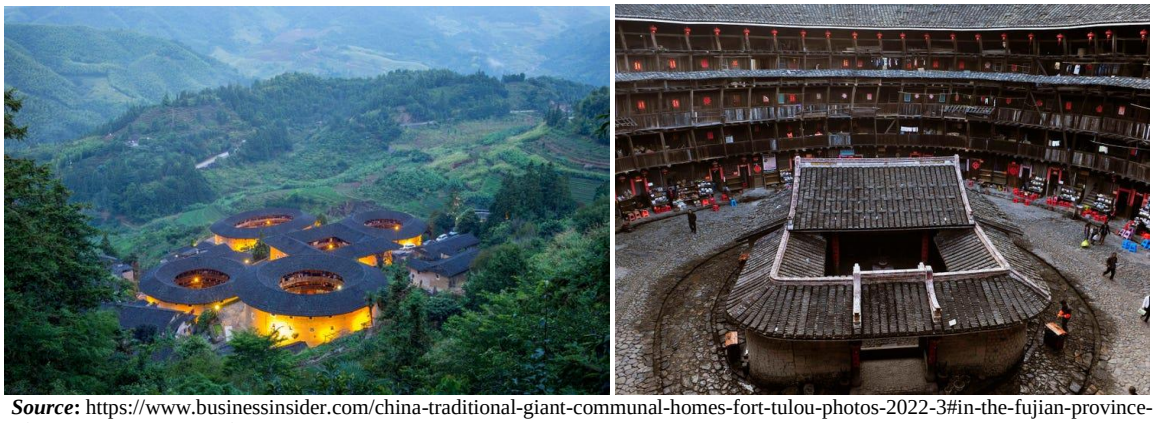
***Source*:** https://www.apartmenttherapy.com/sensitive-plant-love-letter-36895520, Accessed: May 19, 2025.
***Source*:** https://talkingplants.blogspot.com/2020/12/spiderheads-under-threat.html, Accessed: May 19, 2025.

Fig 2: Left: 'Introverted' plants. Right: 'Extroverted' plants attract insects with their color and scent

***Source*:** https://quizly.co/dog-team-introvert-extrovert/result/you-got-introvert/, Accessed: May 19, 2025.
***Source*:** https://sharonskinner.com/sharontalk/extroverted-introverts-can-be-social-but-prefer-not/, Accessed: May 19, 2025.

Fig 3: Left: 'Introverted' dog. Right: 'Extroverted' cat

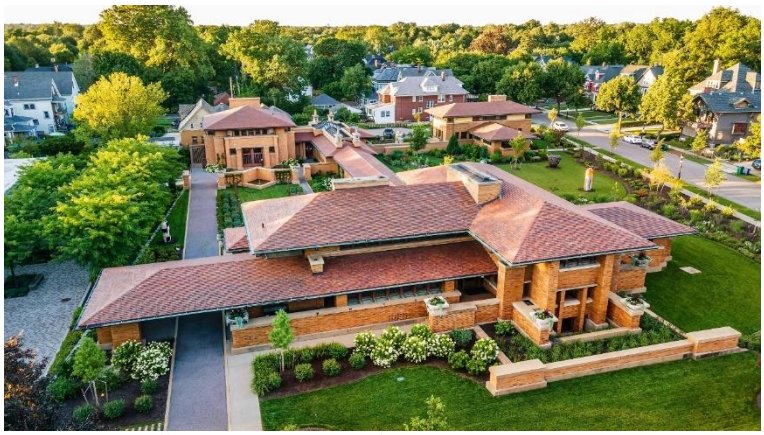
Introverted architecture is illustrated by a large number of examples in a wide variety of architectural programs, from private family houses, through the architecture of collective housing, administrative buildings, museums... The author also tried to show examples of architectural realizations from different natural and social environments around the planet Earth and from different historical epochs (Figure 4).



***Source*:** https://www.businessinsider.com/china-traditional-giant-communal-homes-fort-tulou-photos-2022-3#in-the-fujian-province-of-southeast-china-giant-fort-like-structures-stand-among-the-mountains-1, Accessed: May 19, 2025.

Fig 4: Fujian tulou in Nanjing County, China

Presenting extroverted architecture The author presented a series of examples from different natural and social environments around the planet Earth and from different historical epochs (Figure 5).



***Source*:**https://buffalohomes.co/blog/2020/frank-lloyd-wright-darwin-martin-house, Accessed: May 19, 2025.

Fig 5: Darwin Martin House, Buffalo, USA, 1905 (Architect: Frank Lloyd Wright)

Presenting both introverted and extroverted architecture, the author presented a wide range of architectural programs pointing out the dimensions of introversion and extroversion of architecture along with explanations of this ambivertity (Figure 6).

***Source*:**https://avaz.ba/vijesti/kultura/898035/svrzina-kuca-najljepsi-spomenik-bh-arhitekture-i-neprocjenjivo-nacionalno-blago Accessed: May 19, 2025.

Fig 6: Svrzo's house in Sarajevo

2. Introverted Architecture

By establishing a connection between introversion and design, we can create simple experiences that meet the needs of users without overly distracting them and keeping them at a minimum level. Living in a highly extroverted world, everyone is expected to outperform others in order to succeed and grow. Compared to the introverted person, introverted architecture is built on character and contemplation. It is rooted in a deep introspective theory, wanting to produce rational, well-organized spaces that are inherently connected to the fundamental relationships that architecture has with its context and occupants. The dwelling of the Yanomami tribe in the Amazon rainforest. The family is the lowest form of human social organization, consisting of a husband, wife and

their children. Several related families form a more complex social organization, the tribe, which has a higher level of adaptation and chances of living in natural environments such as the rainforest. In addition to more efficiently providing elementary living conditions, various forms of social life develop within the tribe that enrich the mental, emotional and other dimensions of their existence for the family and each individual [8] (Figure 7).

***Source*:** https://lerainforest.weebly.com/yanomami-tribes-lifestyle-and-impact-on-the-amazon.html, Accessed: May 20, 2025.

Fig 7: Colony of the Yanomami tribe in the Amazon

Deep within the Libyan mountains of Naufos, in the Berber village of Gharyan, one can find a thousand unique cave houses dating back to the 17th century. These unusual dwellings are located 120 kilometers from the country's capital, Tripoli. The houses are dug six to seven meters vertically into the ground, creating rooms surrounded by a central courtyard where several families live. It has not been abandoned for a day since it was excavated. The house has eight rooms and three kitchens. Each room was inhabited by a family, and each room is divided into three parts: one for the parents, one for the children, and one serves as a living room. In the western mountains, the cave houses are currently uninhabited, but some have been restored and opened to tourists [8] (Figures 8,9).

***Source*:**https://www.reddit.com/r/architecture/comments/v1fzcw/a_traditional_medieval_cave_house_with_a/#lightbox Accessed: May 20, 2025.

Fig 8: Traditional medieval cave house with courtyard found in the Libyan desert

***Source*:** https://www.theatlantic.com/photo/2018/02/the-last-families-living-in-tunisias-underground-houses/554426/ Accessed: May 20, 2025.

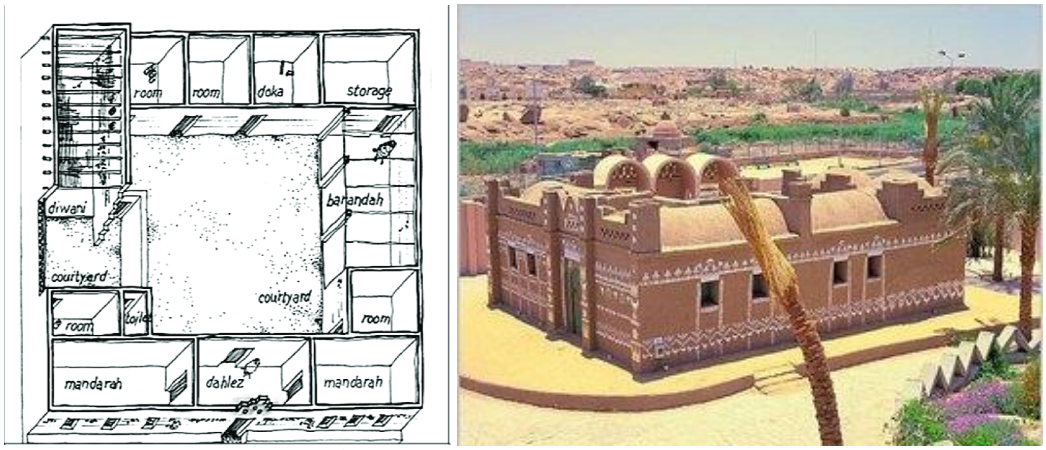
Fig 9: House buried in the ground, Matmata in Tunisia

'Ksar' is a regional term for 'fortified village'. Other connotations of the word suggest 'palace' or 'castle'. They can be found throughout Algeria, Morocco, Tunisia and other North African countries. A ksar looks like a group of detached houses joined together, built mostly of adobe, clay and earthen mortar. Multi-purpose in nature, they hold living quarters, storerooms and even mosques. Their high, long walls were designed to defend the occupants. Ksar Draa lies in central Algeria, specifically in the wider Touat Desert. This region had a network of important oases for travelers venturing further into the harsh Sahara. Ksour were built around these oases. The architecture of Ksar Draa has elements of defense. The double wall indicates additional security and can make it difficult for outside forces to enter the premises. Its circular design allows for surveillance of the dunes from all angles. The building is located on top of the dune at a height that makes it easy to spot enemies from afar (Figure 10).

***Source*:** https://explorersweb.com/exploration-mysteries-ksar-draa/, Accessed: May 20, 2025.

Fig 10: Aerial view of Ksar Draa

Mud, rocks and water – that's all it takes to build green, affordable homes called Nubian Vaults. As the name suggests, they have the famous vaulted, earthen roofs, which work (in terms of architectural physics, i.e. ensuring human comfort) far better than tin roofs for regulating the internal temperature in West Africa, one of the hottest areas in the world. In fact, they offer a gain in thermal comfort of an average of +/-7°C compared to tin roofs. The traditional Nubian house is fundamentally introverted, living as a result of responding to the natural environment rather than the social environment. In the external appearance of the house, one can see the visible efforts of their owners to make their house 'beautiful' by applying a finish that is in harmonious contrast with the basic material - adobe (Figure 11).



***Source*:**https://www.researchgate.net/figure/Old-Nubian-building-components-Source-Dr-Yasser-Mahgoub-research-the-Nubian_fig2_316747390, Accessed: May 20, 2025.

Fig 11: Typical Old Nubian House

In southern Burkina Faso, bordering northern Ghana, lies Tiébélé, a small village displaying fractal patterns of circular and rectangular buildings, home to one of the oldest ethnic groups in West Africa, the Kassena tribe. With traditional houses dating back to the 15th century, the village's buildings are given a special character through their painted walls filled with symbols. It is a form of wall decoration architecture in which a community uses the envelope of its building as a canvas for geometric shapes and symbols of local folklore, expressing a cultural history and unique heritage. This architecture is the product of a unique form of collaborative work, where all men and women in the community are tasked with contributing to the construction and completion of each new house. This practice serves as a transmission point for Kassena culture across generations. The craft of wall decoration in Kassena society is rooted in cultural history, reflecting traditional duties, hierarchical positions and customs. This craftsmanship is most evident in the variations

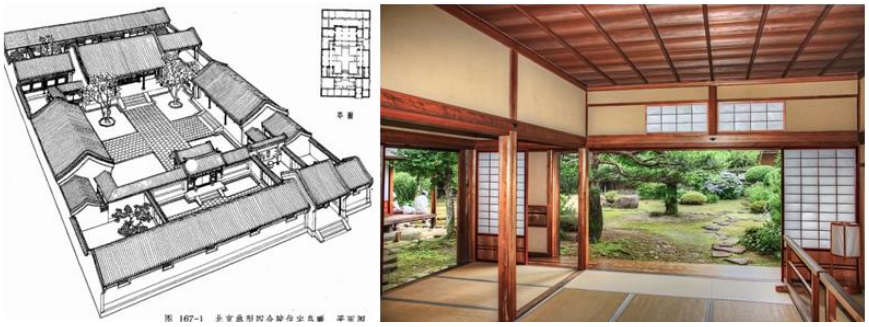
between the buildings in the royal palace, located at the center of the 1.2-hectare village, and the other households that spread out from the palace in a continuous fractal structure as new families arrive. The village is home to 54 indigenous families who draw their history, traditions, and architectural skills from Loumbila, near Ouagadougou, also in Burkina Faso. Tiébélé houses are built entirely from local materials such as earth, wood, straw, and cow dung. The wall envelopes are constructed to be 30 cm thick, creating a favorable indoor climate for the occupants and serving as a defense mechanism against enemies. These houses are traditionally known as sukhala, and in accordance with Kassena customs, they are built by men during the dry season (November to March) and decorated by women just before the rainy season. The decorations primarily serve to protect mud walls from washing away, but they have also evolved into an art form using motifs and symbols to convey the customs, religion, and beliefs of a society [8] (Figure 12).

***Source*:** https://www.archdaily.com/1002826/the-painted-houses-of-tiebele-a-model-for-communal-collaboration, Accessed: May 20, 2025.
***Source*:** https://www.onart.media/events-centered-on-contemporary-african-art/african-vernacular-architecture-patterns-a-source-of-inspiration-for-contemporary-african-artists/, Accessed: May 20, 2025.

Fig 12: The Painted Houses of Tiebele, Burkina Faso

The traditional house of ancient and medieval Japan (1185–1606) is one of the country's most distinctive contributions to world architecture (Figure 13). While the rich and powerful might live in castles and mansions, and the poor in rustic farmhouses or cramped suburbs, many medieval Japanese in between lived in what became the quintessential Japanese home. Features that are still popular today include rice paper walls, sliding doors and folding screens, tatami floors and futon beds, and a minimalist approach to interior design. Most buildings in Japan, both then and now, must withstand annual typhoons and the occasional tsunami and earthquake. In addition, summers can be very hot, winters are cold, and there is an annual season of heavy rain. The ancient and medieval Japanese found a simple solution to these difficulties: don't build to last. Rather than resisting the environment, houses were therefore built to follow its whims and, if the worst happened, were designed to be easily rebuilt. This approach also meant that very few old buildings survive in Japan today, but the architectural style certainly does. Japan had a highly stratified class system, and architecture was one of the many ways in which the authorities maintained the status quo and reinforced the idea that everyone had their own proper station in life. There were specific luxury laws that prohibited commoners from owning houses in the style preferred by the samurai, for example. The samurai class was impressed by the Zen-influenced architecture of Buddhist temples, and they emulated the austerity and minimalism of this in their homes. These trends would eventually filter down to the homes of other classes. One area in which the lower classes were on par with their superiors was their sparse furnishings, but this was usually due to a lack of resources rather than aesthetics. Before the modern era, Japanese domestic dwellings (minka) could be divided into the following four categories: village houses (noka), fishermen's houses (gyoka), mountain houses (sanka), and urban houses (machiya). Although all of the above had regional variations depending on local climate and availability of materials, some common features can be identified. These houses in rural areas, for example, were usually single-storey, built of wood and raised off the ground by posts. They had a floor of hardened earth (doma) where cooking was done and had another area with a raised wooden floor for sleeping. Town houses were smaller than the other categories due to the general lack of space in cities, but this problem was solved by building upwards, so many machiyas had two floors. It was quite common for urban houses to be connected to each other, and for toilets and water sources to be shared between neighbors. Many town houses were also the owner's business premises - a small workshop or shop. The windows were protected by sliding wooden panels (amado) that acted as shutters. The roof was weatherproofed by having a gable and covered with thatch, tiles, or bark

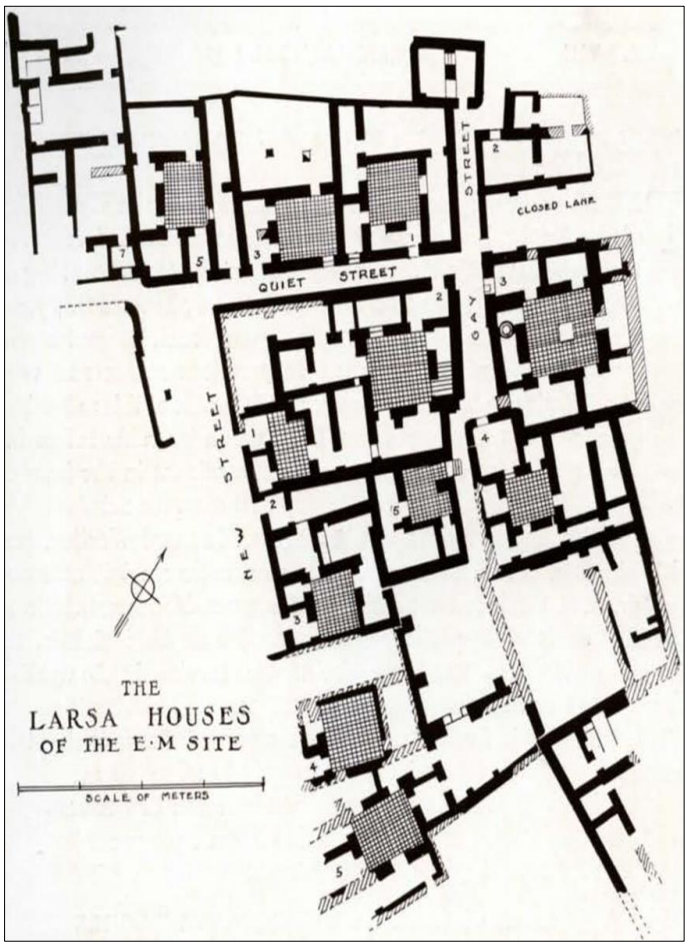
shingles. The roofs had eaves, and the main entrance had its own cover (genkan). The architectural style of finer domestic houses became known as shinden-zukuri in the Middle Ages, and an important part of this was the integration of the home and garden. The garden was designed to be viewed from different points in the house by moving sliding windows and walls. The garden itself was typically landscaped and might contain trees, flowering shrubs, groups of special grasses, areas of moss, artificial hills, water features, and rockeries, although it did not necessarily have to be a large space as all of these elements could be miniaturized. Larger gardens often had their own rustic teahouse (sukiya), a dedicated space for the Japanese tea ceremony. Initially, the shinden-zukuri style was enjoyed only by the samurai class. The living room (zashiki) was first seen in the homes of samurai who, as members of the upper class, had to hold audiences with their vassals and officials. For the same reason, part of the floor of the room might be slightly raised (jodan-no-ma). The idea then spread to the homes of commoners in the late Middle Ages. This room might have a built-in desk (tsukeshoin) facing the wall, another hangover from the samurai home. Internal sliding doors covered with paper (fusuma) were made by gluing paper (or sometimes even silk) to a delicate wooden lattice frame. Doors were closed or opened to play with the size of the rooms, and windows were often designed in the same way. Above both, there could be a transom or ramma, which was a carved wooden rectangle that allowed more light and air into the room. The interior space could be further divided by freestanding paper screens (shoji) which could be of the folding type (byobu) or consisted of a single panel (tsuitate). The paper used in screens was usually thinner and more transparent than that used in walls. More rustic houses might also have bamboo or reed shutters (sudare) over the windows. The wooden floor of a traditional Japanese house is covered with rectangular tatami mats made of straw, but with a top layer of woven grass. Tatami date back to the Heian period (794–1185), and the thickness and weave pattern of the tatami mats were an indicator of status in medieval Japan. Although not strictly standardized across Japan in terms of size, the number of tatami mats that could be placed in a room became a common way of measuring area. The size of a tatami mat in the Middle Ages was 85 cm x 1.73 m. Heating was provided by portable charcoal braziers (hibachi) or a fixed central hearth, and in the Middle Ages, lighting was provided by wooden torches or oil lamps. Furniture was rare in Japanese homes in the Middle Ages, but might include floor cushions (zabuton), portable armrests, a low table (chabudai), small storage cabinets (kodana), hidden cabinets (shoji), and chests (tansu). These items were often made of unusual woods or bamboo and could be more elaborate in design and decoration using lacquer and gilding. Valuables such as swords or jewelry were kept in chests, sometimes, according to ancient Ainu tradition (an indigenous Japanese people), in the northeast corner of the house where the house spirit, Chiseikoro Kamui, was believed to reside. Many people hang artwork in their homes, and these can take several forms. Hanging scrolls (kakemono or kakejiku) were made of either silk or paper and had a wooden pole at the bottom that served to secure the scroll to the wall and help it roll up for storage. The scrolls, often hung in a purpose-built niche (tokonoma) in the wall, displayed either a painting or an example of fine calligraphy, or a combination of both. In the case of paintings, these typically depicted landscape scenes and were usually changed at the beginning of each of the four seasons to suit the theme of the period in which they were viewed [8].



***Source*:** https://no.pinterest.com/pin/759489924655589597/, Accessed: May 20, 2025.

Fig 13: Typical organization of a Japanese traditional house

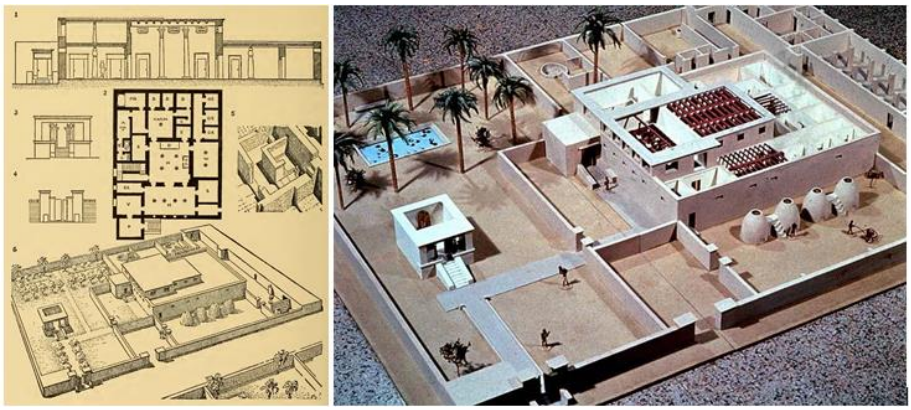
Mesopotamia is a region in southwestern Asia where the world's earliest civilizations developed. The name comes from the Greek word meaning 'between the rivers', and refers to the land between the Tigris and Euphrates rivers, but the region can be broadly defined to include what is now eastern Syria, southeastern Turkey, and most of Iraq. The region was a center of culture whose influence extended throughout the Near East to the Indus Valley, Egypt, and the Mediterranean. The prehistory of the ancient Near East begins in the Lower Paleolithic. Writing emerged there with a pictographic script, proto-cuneiform, in the Uruk IV period (late 4th millennium BC). Documented records of actual historical events - and the ancient history of Lower Mesopotamia - begin in the early 3rd millennium BC with cuneiform writings by early dynastic kings. This entire history ends either with the rise of the Achaemenid Empire in the late 6th century BC or with the rise of the Achaemenid Empire in the late 6th century BC. or the Muslim conquest and establishment of the Caliphate in the late 7th century, at which point the region became known as Iraq. For much of this period, Mesopotamia was home to some of the world's oldest highly developed and socially complex states. Private houses in ancient Mesopotamia are, for the most part, of similar types, although size and exact layout may vary. The typical house in Ur, Mesopotamia, basically consists of a central courtyard with living rooms arranged around it, reflecting both the climate and the need for privacy in a crowded urban environment. The exterior walls were thick and solid—an excellent insulator against the intense summer heat. If there were windows overlooking the street, they were on the upper floors and were probably closed or fitted with lattice screens. Otherwise, all natural light and ventilation came from the courtyard (Figure 14).



***Source*:** https://www.penn.museum/sites/journal/8972/, Accessed: May 20, 2025.

Fig 14: Houses in ancient Mesopotamia

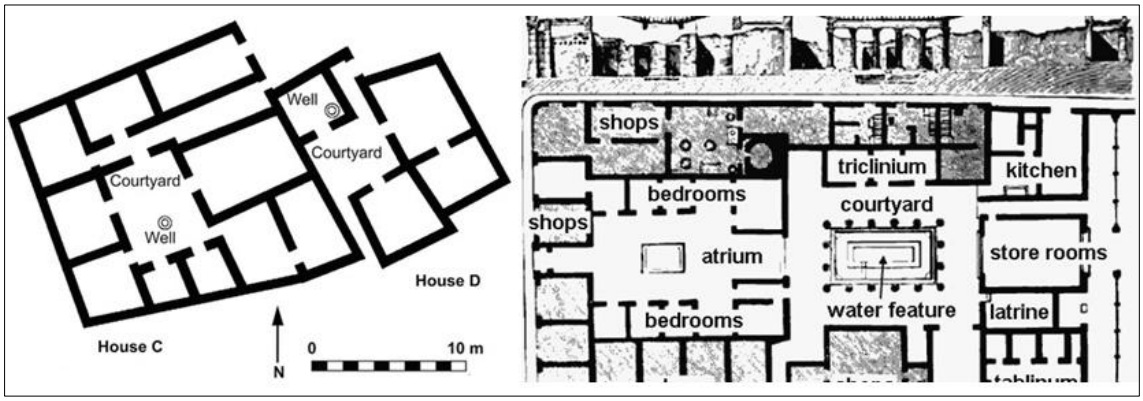
As in villages throughout Egypt today, ancient Egyptian houses were built of mud bricks, with palm trunks supporting their roofs and ceilings. Mudbrick, also known as adobe, was a cheap and practical material. It was easy to build, and the materials were free and readily available. The bricks were made by mixing mud with chopped straw and water, and pressing the mixture into a wooden mold. Once the sun had dried them, they were ready for use. As a precaution against earthquakes and the high floods of the Nile, the walls of houses were often thicker at the bottom and sloped upwards, making them stronger and more stable. As rain was rare, the roofs were flat, providing a useful outdoor living area and storage space. Sheltered by reed mats for privacy, the family could also sleep here in hot weather. In the hot Egyptian climate, keeping cool was a priority. Mudbrick was a good insulator and helped keep the interior of the house cool in the summer. The exterior walls were plastered and painted to reflect the sun's rays, and tiny windows kept the houses cool and ventilated. Some homes even had roof vents to circulate cool breezes through the house, a form of natural air conditioning. In the cities, houses were built close together, with two or more stories, but in the countryside, single-story houses were more common, and there was room for people to have gardens. This allowed villagers to supplement their diet with homegrown fruits and vegetables and to keep poultry for eggs and meat. Wealthy homeowners even had flower gardens, vine arbors, and ponds filled with water lilies where fish and ducks swam. There were big differences between the homes of the rich and the poor. Set on large country estates, the vast mansions of the wealthy had many rooms. The walls and ceilings were plastered and painted with brightly colored patterns or covered with colored textiles. Separate buildings housed stables, storerooms, workshops, and kitchens. Most houses had only a small kitchen courtyard at the back with a clay oven and millstone. In modest homes, the floor was of rammed earth covered with reed mats, while palaces had tiled floors. Wealthy homes even had bathrooms and toilets, while ordinary people had to wash in the river and use a pot or toilet. Regardless of size, most houses had the same layout. At the front was a reception area, sometimes with a porch. Behind were private rooms, where family members ate and slept. The largest of these was a communal living room, with a raised ceiling supported by wooden pillars. The houses at Tell el-Amarna were made of baked brick. The walls, floors and ceilings of many rooms were painted in a vivid naturalistic style [8] (Figure 15).



***Source*:** https://www.pinterest.com/pin/19844054595967160/, Accessed: May 20, 2025.

Fig 15: Ancient Egyptian architecture: The houses of Tell El-Amarna (around 1350 BC)

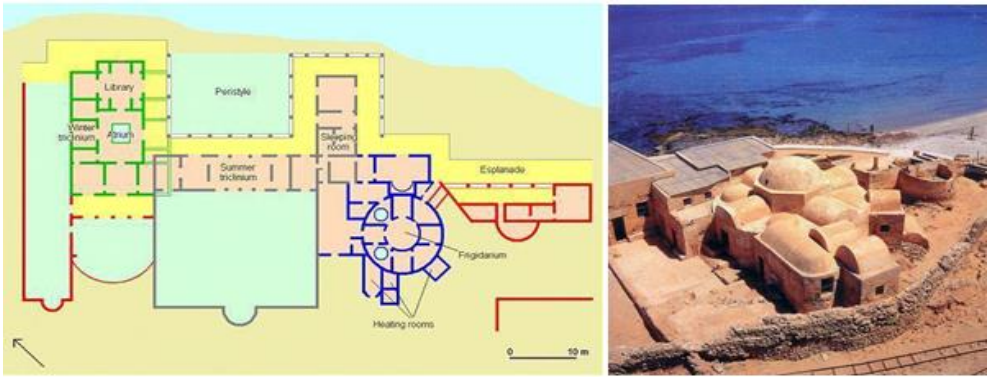
An important element in understanding this change in the way they were built and organized is the concept of 'social complexity'. As Greek society developed (from the eighth century BC onwards), so did various elements of everyday life. The change was based on a hierarchy of needs. An example of increasing complexity in the classical Greek household was the andron, a space primarily used for leisure. The basic necessities of life, food, shelter, etc., which were at the heart of the most basic Greek home, were now added. Archaeological evidence is the main source of what we know about how homes were spatially organized. Since many building materials have not stood the test of time, such as wood and brick, it can be difficult to determine how interior space was divided and organized in some parts of the house. This scene from an Attic vase shows that columns could have distinguished spaces, and it is possible that wooden partitions or even fabrics would also have been used to further divide the space. Furthermore, houses at Olynthus have evidence of stairs leading to the second floor. The more open and general space is easier to interpret, while the complex organization of the courtyard house makes it difficult to really infer what happened where, especially in two-story houses, because all their rubble would still end up at ground level. It is not through architecture, but through close examination of the finds, that the use of the rooms can be reconstructed. The different positions of objects found in different homes, such as stoves, braziers, and loom accessories, show that Greek society did not have a consistent way of marking space in the household. What is extremely important to understand about these objects is that most tools and products, including stoves and ovens, were designed to be as portable and mobile as possible. Their portability allowed those who worked in the house to enjoy warm, sunny days by cooking or weaving outside in their courtyard, or by cooking near the dining room to comfortably entertain guests while preparing a meal. An important element of organization in the home was the way objects were stored, especially cooking utensils, cutlery, and plates. Broken plates and bowls, for example, can be found in the fixed kitchen area, but also around the house where there was less evidence of prolonged cooking. Archaeologists speculate that they used fixed cupboards similar to ours, but they also had portable object carriers that could be moved to wherever the cooking implements were placed. A question of interest to archaeologists and historians is how gendered activities were organized. Literary sources suggest that there was a section of the home reserved for women, the gynaikonitis. The more segmented homes certainly seem to indicate that there was a cultural need for segmentation in some capacity, and one reason may have been to keep women separate from men. But the literary evidence is at odds with the material evidence. Not only are tools used in 'feminine' activities, such as weaving tools and cooking appliances, located in specific areas of the house (which could be labeled 'kitchen', 'workspace', etc.), but they are also located in shared parts of the house, such as the courtyard [8] (Figure 16).



***Source*:**https://www.cambridge.org/core/books/abs/ancient-greek-housing/classical-athens-and attica/253AC834467EB4E798210893AB80C0CE,Accessed:May 20, 2025.
***Source*:** https://www.pinterest.com/pin/522628731753913503/, Accessed: May 20, 2025.

Fig 16: Left: Classical Athens and Attica: Ancient Greek housing. Right: Courtyard of an ancient Greek house

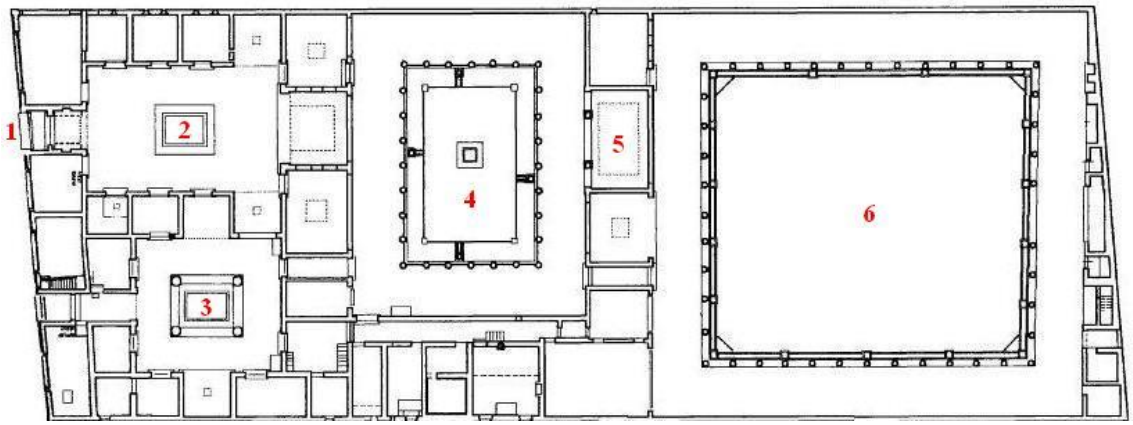
Roman villas have their typological evolution in the Iberian Peninsula, while courtyard houses are characteristic of Islamic architecture, and were later introduced to the peninsula. Both have different architectural features, but are similar in their use and functionality [39]. The majority of the population of the Roman Empire lived in the countryside. Roman villas were rural and most of them were intended for agricultural, livestock or industrial activities, i.e. they had economic purposes derived from their agricultural use. The Romans liked to live in contact with nature and did not mind a modest life in this regard. The different buildings that make up a Roman villa were designed according to different architectural types, since each of them was intended for a specific activity: among others, a stable, a kitchen, a house for servants or a warehouse. These buildings were built around the main owner's residence, which was the center of the plan, around which secondary ones were established. Those in charge of building these Roman villas used the materials that were available to them, but which in many cases were not very resistant. Among them, we highlight stone, adobe or rammed earth with lime. It was important that these buildings were cheap, they did not attach much importance to aesthetic qualities. However, in populated areas they used plaster and marble to cover some of the most important parts and lime and sand for the less important ones. If the owner was wealthier, more types of decorative art could be found, but the most characteristic were the mosaics that were placed on the floors, with mythological motifs or hunting scenes. After the fall of the Roman Empire, many Roman villas were destroyed. Currently, around five hundred Roman villas have been catalogued in Spain, some of which are better preserved than others. If we look at their physical structure, they follow an internal organization based on the classical rules of axial symmetry: an area around which the rooms and other spaces are located. The center consists of a central courtyard with a gallery, which provides access to the living areas, storage areas and other areas such as places of worship. It is common to find, in the area intended for the bath, a thermal set and a heating system located under the floors of the rooms. In the urban part of the villa, the owner lived, where there was a central courtyard or where the manager of the villa lived. In the rustic part, there were houses for slaves, kitchens and stables. In the fruit-bearing part, there were storage areas. In the religious part, there were a baptistery and a mystery. If we consider its architecture, the courtyard is the main element that connects the outside and the inside. Originally associated with a warm and sunny climate, this archetype reached a very diverse state, from the most luxurious palaces to the most modest dwellings. As in Roman villas, courtyard houses were organized around a courtyard that formed the central part of the place. At the same time, they were divided into areas where different members of the family nucleus resided. They were characterized by the use of elements of nature, vegetables and aquifers, which, in addition to decorative elements, gave freshness to the served environment. Courtyard houses arose from the need for a private outdoor space to carry out daily activities. They were multi-purpose spaces that were used by different cultures over the years, but with similar needs. Their goal is also to refine the space and let the home 'breathe' [8] (Figure 17).



***Source*:** https://www.quora.com/Are-there-any-ancient-Roman-villas-still-standing, Accessed: May 20, 2025.

Fig 17: Ancient Roman villa Silin

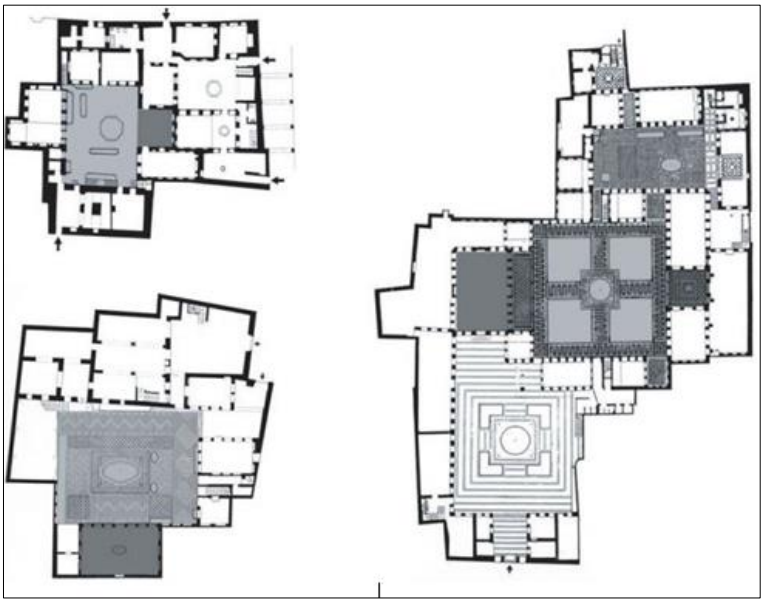
Courtyard houses exist in almost all societies with clearly sedentary characteristics, but there are two main types of courtyard that should be highlighted because of their importance in architecture. Roman courtyard. In ancient Rome, the upper classes had two main courtyards. The first was located behind the vestibule. This courtyard was characterized by its openness to the sky. It usually had a small pond and was decorated with art or mosaics. The second was a portico, larger and could have plant elements such as palm trees, rose bushes or laurel. The floor plan of the House of the Faun (Figure 38) illustrates its immensity - it covers an area of over 2,787 m^2. Its size is comparable to eastern Hellenistic palaces - and scholars consider it to be a modified Hellenistic style, rather than Roman, due to its organization and layout. The detailed floor plan shown in the figure was published by the German archaeologist August Mau in 1902 and is somewhat outdated, especially in terms of identifying the purpose of the smaller rooms. But it shows the main striking parts of the house - two atriums and two peristyles. The room styles in the House of the Faun correspond to the typology of Greek elite houses described by the Roman architect Vitruvius (80-15 BC), not those typical of Roman houses. A Roman atrium is a rectangular open courtyard, sometimes paved, and sometimes with an internal basin for collecting rainwater, called an impluvium. The two atriums are open rectangles at the front of the building (on the left of this image) - the one with the 'Dancing Faun' after which the House of the Faun is named is the upper one. The peristyle is a large open atrium surrounded by columns. This vast open space at the back of the house is the largest; the central open space is the second [8] (Figure 18).



***Source*:** https://web.mit.edu/21h.405/www/HouseOfFaun/homepage.html, Accessed: May 21, 2025.

Fig 18: Faun's house in Pompeii. 1. Entrance to the house, 2. Tuscan atrium, 3. Tetrastyle atrium, 4. First Peristyle, 5. Alexander Exedra, 6. Second Peristyle

The Arab courtyard. It was a multi-purpose space and characteristic of Arab villages due to its individualistic and introverted nature. Thanks to the courtyard located in the house, families could develop their family social activities. Curved or winding approaches are common in Arab courtyards. When it comes to the countries of the Arab world, the creation of these interior spaces inspired by the outdoors is much more than just an intake of sunlight and fresh air, it is an architectural expression of a rich culture that has transcended generations and inspired nations beyond their borders. Courtyard houses are believed to have first appeared in the early third millennium in 'Bilad al-Sham', the land that encompasses the lands between the Tigris and Euphrates rivers. Syrian and Iraqi nomads pioneered the architectural layout when they pitched their tents around a central feature in the desert to protect their livestock. Soon after, courtyards became an essential feature of Arab and Islamic architecture, emphasizing the need for enclosed but open space in residential architecture. In addition to climatic factors, social and cultural factors have had a significant influence on their creation. Arab countries, regardless of their religion or place of origin, highly value close-knit families and family obligations and gatherings. Many countries prioritize family along with religion, making it a critical determinant of personal status, honor, and dignity. As a result, families often reside in large spaces, leaving room for numerous descendants and extended family members. Privacy also has a major influence on the interior and exterior organization and appearance of traditional courtyard houses. In addition to being an important factor and one of the fundamental distinguishing values of Islam, families refrained from flaunting their financial status in public, creating an architectural contrast between the exterior and interior. It is important to note that not all Arab countries have an identical typology of courtyard houses, some use different decoration techniques, some use different landscaping, and others have completely different layouts. Most traditional courtyard houses include: a basement floor, a ground floor that includes the main living spaces (called Al Salamlek), a first floor that includes private spaces (called Al Haramlek) [8], (Figure 19).



***Source*:** https://www.archdaily.com/966445/polished-private-and-passive-traditional-courtyard-houses-and-their-timeless-architectural-features, Accessed: May 21, 2025.

Fig 19: Arab house with an inner courtyard

In extreme weather conditions during summer or winter, basement floors often act as thermal moderators, making them an attractive living space for residents. Wind catchers collect hot air and cool it before it is discharged into the yard. In addition to serving as a seasonal recreation area, it also serves as a storage area, as families in this area have many siblings and descendants, and they keep large quantities of food in reserve in case of unexpected wars (Figure 20).

***Source*:** https://www.archdaily.com/966445/polished-private-and-passive-traditional-courtyard-houses-and-their-timeless-architectural-features, Accessed: May 21, 2025.

Fig 20: Arab house with an inner courtyard

Entering the house through a narrow hallway, visitors experience a spatial contrast as they move from unadorned and modest architecture to a richly landscaped courtyard with greenery, a central fountain, and carved elevations. The more ornate and grander the house, the wealthier the family. The exterior doors are often double-paneled wooden doors with lead and steel reinforcement. From the outside, houses are often left unadorned to represent modesty and security, avoiding the judgment or attention of passersby. The interior, however, is a highly decorated space with intricate geometric patterns and details on the balustrades, furniture, paving, and window corners. Landscaping is also an important feature of traditional courtyard houses. Residents cover the interior walls with jasmine and climbing rose bushes, and orange or lemon trees line the perimeter of the courtyard. Functionally and functionally, the ground floor includes the kitchen, bathrooms, and reception areas (Figure 21).

***Source*:** https://www.archdaily.com/966445/polished-private-and-passive-traditional-courtyard-houses-and-their timeless-architectural-features, Accessed: May 21, 2025.

Fig 21: Arab house with an inner courtyard

On the north side of the courtyard, where there is a cool breeze during the summer, residents enjoy a covered recreational area called an Iwan. Visually, an Iwan offers residents the same features as an open courtyard, but unlike the latter, Iwans are located on a raised platform and are surrounded by walls on three facades. On the opposite side, a large main hall is built to host visitors during celebrations. In most houses, the main hall is often the most decorated space in the entire house and is covered by a dome. To highlight these two spaces, the floor patterns from the courtyard leading to the Iwan and the main hall are arranged to look like an oriental carpet (Figure 22).

Source: https://www.archdaily.com/966445/polished-private-and-passive-traditional-courtyard-houses-and-their-timeless-architectural-features, Accessed: May 21, 2025.

Fig 22: Arab house with an inner courtyard. Ground floor of the house

The first floor is accessed from the courtyard by a wooden or stone staircase. The spatial division of the first floor depends on the size of the family living in the house. In cases where the building accommodates extended families, small apartment-like chambers are built. For smaller families, simple private bedrooms are built. Several houses include terraces on the first floor to benefit from private outdoor space during the summer (Figure 23).

***Source*:** https://www.archdaily.com/966445/polished-private-and-passive-traditional-courtyard-houses-and-their-timeless-architectural-features, Accessed: May 21, 2025.

Fig 23: Arab house with an inner courtyard. House floor

Musharrabiya, also known as Mashrabiya, comes from the Arabic word 'Ssharab' which translates to 'to drink', due to the fact that Musharrabiya refers to a cool, shaded place where one can drink water from a clay pot. Others believe that the word is derived from 'mashrafiya' which translates to 'a place of observation', which is why it was often associated with a small protruding wooden balcony in houses. It is a perforated screen made of wood, clay or stone that regulates light, heat, ventilation and humidity, creating a space of privacy that is not too dark (Figure 24)..

***Source*:** https://www.archdaily.com/966445/polished-private-and-passive-traditional-courtyard-houses-and-their-timeless-architectural-features, Accessed: May 21, 2025.

Fig 24: Arab house with an inner courtyard. Musharabiya

Traditional courtyard houses have two types of windows: external and internal. As previously noted, external facades are rarely decorated to avoid the attention of pedestrians, which is why external windows are plain, small, and located on the first floor. On the other hand, internal windows are larger in scale and richly decorated, and are closed with wooden grilles. Cabinets are carved into the walls of the main reception halls for both display and storage. Open cabinets are used to display wooden carvings, while closed cabinets are used for everyday storage of items. Ceilings are rarely neglected when it comes to the interior decoration of traditional courtyard houses. They are often highly decorated with wooden panels with symmetrical gilded motifs of calligraphy, flowers, animals, or geometric patterns. The same motifs are used for doors, window grilles, floors, and wall patterns (Figure 25).

***Source*:**https://ar.pinterest.com/pin/96194142030870567/?amp_client_id=CLIENT_ID%28_%29&mweb_unauth_id=
Accessed: May 21, 2025.
***Source*:** https://en.idei.club/34468-arabic-room.html#google_vignette, Accessed: May 21, 2025.

Fig 25: Ceilings in Arabic houses

The family as the smallest social community always has value, high status and privacy. The house, as the 'framework of life' of this enduring institution, was an expression of dignity and privacy. The role of privacy in life according to the teachings and commandments of Islam and the cultural affiliations of the people in Iran is no secret to anyone. Introverted houses are examples of privacy. The necessity of this research is obvious due to the growing trend of new construction and the insistence on increasing the number of floors, occupancy and density of construction. The purpose of this research is to get acquainted with effective privacy patterns in extroverted houses. In the formation of residential buildings, doctrinal issues of Iranians such as self-respect and respect for private life have an undeniable effect. Organizing residential spaces around a central open space, the architect breaks the direct relationship of the building with its exterior space. Thus, houses with closed spaces and a quiet space out of sight of others for the residents were created. Examples of privacy in traditional introverted houses are recognizable, while eccentric houses are considered without privacy, at first glance. Privacy is a set of beliefs, practices, behaviors, characteristics, features, and possessions of each person [40]. Research into the Quranic verses has shown that the Quran places great emphasis on privacy. Verses 27 and 28 of Surah An-Nur affect the need for privacy of objects, private spaces. And it knows that every entry into a house is subject to permission. Verses 30 and 31 of Surah An-Nur imply that one should continue to look at the faithful men and women. Verse 11 of Surah Al-Hujurat implies a prohibition on searching and investigating the affairs of others. This prohibition of investigation includes all matters of privacy. The arrow-shaped volume of the Casa Delle Bottere family home in the Veneto region of northern Italy is set within a deep excavation, creating one floor above ground and a basement level, with a sunken courtyard to the west (Figure 26). The central roof plane rises from the eastern elevation, and its lines converge at the top of a sloping gable on the western facade. Following Palladian precedents, the design incorporates a pair of transverse projections, oriented along the principal axes. The aim of the project was to create a building with almost zero energy requirements, and Casa delle Bottere is one of only seventy houses in Italy to have been awarded the gold star of the sustainability certificate. Casa delle Bottere combines asceticism with a full quota of state-of-the-art low-energy technology. Pawson's houses have always received more attention than his other works,

mainly because they seem to prescribe a very particular way of life. Yet, as the architect himself gently points out, creating a domestic environment is always a collaboration with the client, an ongoing conversation that blends their requirements with Pawson's ever-refined visual sense.

***Source*:** https://www.johnpawson.com/works/casa-delle-bottere, Accessed: May 21, 2025.
***Source*:** https://www.wallpaper.com/architecture/casa-della-boterre-house-john-pawson-veneto-italy, Accessed: May 21, 2025.

Fig 26: Casa Delle Bottere, Veneto, Italy, 2012 (Architect: John Pawson)

House 2 in Maija, Portugal, is spread over two plots with a seven-meter difference between the ends (Figure 27). Between the two volumes are arranged the bedrooms to the east and the living rooms to the west. Below is a basement with a porch that serves as a garage, a swimming pool and a machine room. The house has two terraces, two gardens with different geographical positions: to the east are the bedrooms, a more intimate part with a quiet oriental garden that provides the necessary light. To the west is a long garden with North Oaks, with a pool where a window allows you to see the industrial suburbs and the subway passing by.

***Source*:** https://www.archdaily.com/637186/house-in-maia-2-eduardo-souto-de-moura, Accessed: May 21, 2025.

Fig 27: House in Maija, Portugal, 2007 (Architect: Eduardo Souto de Moura)

The Bibliothèque Alexis de Tocqueville is a public library for the metropolitan region of Caen la Mer in Normandy, France. The 12,000 m^2 multimedia library is located at the tip of a peninsula that stretches from the city of Caen to the English Channel. Its key location – between the historic city center and the developing Caen area – supports the city's ambition to make the library a new civic center. The library's glass facade visually connects the adjacent park, pedestrian walkway, and waterfront square to the interior and, together with two large entrances on the ground floor on either side of the building, allows the library to interact fluidly with its surroundings. On the upper floors, an urban gazebo offers unobstructed views in all four directions. Introverts prefer private offices to modern open office spaces. Introverts have chosen areas for focus and reflection over clichés of groupthink and overrated boardroom collaboration. At home, introverts seek solitude like a reading nook, rather than an open kitchen and adjacent great room with high ceilings. In the park, a bench under a tree rather than a large lawn. Introversion is related to the size of the architecture, not necessarily its size. A large room can be designed to be intimate. In fact, architecture that supports inward strivings addresses real human needs, helping us all breathe a little easier in this sometimes obsessively outward-facing world (Figure 28).

Source: https://www.oma.com/projects/bibliotheque-alexis-de-tocqueville, Accessed: May 21, 2025.
Source: https://www.anthonypoon.com/buildings-introverts-vs-extroverts/, Accessed: May 21, 2025.

Fig 28: Bibliotheque Alexis de Tocqueville, Caen, France, 2016 (Architects: OMA)

A house in Kohoku, Tokyo, Japan, is located in a quiet residential area redeveloped on the Yokohama hill. With neighboring houses lined up very close to each other, this flag-shaped site meets the road at an edge no wider than 3 meters. Since the site slopes to the north, and the neighboring house to the south is a two-story building built on higher ground, it initially seemed almost impossible to let in light from the south, even though the client, a married couple who have lived in the area for a long time, wanted a small but sunny one-story house just as their child was growing up. The roof, which appears to be bare, lets in light through the glass on top of the tubular windows, which are positioned to avoid blinds and the gaze of neighbors. From the inside of the house, the shapes of these tubes clearly appear, and the lever of a kind of folded-up sheet roof gently separates the entire living space. Since the house is single-story, we were free to shape the roof. And taking advantage of this freedom, the architects sought to make the exterior and interior appear as two sides of the same object. Although the main living space is no larger than about 7.5 x 7.5 meters, the architects tried to provide appropriate distance between the scenes of food, clothing, and housing by moderately separating each space along the ceiling range and by maximizing the height of the ceiling itself. High arbours connect adjacent spaces, while low ones separate them into, for example, the living room and the bedroom. A wooden mass is fixed in the area where the ceiling is highest. Inside the mass are the kitchen, bathroom, and toilet facilities, while at the top of the mass is the design office for their son. The upper part of the mass, which resembles a loft, and the other spaces are visually separated, but the presence of family members is felt when they are there (Figure 29).

***Source*:** https://www.archdaily.com/6893/house-in-kohoku-torafu, Accessed: May 21, 2025.

Fig 29: House in Kohoku, Tokyo, Japan, 2008 (Architects: Torafu Architects)

If there is any collective certainty of our existence on this planet, it is our death. Regardless of our social position, where and how we live, in poverty or wealth, what we do or be, each of us ultimately meets our end, practicing countless speculative yet hopeful traditions in preparation for life hereafter, while we live. Mortality is a fate we all share. The Hall of Immortality at the Longshan Cemetery in China personifies the inevitability of death (Figure 30). Apart from ancient traditions and rituals, what are our alternative options in terms of marking and experiencing death - whether it is the departure of our loved ones or the end of our own life journey. Professional and spiritual, not religious, memorial architecture seeks to find answers to these questions through its form and essence.

***Source*:** https://www.stirworld.com/see-features-the-quiet-and-introverted-architecture-of-the-hall-of-immortality-by-studio-10
Accessed: May 21, 2025.

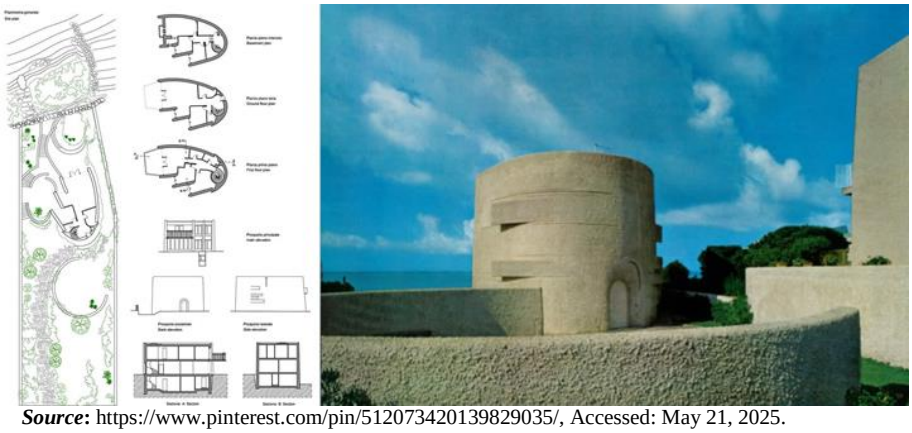
Fig 30: The Longshan Cemetery Memorial Hall is defined as an earth-colored concrete monolith, 2020 (Architects: Studio 10)

Longshan Cemetery is located in the barren hills west of Caipo Village, and primarily serves the residents of Jiaozuo City and the rural neighborhood of Xiuwu County, Henan Province, China (Figure 31). The building can accommodate up to 50 people, and derives its ethos from reinforced concrete, finished with earth-toned stucco that emphasizes its monolithic nature, reminding us of the ground we come to and return to, as well as strengthening our relationship with the land. The beige-washed interior design sees restrained details in bronze, such as the star-shaped ornament that hangs above the altar inside. Marble clads the dais and the altar, creating a soft, warm essential presence without compromising the lofty atmosphere of the space.

***Source*:** https://www.stirworld.com/see-features-the-quiet-and-introverted-architecture-of-the-hall-of-immortality-by-studio-10
Accessed: May 21, 2025.

Fig 31: Longshan Cemetery, 2020 (Architects: Studio 10)

Villa Califfa, Santa Marinella in Italy completes a triptych of exemplary works flanking the Ostia coast - plastic and energetic exercises between architecture and sculpture, typical of the second half of the Roman architect's professional life. The aim of these introverted houses is to refresh the human soul and help it establish a relationship with nature amidst the vast blue, between sea and sky. Villa Califfa is the smallest of the three and stands monolithic and rough, closed like a defensive watchtower towards the land, and equally open (we might say cut) towards the sea at noon. From the outside, from the abandoned city, one can only observe a few small slits in the semi-cylindrical volume, like the gills of a stranded sea creature, opening up and allowing light to filter inwards and directing the view outwards (Figure 32).



***Source*:** https://www.pinterest.com/pin/512073420139829035/, Accessed: May 21, 2025.
***Source*:** https://www.domusweb.it/en/architecture/2022/11/09/50-famous-houses-that-have-influenced-the-history-of-architecture.html
Accessed: May 21, 2025.

Fig 32: Villa Califfa, Santa Marinella, Italy, 1977 (Architect: Luigi Moretti)

The White U House is a home for the architect's sister, who recently lost a loved one and wanted to live in isolation for a while, in the ideal embrace offered by an intimate, introverted and introspective 'U'-shaped dwelling that seeks a connection with the sky, the earth and nature that must be nurtured in order to flourish. The architecture here is a portrait of the inner landscape of the person living in the house, with primary functions placed in linear spaces and a curved – and tense – space left free for the inhabitation of daily thoughts and activities. After a long period of mourning, the house was voluntarily and consensually demolished [8] (Figure 33).

***Source*:** https://www.domusweb.it/en/architecture/2022/11/09/50-famous-houses-that-have-influenced-the-history-of-architecture.html
Accessed: May 21, 2025.

Fig 33: White U House, Tokyo, Japan, 1976 (Architect: Toyo Ito)

Living in a modern cave brings man back into contact with the primary activities of life, its flows in relative time and in its simplest and most direct forms. This semi-hypogean house (by Aires Mateus) is located next to an artificial lake that has submerged several depressions and is slowly changing the environmental conditions in a region where heat and drought result in a unique vegetation. From the outside, the house is almost invisible, while inside, the cleanly shaped spaces gather around a clean dome, half-open to the landscape and below which one can observe the lake that is the natural place of new life (Figure 34).

***Source*:** https://arquitecturaviva.com/works/casa-en-monsaraz-0#lg=1&slide=1, Accessed: May 21, 2025.

Fig 34: House in Monsaraz, Alentejo, Portugal, 2018 (Architect: Aires Mateus)

With the Gadi House in Talegaon Dabhade, Maharashtra, PMA Madhushala demonstrates how vernacular architectural history can be succinctly applied to a modern structure, without obvious imitation or shadowing, creating a symbiotic, nurturing planning of shared spaces. The residential architecture unhesitatingly plays with the strength of stone and the lightness of brick, as evidenced at the outset by its prominent, lyrical masonry skin. The façade design is articulated by choreographed perforations in the brick, arranged to create undulating patterns on top, a solid gray stone base, and Corbusier windows that protrude in relief. The stonework for the entrance is given a touch of color by means of a soft pink grout, with certain blocks removed in between to create the desired perforated pattern (Figure 35).

***Source*:** https://www.stirworld.com/see-features-building-future-for-a-billion-voices-the-best-of-indian-architecture-in-2022
Accessed: May 21, 2025.

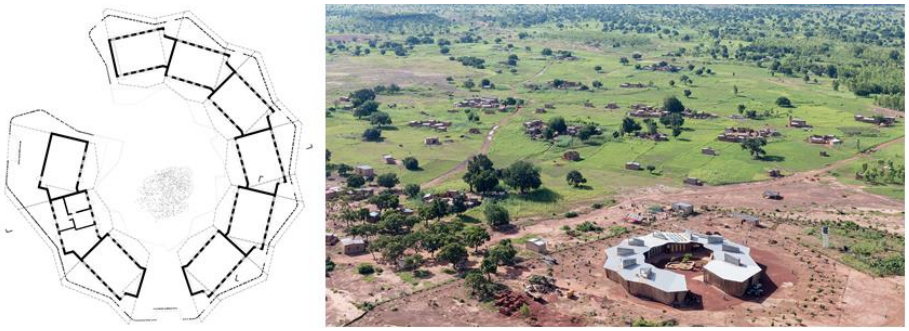
Fig 35: Gadi House, Talegaon Dabhadeu, Maharashtra, 2022 (Architects: PMA Madhushala)

Designer Amey Kandalgaonkar was captivated by the architecture of the rock-cut tomb at Mada'in Salih in Saudi Arabia and felt compelled to incorporate it into his project. This resulted in the creation of a house within a rock, located in the Saudi Arabian desert. Given the intricate rock formations at Mada'in Salih, Kandalgaonkar employed a simple design in terms of form and composition, relying heavily on 3D software to achieve balance through the use of planes and cubes. To minimize the visual impact from eye level, he attempted to limit the house's insertion into the rock, revealing only the extent of the intervention when viewed from above (Figure 36).

Source: https://amazingarchitecture.com/concrete-houses/house-inside-a-rock-designed-by-amey-kandalgaonkar, Accessed: May 21, 2025.

Fig 36: Hegra, Saudi Arabia, (Architect: Amey Kandalgaonkar)

Léo Surgical Clinic & Health Center, 2014, Burkina Faso was built as a collection of modules arranged along a central street and includes surgical rooms, a hospital ward and a maternity ward serving a population of over 50,000 people. It is built of rammed earth bricks with projecting colorful windows located at different heights on the facades of each module. Large overhanging roofs provide protection from the sun and are equipped with rainwater collection systems for irrigation (Figure 37).



***Source*:** https://www.dezeen.com/2022/03/15/diebedo-francis-kere-projects-roundup-architecture/, Accessed: May 21, 2025.

Fig 37: Léo Surgical Clinic & Health Center, Burkina Faso, 2014 (Architect: Francis Kéré)

Apple Campus 2 in Cupertino (USA) is the main headquarters of Apple Inc. in Cupertino, California, USA. The building was designed by the famous design company Foster & Partners according to the idea of the owner of the company, Steve Jobs (1955-2011), during his lifetime. The facility was built in less than four years (2013-2017). This megastructure is characterized, at the same time, by a huge built-up space (with all the necessary spatial-technical and infrastructural performances) and by equally huge efforts to make the facility in a "friendly" relationship with nature, while providing optimal comfort conditions for its 12,000 employees. The owner and creator of this facility, Steve Jobs, wanted to build a facility where employees would be able to achieve joint creativity, cooperation, innovation, development and progress [8] (Figure 38).

***Source*:**https://www.designboom.com/architecture/apple-campus-2-drone-video-update-cupertino-spaceship-california-01-06-2017/
Accessed: May 21, 2025.

Fig 38: Apple Campus 2 in Cupertino, USA, 2017 (Architects: Foster & Partners)

3. Extrovert architecture

Extroverted architecture is characterized by open floor plans and outward-facing design, with a clear focus on creating interaction with the environment. The author presents a series of examples from different natural and social environments and from different parts of the world and from different historical eras. The Customer Information Center and Event Forum PANEUM – Wunderkammer des Brotes – for Backaldrin in Asten consists of two elements: a box-shaped base building with a lobby and event rooms plus the "Wunderkammer des Brotes", a two-story free-form exhibition space floating on top. The selected materials enhance the contrast of these two elements: the square base of the building displays a poured concrete facade while the rounded wooden structure of the museum is clad in stainless steel shingles. The main building houses the event rooms and adjacent rooms. This space can be used for various events such as presentations, receptions or workshops for up to 120 visitors. The design of the exhibition space is based on the idea of the cabinet of curiosities, a concept of collections originating from the Baroque period. This concept is particularly suitable for the unusual and small objects in the bread-themed collection presented in the exhibition space. The centerpiece of the „Wunderkammer des Brotes" is a circular atrium, in which selected objects from the collection are individually suspended from above, as in a differentiated crystal chandelier. The atrium is closed off by a spiral staircase, where visitors can view the exhibits from different perspectives. The staircase provides access to two exhibition levels, where the objects are presented with the help of walls, tables and cabinets that are integrated into the architecture. In addition, all floors can be reached by elevator. The atrium is naturally lit from above, and the exhibition spaces have artificial light. The self-supporting wooden shell of the exhibition structure is visible in the interior. It consists of layered circles of cross-laminated wood. This construction method allows for the realization of free form. The high degree of prefabrication with 3D CNC technology (computerized numerical control) leads to a short construction time. By leaving the precisely shaped wooden beam exposed in the interior, with only a coat of paint, additional interior finishing became unnecessary (Figure 39).

***Source*:** https://www.archdaily.com/881743/paneum-center-coop-himmelb-l-au, Accessed: May 21, 2025.

Fig 39: Backadrin Headquarters, Asten, Austria, 2017 (Architects: Coop Himmelb(l)au)

Montréal is the number one host city for international events in North America; it is the center of higher education and innovation. No less than 5 universities, 200 research centers and 60 international organizations are located in the city. Also known for its nightlife and gastronomic cuisine, Montréal is a safe, cosmopolitan city where French, English and 80 other languages are spoken. Located in the heart of the city, the Palais des Congrès de Montréal has 113 rooms and spaces equipped with the latest state-of-the-art technology. The venue has unique architecture, is certified as an environmentally responsible meeting place and serves as a Canadian Border Services customs clearance point. About 15,000 hotel rooms are located nearby within a 10-minute walk, 4,000 of which are connected to the Palais via the Montreal Metro. What really sets the Palais experience apart is the team of professionals passionate about providing outstanding service, working side by side with organizers from the bidding stage to event closure, responding to their needs with actions that deliver results. The Palais des congrès de Montréal is a convention centre in Montreal's Quartier International, at the north end of Old Montreal. Construction began in 1977 and was completed in 1983. Victor Prus designed the original building. Part of the land for the Palais des congrès was acquired from Montreal's Chinatown, along with the construction of the Guy-Favreau complex. Plans to expand the Palais began in 1997. It was expanded from 1999 to 2002, doubling its capacity from 92,000 m^2 to 184,000 m^2. The expansion was designed by a consortium of three companies: Tétrault Parent Languedoc; Saia Barbarese Topouzanov; and Aedifica, with Hal Ingberg. It was the venue for the 2022 United Nations Conference on Biodiversity, which led to the Kunming-Montreal Global Biodiversity Framework (Figure 40).

***Source*:** https://www.meetings-conventions.com/Meeting-Event-Venues/Montreal/Convention-Center/Le-Palais-des-Congres-de-Montreal-p2149307, Accessed: May 21, 2025.
***Source*:** https://pixels.com/featured/colorful-palais-des-congres-montreal-canada-pierre-leclerc-photography.html?product=poster Accessed: May 21, 2025.

Fig 40: Palais des Congres, Montreal, Canada, 1983 (Architect: Victor Prus)

VIA 57 West is an apartment building located at 625 West 57th Street between 11th and 12th Avenues in Hell's Kitchen, Manhattan, New York City. The pyramid-shaped or 'tetrahedron' tower, designed by the Danish architectural firm Bjarke Ingels Group (BIG), rises 142 m and is 35 stories high. From Manhattan, the 709-unit building resembles a twisted pyramid with a steeply sloping facade, rising 142 meters to the northeast. Across the river in Weehawken, New Jersey, the sloping facade of the building gives the appearance of a particularly large sailing ship crossing the Hudson River. With its angular balconies around an integrated green square, the block connects to the waterfront and Hudson River Park, taking full account of the surroundings while offering views with little traffic noise. The building has a floor plan area of 80,000 m^2 including residential and retail program. The building's north facade features several balconies angled at 45 degrees, a pattern used in Ingels' previous works, such as the VM Houses in the Ørestad area of Copenhagen. In terms of marketing and public relations, the architecture firm found it easier to propose extroverted than introverted projects - just as a large symphony performance tends to sell more than a concert hall compared to an intimate solo cello recital. Extroverted design makes a bold statement, and architects often aim to do so in order to put their name on the map - to plant a flag in the ever-competitive landscape of design awards and recognition. Unlike its neighbors, an extroverted

high-rise wants to be noticed from all sides (Figure 41).

Source: https://www.e-architect.com/new-york/west-57-residential-building, Accessed: May 21, 2025.

Fig 41: W57, New York, 2016 (Architects: Bjarke Ingels Group, BIG)

Houses on stilts are structures that are located on an elevated platform above the water. The structures are still common in the regions of Central America and Oceania, especially in northeastern Nicaragua and Papua New Guinea (Figure 42).

***Source*:** https://medium.com/asia-p3-hub-updates/multi-sector-partnership-to-bring-safe-toilets-to-papua-new-guineas-coastal-communities-687a77a8378c, Accessed: May 21, 2025.
***Source*:** https://www.archdaily.com/898253/25-examples-of-vernacular-housing-from-around-the-world, Accessed: May 21, 2025.

Fig 42: House on pylons-soyhouses

Indonesian rumah gadang are traditional houses of the Minangkabau people of Sumatra. These houses, which mean 'big house', with a pointed roof, are usually built several meters above the ground. Their use reflects the complex social structure and traditions of the Minangkabau people, but is generally the domain of women. Today, rumah gadang are used mainly for various ceremonies (Figure 43).

Source: https://travel.earth/delightful-traditional-houses-around-the-world/, Accessed: May 21, 2025.

Fig 43: Indonesian rumah gadang are traditional Minangkabau houses from Sumatra

Egyptian pyramids are ancient masonry structures. Sources list at least 118 identified Egyptian pyramids. About 80 pyramids were built within the Kingdom of Kush, which is now located in the modern country of Sudan. Of those found in modern Egypt, most were built as tombs for pharaohs and their wives during the Old and Middle Kingdom periods. The earliest known Egyptian pyramids were found at Saqqara, northwest of Memphis, although at least one step-pyramid-like structure has been found at Saqqara, dating to the First Dynasty: Mastaba 3808, attributed to the reign of Pharaoh Anedjib, with inscriptions and other archaeological remains from that period suggesting that others may have existed. The earliest of these is the Pyramid of Djoser, built around 2630–2610 BC during the Third Dynasty. This pyramid and its surrounding complex are generally considered to be the world's oldest monumental structures made of ashlar masonry. The most famous Egyptian pyramids are those found at Giza, on the outskirts of Cairo. Several of the pyramids at Giza are among the largest structures ever built. The Pyramid of Khufu is the largest Egyptian pyramid and the last of the Seven Wonders of the Ancient World to still exist, despite being the oldest by about 2000 years [8] (Figure 44).

***Source*:** https://egypttimetravel.com/how-to-enjoy-egypt-giza-pyramids-complex, Accessed: May 21, 2025.

Fig 44: Pyramid complex in Gaza, Egypt

El Castillo, also known as the Temple of Kukulcan, is a Mesoamerican step pyramid that dominates the center of the Chichen Itza archaeological site in the Mexican state of Yucatán. The temple building is more formally designated by archaeologists as Chichen Itza Structure 5B18. Built by the pre-Columbian Maya sometime between the 8th and 12th centuries, the building served as a temple to the deity Kukulcán, the Feathered Serpent deity of the Yucatec Maya closely related to Quetzalcoatl, a deity known to the Aztecs and other Central Mexican cultures of the Postclassic period. It has a substructure that was probably built several centuries earlier for the same purpose. The temple consists of a series of square terraces with steps ascending on each of the four sides to the temple at the top. Sculptures of feathered serpents run down the sides of the north balustrade. Around the spring and autumn equinoxes, the late afternoon sun strikes the northwest corner of the temple, casting a series of triangular shadows on the northwest balustrade, creating the illusion of a feathered serpent 'crawling' down the temple. The event was very popular with modern visitors and has been witnessed by thousands on the spring equinox, but it is not known whether the phenomenon is the result of purposeful design, as the effect of light and shadow can be observed without significant change for several weeks near the equinoxes. Scientific research, which has been ongoing since 1998, suggests that the temple imitates the chirp of the quetzal bird when people clap their hands around it. Researchers argue that this phenomenon is not accidental, that the builders of this temple felt divinely rewarded by the echo effect of the structure. Technically, the sound of the clapping rings and disperses down the temple's tall and narrow limestone steps, producing a chirp-like tone with a decreasing frequency. All four sides of the temple have about 91 steps which, when added together and including the temple platform at the top as the final 'step', would produce a total of 365 steps (the steps on the south side of the temple have eroded away). This number is equal to the number of days in the Haab' year and is probably significantly related to rituals. The structure is 24 m high, plus an additional 6 m for the temple at the top. The square base is 55.3 meters wide [8] (Figure 45).

***Source*:** https://www.playadelcarmen.com/blog/the-secrets-of-chichen-itza/, Accessed: May 21, 2025.

Fig 45: El Castillo pyramid in Chichen Itza, Mexico, 8th - 12th century

The Oslo Opera House is the home of the Norwegian National Opera and Ballet and the national opera house of Norway. The building is located in the Bjørvika district in the center of Oslo, at the top of the Oslofjord. It is managed by Statsbygg, the government agency that manages the assets of the Norwegian government. The structure contains 1,100

rooms on a total area of 49,000 m^2. The main hall has 1364 seats, and the other two performance spaces can accommodate 200 and 400 seats. The main stage is 16 m wide and 40 m deep. The sloping exterior surfaces of the building are covered with marble from Carrara in Italy and white granite, and appear to emerge from the water. It is the largest cultural building built in Norway since Nidarosdomen was completed around 1300 (Figure 46).

***Source*:** https://architectuul.com/architecture/oslo-opera-house, Accessed: May 21, 2025.

Fig 46: Oslo Opera House Norway, 2007 (Architects: Snohetta Architects)

In the contemporary world with its abundance of visual experience, with the dominant pictorial language of communication, with the almost unfettered and instantaneous availability of iconographic material, an architectural work of exhibition will be attractive only to the extent that it can offer perceptual sensations that can only be achieved through direct, immediate exposure to unusual, individual stimuli, to the extent that it can provide a quality of experience born from the chemistry of intersensory stimulation. Given the nature of the exhibition, the exhibition space must, by its aesthetic distinctiveness, signify the country of origin, by the power of its stylistic connotations it must constitute an evocative, recognizable and memorable cultural ideogram. The cultural idiom in our design was primarily conveyed through the theme, the motif of folk art carving. Or, more precisely, by the representation of the motif, the transcription of the elementary aesthetic code into the contemporary language of architectural decor. The rationale for the transcription was twofold. First of all, the architects did not want the design to be literally folkloric, a mechanical reproduction of conventionally approved patterns. The intention was for the structure's decor to draw on and invoke tradition, but ultimately to be a contemporary reinterpretation of that tradition, a creative extension into the present day through inspiration rather than replication. Second, the architects aimed for the structure itself, in a purely architectural dimension, to become a significant landmark, a showcase of Polish design achievements. It should be an attractive, inviting exterior both in daylight, against the panorama of other Expo buildings, and an enchanting experience at night with the building attracting the multicolored light that penetrates through the cut-out patterns [2] (Figure 47).

***Source*:**https://www.dezeen.com/2010/06/03/polish-pavilion-for-shanghai-expo-2010-by-wwaa-architects/, Accessed: May 21, 2025.

Fig 47: Polish Pavilion, Shanghai Expo 2010 (Architects: WWAA Architects)

The Danish Pavilion at the Shanghai Expo 2010 was designed by architects from the Bjarke Ingels Group (BIG) with ARUP and was interesting not only from an architectural and structural point of view, but also because of the Danish spirit it represents. Basically, the pavilion is a large loop where visitors ride one of the 1,500 bicycles available at the entrance, which is an opportunity to experience the Danish urban way. At the center of the pavilion is a large pool with fresh water from the Copenhagen harbor (one of the cleanest in the world), in which visitors can even swim. At the center of the pool is the Little Mermaid, a statue that has become a symbol of Denmark. The pavilion is a monolithic structure of steel painted white, which keeps it cool during the Shanghai summer sun due to its heat-reflecting properties. The roof is covered with a light blue surface texture, familiar from Danish bike paths. Inside, the floor is covered with a light epoxy, and it also has a blue bike path that bicycles use to pass through the building. The steel on the facade is perforated in a pattern that reflects the actual structural stresses experienced by the pavilion, making it a 1:1 load test [2] (Figure 48).

***Source*:** https://www.archdaily.com/57922/denmark-pavilion-shanghai-expo-2010-big, Accessed: May 21, 2025.

Fig 48: Denmark Pavilion, Shanghai Expo 2010 (Architects: Bjarke Ingels Group, BIG)

CCTV Headquarters is a 51-story skyscraper formed by a pair of connected towers located on East Third Ring Road, Guanghua Road in Beijing's Central Business District (CBD) and serves as the headquarters of China Central Television (CCTV). Rem Koolhaas and Ole Scheeren of OMA were the architects in charge of the building, while Cecil Balmond of Arup provided the complex engineering design. Construction of the building began on June 1, 2004, and its facade was completed in January 2008. Some architectural critics have rated the structure as „the greatest work of architecture built this century“, and in 2013 it was named the best tall building in the world by the Council on Tall Buildings and Urban Habitat [8] (Figure 49).

***Source*:** https://www.turnerconstruction.com/projects/china-central-television-headquarters-cctv, Accessed: May 21, 2025.
***Source*:** https://archidialog.com/wp-content/uploads/2012/12/tall52.jpg, Accessed: May 21, 2025.

Fig 49: Central Chinese TV Building, Beijing, 2008 (Architects: Rem Koolhass and Ole Scheeren, OMA)

The Taichung Metropolitan Opera House was designed in 2006 and built from 2009 to 2016. The design is known for its cavernous, curved, and folded interior forms, which produce a dramatic and complex section that is neatly resolved into a 'parallelepiped' exterior form [8] (Figure 50).

***Source*:** https://www.archdaily.com/796428/toyo-itos-taichung-metropolitan-opera-house-photographed-by-lucas-k-doolan
Accessed: May 21, 2025.

Fig 50: Taichung Metropolitan Opera House, 2015 (Architects: Toyo Ito and Cecil Balmond, Toyo Ito & Associates)

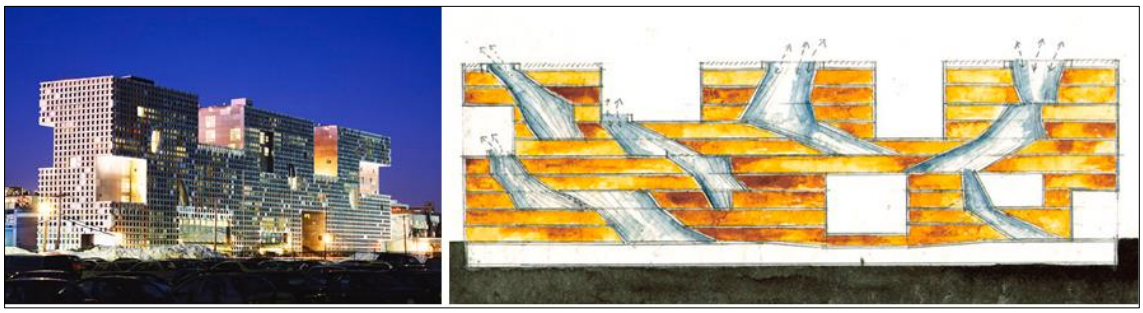
Morpheus is a neo-futuristic luxury hotel in Macau, a special administrative region of China, managed by Melco Resorts & Entertainment. Opened in June 2018, TIME describes it as "the world's first free-form skyscraper with an exoskeleton: a mesh of steel wraps 40 glass floors with a fluidity inspired by Chinese jade carvings". The interior features a playground, a rooftop pool, a modern art gallery, and restaurants by chefs such as Alain Ducasse. The hotel stands 160 meters tall. The hotel's 772 rooms include nine two-story 'sky villas,' three of which have private pools. The hotel was designed by renowned architectural firm Zaha Hadid Architects. The hotel is the first building in Asia without a single interior column, and tops out at 160 meters [8] (Figure 51).

***Source*:** https://www.azuremagazine.com/article/zaha-hadid-architects-morpheus-hotel-macau/, Accessed: May 21, 2025.

Fig 51: Morpheus Hotel, Macau, 2018 (Architects: Zaha Hadid Architects)

When the Massachusetts Institute of Technology commissioned Steven Holl in 1999 to design a new dormitory for the school, they had one goal in mind: that the spaces around and within the building encourage interaction among students. While MIT focused on the use and function of the building, Holl aimed to create a memorable building. Keeping MIT's vision in mind along with Holl's artistic architectural ideas, the ten-story undergraduate dormitory

became a small city in itself, balancing opposing architectural elements, such as solids and voids, and opacity and transparency. Holl's design solution was that the building would act metaphorically like a sponge. It would be a porous structure that would absorb light through a series of large openings that would be cut into the building so that light filtered through the section. These breaks in the sections would then become the main interactive spaces for students, providing views at different levels. In his original drawings, Holl referred to these breaks as the 'lungs' of the building because they would allow natural light to flow downwards while air would circulate upwards. Unfortunately, the final design could not incorporate these voids to the enormous extent that Holl originally had in mind due to fire regulations. Nevertheless, the main concept was still implemented with minor interruptions. The lungs scattered throughout the building have a dynamic organic geometry that counteracts the rigidity of the latticed rectilinear exterior. Along this painted external grid system are five large openings or voids in the otherwise solid structure that correspond to the main entrances, view corridors and external terraces [8] (Figure 52).



***Source*:** https://www.archdaily.com/65172/simmons-hall-at-mit-steven-holl, Accessed: May 21, 2025.

Fig 52: Simmons Hall at MIT, 1992 (Architect: Steven Hall)

The Gehry Tower is a nine-story building designed by architect Frank Gehry; it is located at Steintor, Goethestraße 13a, in Hanover, Germany. The building was commissioned by the city-owned Hannover Transport Services (üstra), for which Gehry also designed the city's bus station. Constructed of stainless steel, the tower is notable for the striking twist of its exterior facade on a reinforced concrete core, making optimal use of the relatively small plot of land on which it sits. Like many of Gehry's buildings, the tower was constructed with the most advanced technology available at the time. Gehry's office first created a 1:100 scale model, which was then scanned and imported into CAD software to calculate dimensions for the individual parts, which vary in size and shape. Construction began in 1999, and the building was officially opened on 28 June 2001 [8] (Figure 53).

***Source*:** https://www.orangesmile.com/extreme/en/spiral-buildings/gehry-tower.htm, Accessed: May 21, 2025.

Fig 53: Gehry Tower, Hanover, 2001 (Architect: Frank Gehry)

Turning Torso is a neo-futuristic residential skyscraper built in Malmö, Sweden, in 2005. It was the tallest building in the Nordic region until September 2022, when it was surpassed by Karlatornet in Gothenburg. Located on the Swedish side of the Öresund Strait, it was built and owned by the Swedish housing cooperative HSB. It was designed by Spanish architect, civil engineer, sculptor and painter Santiago Calatrava, and officially opened on 27 August 2005. It reaches a height of 190 m with 54 floors and 147 apartments [8] (Figure 54).

***Source*:**https://www.archdaily.com/771471/santiago-calatravas-turning-torso-wins-ctbuhs-10-year-award, Accessed: May 21, 2025.

Fig 54: Turning Torso, Malmö, Sweden, 2005 (Architect: Santiago Calatrava)

Wangjing SOHO is a complex of three curved asymmetrical skyscrapers in Wangjing, Beijing, between downtown Beijing and Beijing Capital International Airport. The towers contain office and retail space. Originally designed as a two-tower complex, SOHO was redesigned as a three-tower project with the towers having a lower maximum height due to height issues. One of more than a dozen properties developed by SOHO China, the complex officially opened on 20 September 2014 [8] (Figure 55).

***Source*:** https://www.archdaily.com/774575/zaha-hadids-wangjing-soho-wins-emporis-skyscraper-award, Accessed: May 21, 2025.

Fig 55: Wangjing Soho, Wangjing in Beijing, 2014 (Architect: Zaha Hadid)

The Guggenheim Museum is located at 1071 Fifth Avenue between 88th and 89th Streets on the Upper East Side of Manhattan, New York City. It houses a permanent collection of Impressionist, Post-Impressionist, early modern, and contemporary art, and hosts special exhibitions throughout the year. It was founded by the Solomon R. Guggenheim Foundation in 1939 as the Museum of Non-Objective Painting, under the leadership of its first director, Hilla von Rebay. The museum adopted its current name in 1952, three years after the death of its founder Solomon R. Guggenheim. It is still owned and operated by the Solomon R. Guggenheim Foundation. The museum building, a landmark of 20th-

century architecture designed by Frank Lloyd Wright, has been controversial for the unusual shape of its exhibition spaces, and took 15 years to design and construct; was completed in 1959. It consists of a six-story, bowl-shaped main gallery to the south, a four-story 'monitor' to the north, and a ten-story annex to the northeast. A six-story spiral ramp runs along the perimeter of the main gallery, beneath a central skylight. The Thannhauser collection is housed within the upper three floors of the monitor, with additional galleries in the annex and a learning center in the basement. The design of the museum building was controversial when completed, but has since been widely praised. The building underwent extensive renovations from 1990 to 1992, when the annex was built, and again from 2005 to 2008 [8] (Figure 56).

***Source*:**https://www.archdaily.com/60392/ad-classics-solomon-r-guggenheim-museum-frank-lloyd-wright, Accessed: May 21, 2025.

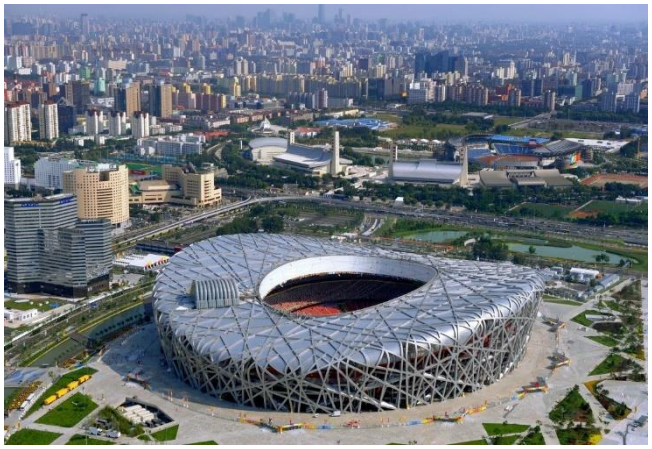
Fig 56: Guggenheim Museum, New York City, 1959 (Architect: Frank Lloyd Wright)

City Hall is a building in Southwark, London, which previously served as the headquarters of the Greater London Authority (GLA) between July 2002 and December 2021. In June 2020, the GLA began consultation on proposals to vacate City Hall and move to The Crystal, a GLA-owned property in Newham, at the end of 2021. The decision was confirmed on 3 November 2020, and the GLA left the City Hall town hall on 2 December 2021. The Southwark site is ultimately owned by the Government of Kuwait. The building has an unusual, bulbous shape, supposedly with the aim of reducing the area and thereby improving energy efficiency, although the excess energy consumption caused by the exclusive use of glass (in the double facade) outweighs the benefit of the shape. Despite the claim that the building "shows the potential for a sustainable, virtually zero-emission public building", energy consumption measurements have shown that this building is quite inefficient in terms of energy consumption (375 kWh/m^2/year), with a 2012 Energy Performance Certificate rating of "E". Its design has been compared to a helmet (either Darth Vader's or simply a motorcycle helmet), distorted into an egg [8] (Figure 57).

***Source*:**https://www.designingbuildings.co.uk/wiki/City_Hall,_London, Accessed: May 21, 2025.

Fig 57: London City Hall, London, 2002 (Architect: Norman Foster)

Beijing National Stadium (Bird's Nest) is a stadium in the Olympic Park in Chaoyang, Beijing. It covers an area of 204,000 m2 with a capacity of 91,000 spectators and was completed in June 2008. The stadium was designed for the 2008 Summer Olympics and Paralympics. It will also be used during the 2022 Winter Olympics and Paralympics. The Beijing National Stadium (BNS) was a joint venture between architects Jacques Herzog and Pierre de Meuron of Herzog & de Meuron, designer Stefan Marbach, and CADG, led by chief architect Li Xinggang. In an effort to design a stadium that is 'porous' while also being „a collective building, a public vessel“, the team studied Chinese ceramics. This line of thinking led the team to the 'nest scheme'. The stadium consists of two independent structures: a red concrete seating bowl and an external steel frame around it [8] (Figure 58).



***Source*:** https://edition.cnn.com/style/article/ai-weiwei-winter-olympics-2022-christiane-amanpour/index.html, Accessed: May 21, 2025.

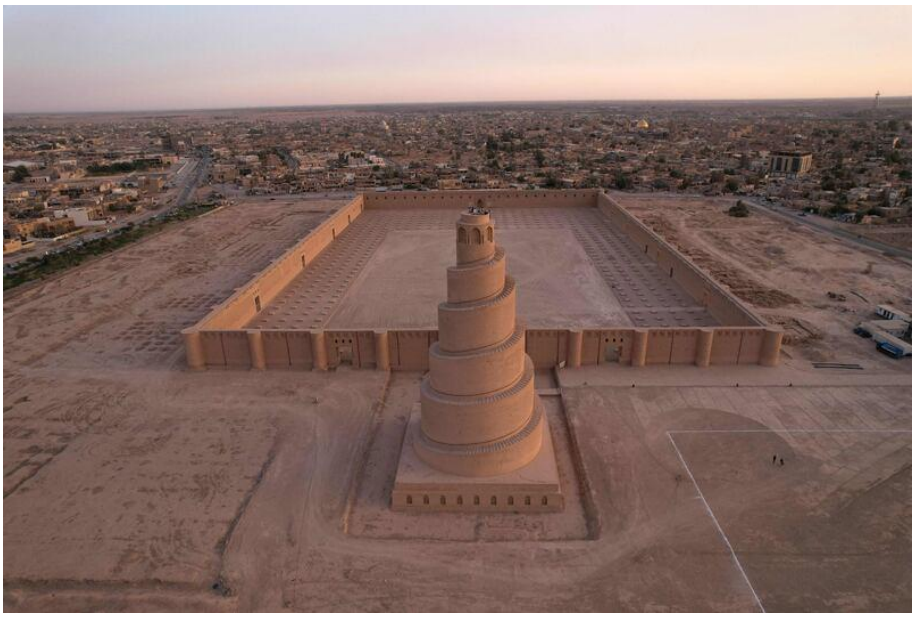
Fig 58: Beijing National Stadium, 2008 (Architects: Herzog and de Meuron, ArupSport, China Architecture Design & Research Group)

The new Museum of Contemporary Art is an urban infill for midtown Manhattan. Given such a dense urban environment, stacking the museum spaces could easily have led to an introverted mass, but by moving the volumes in relation to each other, the building is opened up and the museum begins to communicate with its surroundings. This movement allows for skylights, terraces, and variations, all while maximizing wall space and keeping it within the building's zonal envelope. As the relationship between core and envelope varies, different lighting conditions and proportions emerge [8] (Figure 59).

***Source*:** https://archello.com/story/19102/attachments/photos-videos/2, Accessed: May 21, 2025.

Fig 59: Museum of Contemporary Art, New York City, 2007 (Architects: SANAA)

The Great Mosque of Samarra was the largest mosque in the world for four centuries. Built on the Tigris River in Samarra, a city in modern-day Iraq that was established as the second capital of the Abbasid Caliphate in the 9th century, the Great Mosque of Samarra was one of many projects undertaken during the reign of the Abbasid Caliph al-Mutawakkil. It was largely destroyed in 1258 by an army led by Genghis Khan's grandson Hulagu Khan. Its thick walls and the Malwiya Tower, a tall, spiraling minaret, are all that remain today. The walls, minaret, and archaeological site are located within the Archaeological City of Samarra, a vast area that was designated a World Heritage Site by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2007. Often referred to as the Malwiya Tower (malwiya is the word for its spiral in Arabic), it is the minaret of the Great Mosque of Samarra, Iraq. Built in the mid-9th century, the mosque was largely destroyed in 1258, but the 35.7-meter-high minaret still stands. A walkway winds counterclockwise along the minaret to the very top [8] (Figure 60).



***Source*:**https://www.thenationalnews.com/mena/iraq/2022/07/27/the-great-mosque-of-samarras-spiral-malwiya-minaret-in-pictures/
Accessed: May 21, 2025.

Fig 60: The Spiral Minaret of the Great Mosque of Samarra, Iraq

During the process of urbanization, skyscrapers have been symbols of technological bravura, cutting-edge capitals, and social projections of wealth and prosperity. This limited framework for skyscrapers often results in solutions limited to homogeneous, linear structures and degenerative duplication in business districts around the world. Forced into an unnatural state of conformity, city life is negatively impacted by these untested development practices focused on efficiency. Without challenging the status quo, our cities will continue to lack the cohesion of life as the term implies: a forest. A forest is a thriving ecosystem in which each organism survives only in a state of symbiosis. New ambitions nurtured in a changing global consciousness are questioning the outdated development pattern of the past century and favoring fresh, thoughtful, inspiring, and eloquent solutions for the high-rises of tomorrow. What lies ahead for our cities? How should the concept of emerging high-density cities be understood? How can city dwellers be immersed in an enriching experience of nature when its presence is constantly diminishing in the face of ever-increasing concrete floods? Faced with these challenges, future tall buildings should catalyze a higher level of complexity in our cities for the benefit of a harmonious civilization. Local residents fondly nicknamed them the Marylyn Monroe Towers, the Absolute Towers parallel the sinuous fluidity or natural lines we find in life. This activation of flow creates an organic punctuation in the landscape and a desire for urban recognition of enthusiasm. Here we advance the challenge of maintaining the usual boxy skyscrapers. Our ambition was to provide each resident with a unique experience of the city, a heteroarchic distribution. Continuous balconies expand individual viewing angles and promote community at the micro level of a single floor. In a macro shot, the cadence of floors rising into the sky echoes the modular rhythms of human experience, yet emphasizes the movement of the adored figure. We hope that this building can awaken the metropolitan's desire for nature, such as the sun and the wind, and certainly human bodies [8] (Figure 61).

***Source*:** https://www.archdaily.com/306566/absolute-towers-mad-architects, Accessed: May 21, 2025.

Fig 61: Absolute Towers, Mississauga, Canada, 2012 (Architects: MAD Architects)

Guangzhou Opera House is an opera house in Guangzhou, Guangdong Province, China. It was designed by Zaha Hadid and opened on May 9, 2010. The building is designed as two rocks washed by the Pearl River. His free-standing concrete hall set within an exposed granite and glass-clad steel frame took more than five years to complete [8] (Figure 62).

***Source*:** https://guangzhouoperahouse.com/, Accessed: May 21, 2025.

Fig 62: Guangzhou Opera House, 2010 (Architect: Zaha Hadid)

41 Cooper Square, the new academic building for The Cooper Union, seeks to embody the character, culture, and vibrancy of the 150-year-old institution and the city in which it was founded. Dedicated to Peter Cooper's vision that education leads to civic, cultural, and practical enrichment, the institution has since grown into a renowned intellectual and cultural center for New York City. 41 Cooper Square seeks to reflect the institution's stated goal of creating an iconic building - one that reflects its values and aspirations as a center for advanced and innovative education in the arts, architecture, and engineering. Internally, the building is envisioned as a means to foster collaboration and interdisciplinary dialogue among the college's three schools, which were previously housed in separate buildings. A vertical piazza—a central space for informal social, intellectual, and creative exchange - forms the heart of the new academic building. A wavy lattice wraps a 20-foot-wide grand staircase that rises four stories from ground level through a skylit central atrium that itself reaches the full height of the building. This vertical piazza is the social heart of the building, providing a place for impromptu and planned meetings, student gatherings, lectures, and the intellectual debate that defines the academic environment. From the double-height entrance lobby, a grand staircase ascends four floors to terminate in a glass-enclosed double-height student lounge with city views. From the fifth to ninth floors, sky lobbies and meeting spaces - including a student lounge, seminar rooms, lockers, and seating areas with cityscape views - are organized around a central atrium. Sky bridges span the atrium to create connections between these informal spaces. Further reinforcing the strategy for creating a vibrant intellectual space is a 'skip-stop' circulation strategy that allows for both increased physical activity and more impromptu meeting opportunities. Primary skip-stop elevators, stopping at the first, fifth, and eighth floors, encourage residents to use the grand staircases and sky bridges. Secondary elevators stop at each floor, both for ADA compliance and for the practical tasks of moving materials, artwork, and equipment. In the spirit of the institution's commitment to free, open, and accessible education, the building itself is symbolically open to the city. Visual transparencies and accessible public spaces connect the institution to the physical, social, and cultural fabric of its urban context. At street level, the translucent facade invites the neighborhood to observe and participate in the intensity of activity contained within. Many of the public amenities - an exhibition gallery, a meeting room, and a two-hundred-seat auditorium - are easily accessible one level below. The building resonates with light, shadow, and transparency through a high-performance exterior double skin whose translucent layer of perforated stainless steel wraps the building's glazed envelope to provide critical control of the interior environment while also allowing transparency to reveal the creative activity taking place within. Responding to its urban context, the sculpted facade establishes a distinctive identity for Cooper Square. The corner entrance of the building is raised to draw people into the lobby in homage to the institution's historic Foundation Building. The facade registers the iconic, curved profile of the central atrium as a glazed figure that appears to be carved out of the Third Avenue façade, connecting the building's creative and social heart to the street [8] (Figure 63).

***Source*:** https://www.morphosis.com/architecture/4/, Accessed: May 21, 2025.

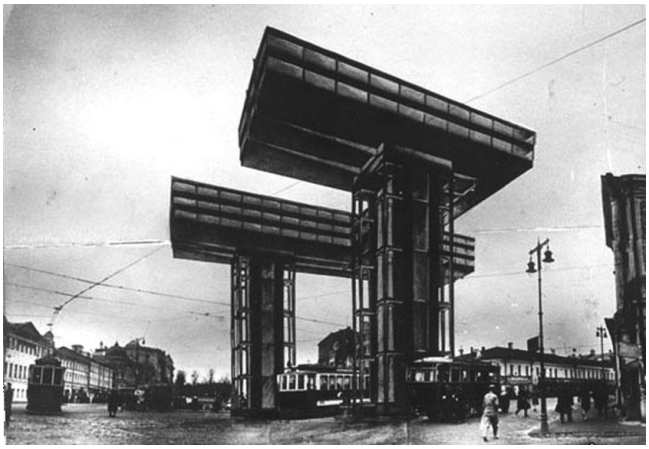
Fig 63: Sciences Building of Copper Union, New York City, 2009 (Architects: Morphosis)

Torre Glòries, formerly known as Torre Agbar, is a 38-storey skyscraper located between Avinguda Diagonal and Carrer Badajoz, near the Plaça de les Glòries Catalanes, marking the entrance to the new technological district of Barcelona. It was designed by French architect Jean Nouvel in collaboration with Spanish firm b720 Fermín Vázquez Arquitectos. Torre Glòries is located in the Poblenou district of Barcelona and was originally named after its owners, the Agbar Group, a holding company whose interests include the Barcelona water company Aigües de Barcelona. Torre Agbar is intended to resemble the shape of a geyser rising into the air. It was inspired by Montserrat, a mountain near Barcelona. Due to its unusual shape, the building is known by several nicknames, such as el supositori ('the suppository'), l'obús ('the clamshell'). It is also somewhat similar in shape to Norman Foster's 30th century Sir Mary Axe in London, which is often referred to as 'the gherkin'. The Agbar Tower is 144.4 m high and consists of 38 floors, including four underground levels [8] (Figure 64).

Source: https://www.dezeen.com/2017/01/18/impracticality-drives-tenants-jean-nouvel-barcelona-skyscraper-torre-agbar-spain/
Accessed: May 21, 2025.
https://www.dezeen.com/2017/01/18/impracticality-drives-tenants-jean-nouvel-barcelona-skyscraper-torre-agbar-spain/
Accessed: May 21, 2025.

Fig 64: Agbar Tower (Torre Glòries), Barcelona, 2004 (Architect: Jean Nouvel)

In 1923–1925 El Lissitzky proposed and developed the idea of 'horizontal skyscrapers' (Wolkenbügel, 'cloud-irons'). A series of eight such structures were to mark the main intersections of the boulevard ring in Moscow. Each Wolkenbügel was a flat, three-story L-shaped slab, 180 meters wide, raised 50 meters above street level. It rested on three pylons (10×16×50 meters each), set at three different angles. One pylon extended underground, also serving as a staircase to the proposed metro station; the other two provided shelter for the tram stations on the ground floor. Lissitzky argued that as long as humans could not fly, horizontal movement was natural, but vertical movement was not. Therefore, where there was insufficient land for construction, a new aircraft created in the air at medium altitude should be better than the American tower. These buildings, according to Lissitzky, also provided superior insulation and ventilation for their inhabitants. Lissitzky, aware of the serious mismatch between his ideas and the existing urban landscape, experimented with different configurations of horizontal surfaces and height-to-width ratios so that the structure appeared visually balanced ("spatial balance is in the contrast of vertical and horizontal tensions"). The raised platform was designed in such a way that each of its four aspects looked distinctly different. Lissitzky, aware of the serious mismatch between his ideas and the existing urban landscape, experimented with different configurations of horizontal surfaces and height-to-width ratios so that the structure appeared visually balanced ("spatial balance is in the contrast of vertical and horizontal tensions"). The raised platform was designed in such a way that each of its four aspects looked distinctly different. Each tower faced the Kremlin with the same facet, providing a directional arrow to pedestrians on the streets. All eight buildings were planned identically, and Lissitzky suggested color-coding them for ease of navigation [8] (Figure 65).



***Source*:** https://antitheziz.wordpress.com/2013/02/28/horizontal-skyscrapers-1923-1925-by-el-lissitzky/, Accessed: May 21, 2025.

Fig 65: Horizontal Skyscraper ('supports of the sky'), 1925 (Architect: El Lissitzky)

The pure white structure of the Farnsworth House, Plano (USA), stands out from the green lawn in the woods at the edge of the river. The lattice structure of steel and glass contains a minimum of practical furniture for a maximum of idealized living. Mies van der Rohe had the (not easy) opportunity to work on a tiny but precious project that he perhaps considered too much his own due to his close and immediate relationship with the client Edith Farnsworth. Beyond private and personal anecdotes, Mies attempted to design a house that would 'let in outside', with the structure highlighted by a single volume of transparent glass, skillfully distributing semi-public and semi-private rooms around a central, opaque 'core' with kitchen and bathroom. Living in it is a work of art - which is usually an unpleasant thing to do (Figure 114). The Glass House in New Canaan (USA) by architect Philip Johnson is only one of two buildings he designed at the same time, for the same site - a park where he built pavilions in which he lived surrounded by nature and art. Almost like a competition - a student who wants to surpass his teacher and friend Mies van der Rohe - this glass house is a transparent volume resting on the ground, with a three-dimensional black frame made of structural perimeter profiles. Each side of the parallelepiped has access to a central and direct environment, in which the equipment for the primary functions, except for the bathroom, is distributed without physical margins - kitchen, dining room, living room, study, bed, as well as the not at all accidental and important presence of painting and sculpture. On the other hand, the second pavilion, called Brick House, skillfully moved and a few steps from the 'living pavilion', contains the bedrooms and the study - intimate and private spaces, without direct views to the outside, illuminated only by zenithal skylights and a few circular windows [8] (Figure 66).

***Source*:** https://www.domusweb.it/en/architecture/2022/11/09/50-famous-houses-that-have-influenced-the-history-of-architecture.html
Accessed: May 21, 2025.

Fig 66: Left: Farnsworth House, Plano (USA), 1951 (Architect: Ludwig Mies van der Rohe). Right: Glass House, New Canaan (USA), 1949 (Architect: Philip Johnson)

Internationally renowned architects Snøhetta have blended extroversion and introversion in their design for the King Abdulaziz Center for World Culture in Saudi Arabia. The studio's biggest challenge is to create both a landmark and a building that speaks to each individual person who visits it. The extroversion part comes from what people want and expect architects to do for a project of this scale and quality. Everyone wants an icon, and the complex is extroverted by nature. In this regard, the project has achieved a strong impression within its context – and the abstract arch form that evokes a collection of reddish rocks, including the central Keystone, is connected to the landscape. The introversion comes from the interior layout, where the center's museum and archives are located underground and grouped around an internal void. Each room has a very distinct feel, so once inside, the design speaks to your identity and the identity of the space. Each person can have a different experience, depending on which path you choose to move through the building. The center is developed on 45,000 m^2 of diverse cultural facilities, including an auditorium and concert hall with a capacity of 930 seats, a library with 30,000 books, exhibition spaces, a banqueting venue and the first cinema in Saudi Arabia. The development is being financed by oil company Saudi Aramco near its headquarters in the eastern city of Dhahran. The organization is committed to offering both its employees and the surrounding community technologically advanced cultural experiences - the kind of which are currently rare in the country. Snøhetta was selected to design the project following an invitational architectural design competition in 2007. The facility was built in 2017 [8] (Figure 67).

***Source*:** https://arquitecturaviva.com/works/centro-cultural-cking-abdulaziz-5, Accessed: May 21, 2025.

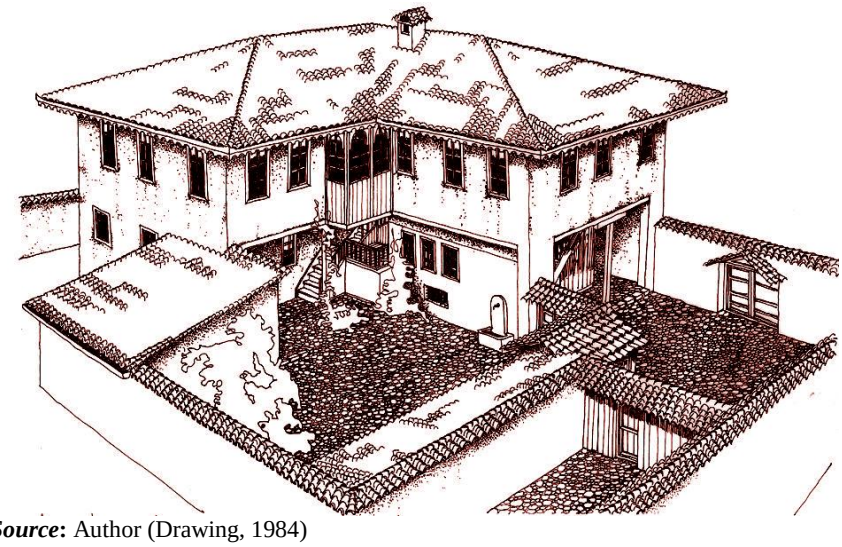
Fig 67: King Abdulaziz Center for World Culture, Saudi Arabia, 2017 (Architects: Snøhetta)

4. Both introverted and extroverted architecture

An ambivert is someone who exhibits traits of both an introvert and an extrovert. They cannot be labeled pure introverts ('shy') or extroverts ('aloof'). Omnivert is another word used for the same personality type, but both words have the same meaning.

Similar to the human-individual, there are frequent architectural realizations that are both introverted and extroverted at the same time. As such, they reflect the complex nature of the human-individual and his collectivities. At the same time, architecture expresses this complexity in a subtle way through the designed development of its horizontal and vertical plans and its overall appearance. In this chapter, a wide variety of architectural programs will be presented that support ambivertism in architecture.

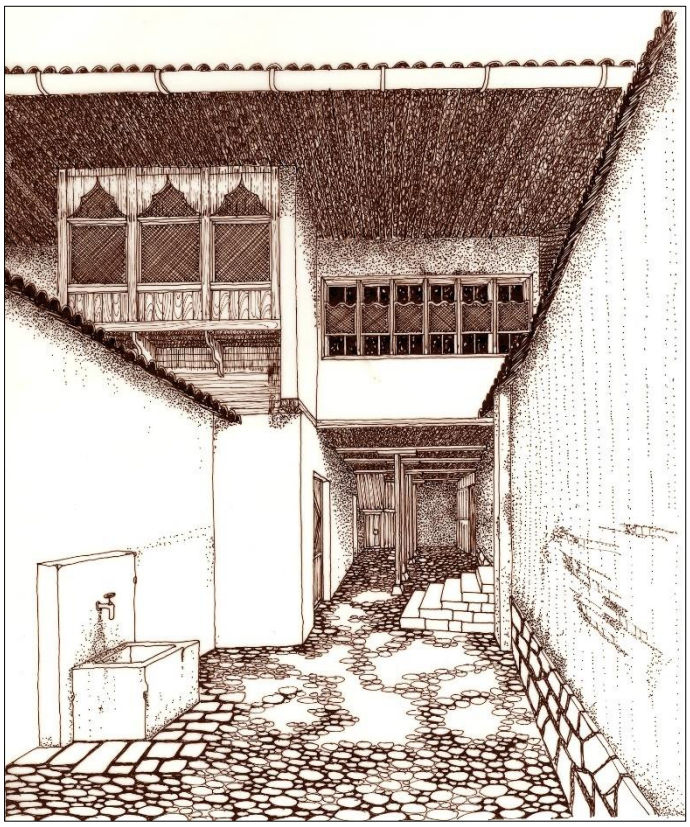
The house in Potok Street (Potokli Street) in Sarajevo is situated on the very edge of Baščaršija. The street was formed in the 16th century, and belonged to Tokmo-zade Hadzi-Ahmed's Mahal. The street had this name until 1920 [44]. The house in Potokla street, according to its layout and overall decoration, belonged to the developed type of oriental-type town house in Sarajevo, which is characterized by the separation of the public ('selamluk') and intimate zones (haremluk) of the house complex. The house was demolished, and new residential and commercial buildings were built in its place (Figure 68).



***Source*:** Author (Drawing, 1984)

Fig 68: House in Potokli street in Sarajevo

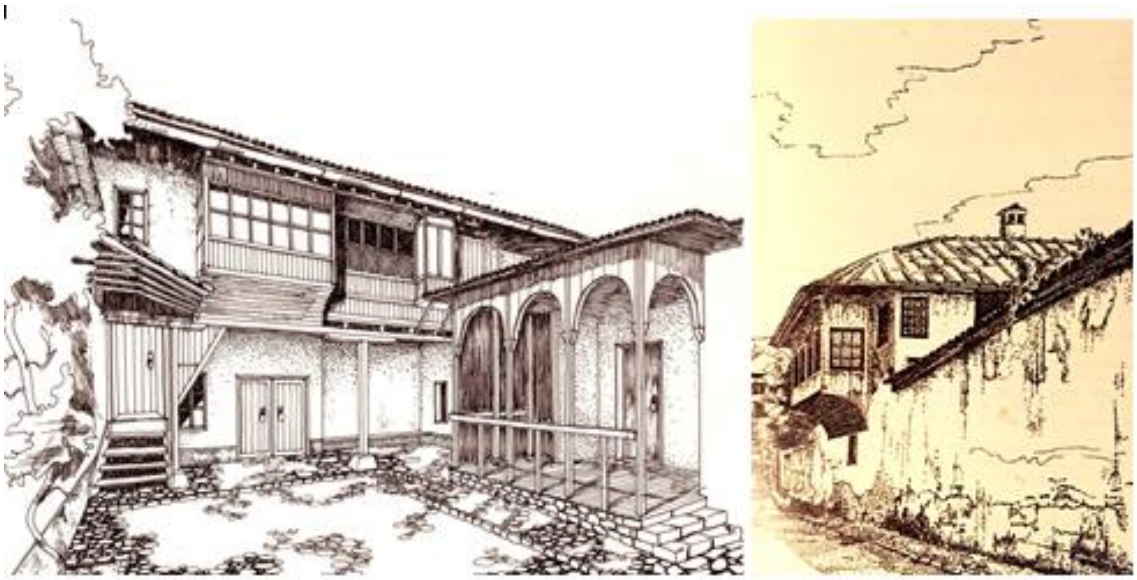
The Hadzisabanovic House was built in the 18th century and belongs to a developed type of town house with a differentiated public (selamluk) and intimate zone (haremluk). The house is developed through a basement (under part of the ground floor plan), ground floor and first floor. The Hadzisabanovic House had the status of a national monument [45]. Namely, this exceptional architectural complex burned down completely (December 12, 2009.) in a fire caused by a gas explosion. Interestingly, the house also burned down in 1929, after which it was completely renovated (Figure 69).



***Source*:** Author (Drawing, 1984)

Fig 69: Hadžisabanović's house in Sarajevo

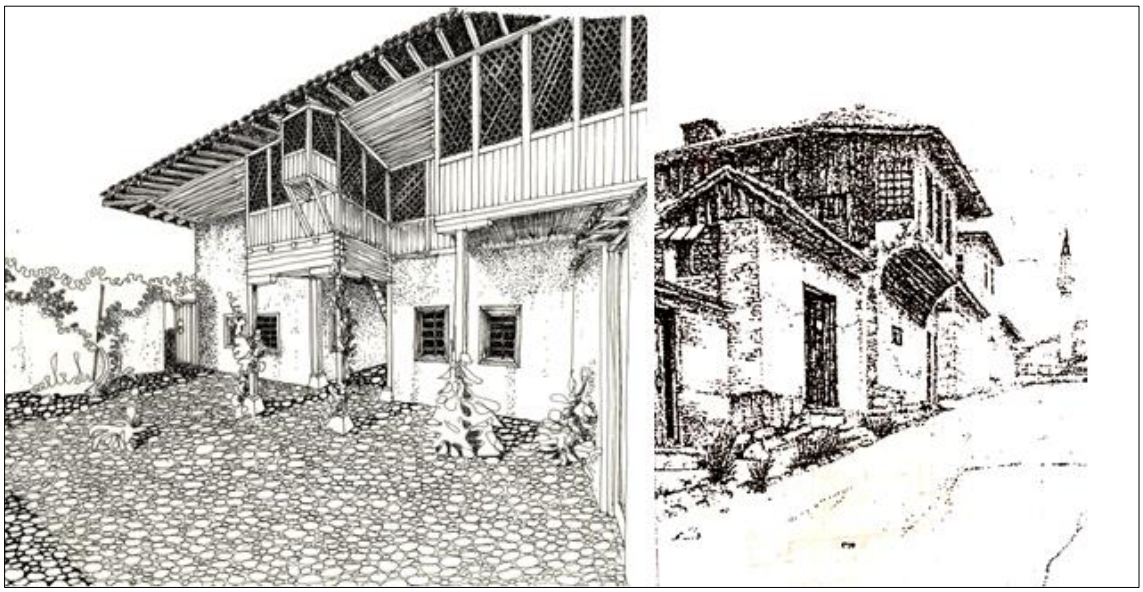
Svrzo's house is located in Glodjo's Street, in the district known as Curcica brijeg, near the Jahja Pashina (Curcica) mosque. In the great fire that hit Sarajevo (1697), Jahja Pasha's mosque burned down. The mosque was restored (1698) by Hadzi Salih-aga Curcic, after whom both the mosque and the mahal where it is located were named. Svrza's house is one of the most representative examples of an oriental-type town house in Sarajevo. The house was built in the 17th century by the famous Glođo family from Sarajevo [46]. Svrza's house (as a national monument) consists of four connected residential units, two courtyards with gardens and courtyard walls. Most of the equipment in Svrza's house is original. Svrza's house is considered one of the most important and best-preserved examples of an oriental-type town house in the area of the former Yugoslavia. Svrza's house has had the status of a national monument of culture [47] since 2004, and in accordance with this fact, protection measures established by the Act on the Implementation of Decisions of the Commission for the Protection of National Monuments apply to this complex (Figure 70).



***Source*:** Author (Drawing, 1983)

Fig 70: Svrzo's house in Glodjina Street in Sarajevo

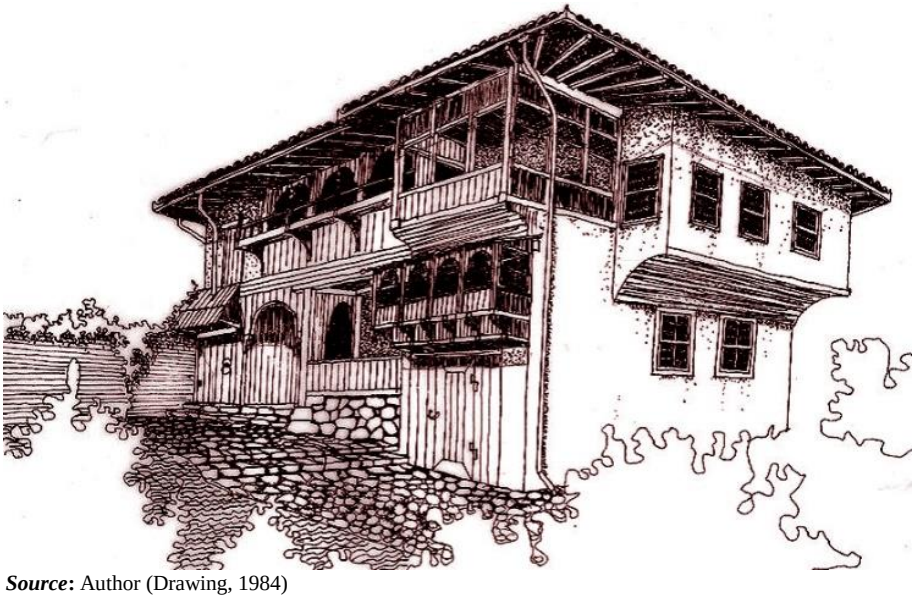
Alija Derzelez's house is located on the corner of Sagrdžija Street and Sunulah-Efendije Street in the municipality of Stari Grad Sarajevo, in the former Kadi Bali-Efendi Mahal, which was formed between 1578 and 1582 [48]. Djerzelez's house was built in the 17th century, and until the end of the 20th century it belonged to the Kazakh Cevanija family. It is the house of a rich family from Sarajevo, with a differentiated public area ('haremluk') and an intimate zone (selamluk). Both parts of the house were developed through the ground floor and first floor, with rooms typical for the developed type of town house. Today, Djerzelez's house has the status of a national monument [49] and is subject to protection measures established by the Law on the Implementation of Decisions of the Commission for the Protection of National Monuments (Figure 71).



***Source*:** Author (Drawing, 1984)

Fig 71: Alija Djerzelez's house in Sagrdzije Street (view from the courtyard) in Sarajevo

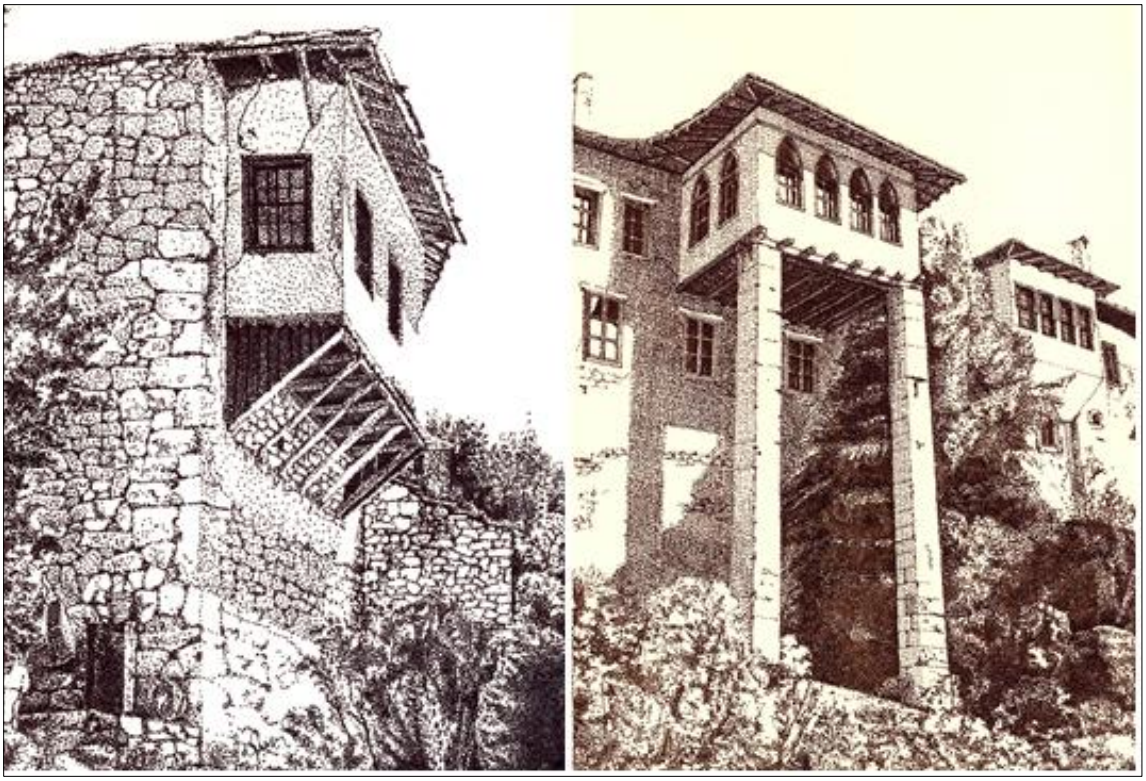
Sabura's house was built in the 18th century, and it belonged to the old Sabure family from Sarajevo [50], who made and traded Kazan goods. In addition to the house, this family had a garden, a mill, a garden in Medreset, a store in Tašlihan, a store with a store near Tsareva ćuprije, and shops, stores, land and buildings in the villages around Sarajevo. The current state of Sabura's house is the only preserved remnant (selamluka) of the former rich house that had a public (selamluka) and private part ('haremluk'). The harem complex of Sabura's house completely fell into disrepair after 1918. 'Selamluk' (which was built in 1750) has been preserved and renovated several times. After the building was directly hit by shells during the war (1992-1995), its restoration was completed only at the end of 2015. Sabura's house in Sarajevo has had the status of a national cultural monument [51] since 2006, and accordingly, the building is subject to prescribed protection measures (Figure 72).



***Source*:** Author (Drawing, 1984)

Fig 72: Sabura's family house in Kovaci (Sabura's Street) in Sarajevo

An oriental-type city house in Bosnia and Herzegovina has an inner courtyard ('avlija') that is enclosed from its physical surroundings by a more or less high wall that hides the interior of the house complex. In the most developed solutions, these houses have a separate public ('selamluk') and private zone ('haremluk'), from the ground floor (courtyard level) to the first floor. At the same time, the contact points (doors) connecting these zones were left. The extroversion of these houses can be read by the appearance of the landings at the floor level, which are cantilevered out into the space of the inner courtyard as well as the space of the street. Doksats are a reflection of the curiosity of the residents of the house and their need to 'see and know everything'. At the same time, they are protected from outside view by specially designed elements, mushebci (made of a network of wooden slats). These are the characteristics of an oriental-type town house in Bosnia and Herzegovina, and each town, in accordance with the climate, has its own specifics, which are partly the result of the specifics of the social environment [52, 53] (Figures 73,74,75).



***Source*:** Author (Drawings, 1983, 1985)

Fig 73: Introversion and extroversion in architecture. Left: Biscevica cosak house in Počitelj (view from the Neretva bank) in Mostar. Right: Biscevica cosak (view from the Neretva bank) in Mostar

***Source*:** Author (Drawings, 1983, 1985).

Fig 74: Introversion and extroversion in architecture. Left: Rizvanbegovic's house (Begovina complex) in Stolac. Right: Djulhanuma's house in Begovina near Stolac

***Source*:** Author (Drawing, 1984)

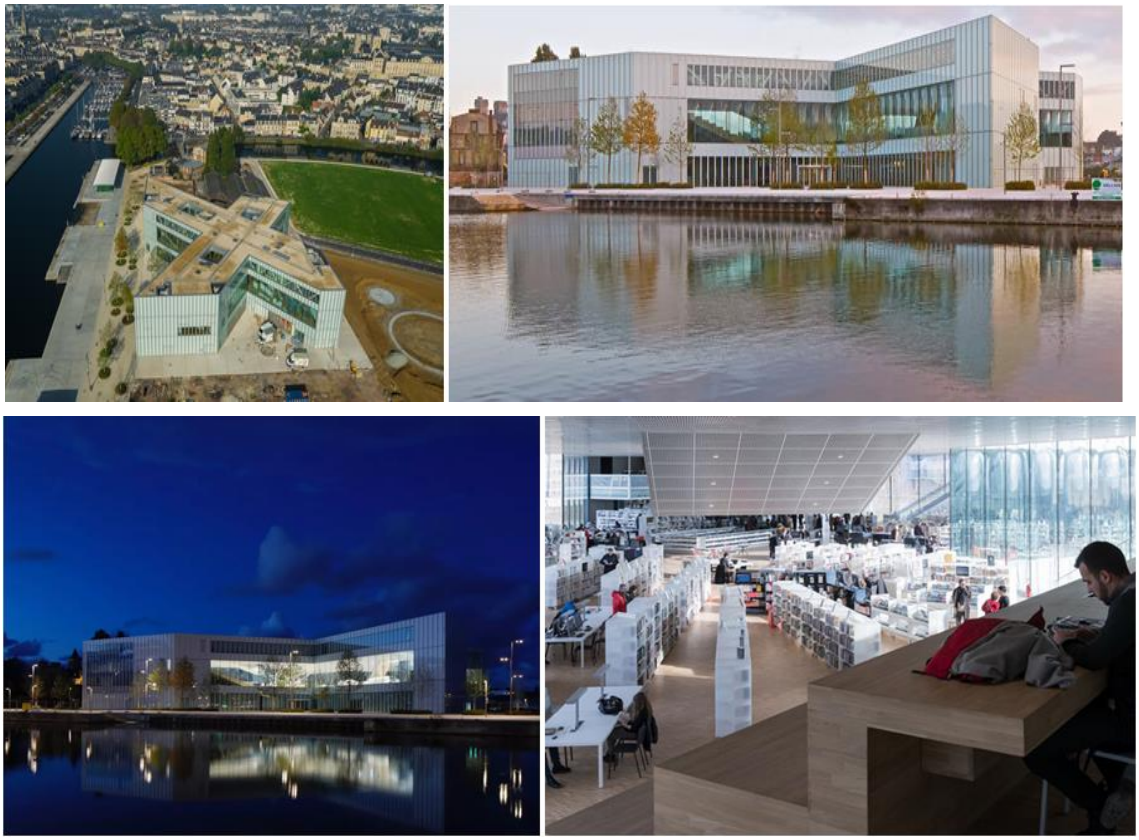
Fig 75: Introversion and extroversion in architecture - Sarajevo neighborhoods: left: motif from Hadzisabanovic's street in Sarajevo. Right: M. Sadovic's street in Sarajevo

A house in Kohoku, Tokyo, Japan, is located in a quiet residential area redeveloped on the Yokohama hill. With neighboring houses lined up very close to each other, this flag-shaped site meets the road at an edge no wider than 3 meters. Since the site slopes to the north, and the neighboring house to the south is a two-story building built on higher ground, it initially seemed almost impossible to let in light from the south, even though the client, a married couple who have lived in the area for a long time, wanted a small but sunny one-story house just as their child was growing up. The roof, which appears to be bare, lets in light through the glass on top of the tubular windows, which are positioned to avoid blinds and the gaze of neighbors. From the inside of the house, the shapes of these tubes clearly appear, and the lever of a kind of folded-up sheet roof gently separates the entire living space. Since the house is single-story, we were free to shape the roof. And taking advantage of this freedom, the architects sought to make the exterior and interior appear as two sides of the same object. Although the main living space is no larger than about 7.5 x 7.5 meters, the architects tried to provide appropriate distance between the scenes of food, clothing, and housing by moderately separating each space along the ceiling range and by maximizing the height of the ceiling itself. High arbours connect adjacent spaces, while low ones separate them into, for example, the living room and bedroom. A wooden mass is fixed in the area where the ceiling is highest. Inside the mass are the kitchen, bathroom, and toilet facilities, while at the top of the mass is the design office for their son. The upper part of the mass, which resembles a loft, and the other spaces are visually separated, but the presence of family members is felt when they are there [8] (Figure 76).

***Source*:** https://www.archdaily.com/6893/house-in-kohoku-torafu, Accessed: May 22, 2025.

Fig 76: House in Kohoku, Tokyo, Japan, 2008 (Architects: Torafu Architects)

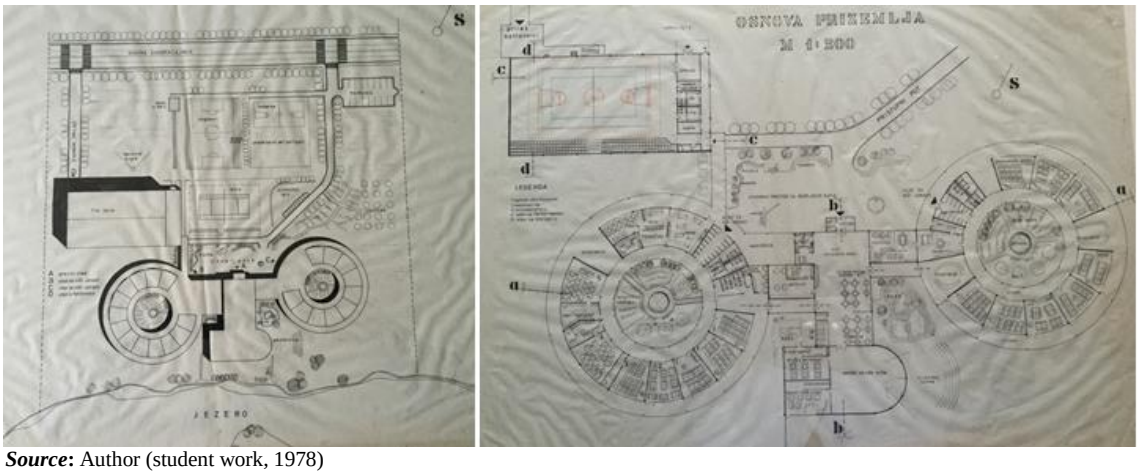
The Bibliothèque Alexis de Tocqueville is a public library for the metropolitan region of Caen la Mer in Normandy, France. The 12,000 m^2 multimedia library is located at the tip of a peninsula that stretches from the city of Caen to the English Channel. Its key location – between the historic city center and the developing Caen area – supports the city's ambition to make the library a new civic center. The library's glass facade visually connects the adjacent park, pedestrian walkway, and waterfront square to the interior and, together with two large entrances on the ground floor on either side of the building, allows the library to interact fluidly with its surroundings. On the upper floors, an urban gazebo offers unobstructed views in all four directions. Introverts prefer private offices to modern open office spaces. Introverts have chosen areas for focus and reflection over clichés of groupthink and overrated boardroom collaboration. At home, introverts seek solitude like a reading nook, rather than an open kitchen and adjacent great room with high ceilings. In the park, a bench under a tree rather than a large lawn. Introversion is related to the size of the architecture, not necessarily its size. A large room can be designed to be intimate. In fact, architecture that supports inward strivings addresses real human needs, helping us all breathe a little easier in this sometimes obsessively outward-facing world (Figure 77).



***Source*:** https://www.oma.com/projects/bibliotheque-alexis-de-tocqueville, Accessed: May 22, 2025.
***Source*:** https://www.archdaily.com/803673/library-of-caen-oma/587f8d9ae58ece8d93000034-library-of-caen-oma-photo **Accessed:** May 22, 2025.
***Source*:** https://www.anthonypoon.com/buildings-introverts-vs-extroverts/, Accessed: May 22, 2025.

Fig 77: Bibliotheque Alexis de Tocqueville, Caen, France, 2016 (Architects: OMA)

The elementary school project was done by the author-student in the third year of study (winter semester 1978), on the subject Architectural design II. The situational view clearly shows the differentiation of the school's basic contents: a sports playground in an open area, a gymnasium (also available to external users) and school premises with classrooms, separate for lower and upper grades, connected by common rooms (hall-space for multiple purposes). The circular base of the school space with classrooms is interesting. The circle, as a form, suggests the existence of a 'centre', or 'convergence', and the existence of a periphery as 'divergence'. With this double meaning of the circle, the author-student emphasized the introversion of the school's contents with 'convergence', which refers to the rapprochement and socializing of students during the breaks between hours spent in the classroom. The divergence of each classroom refers to the freedom of knowledge of each student, that is, the 'openness of vision' of each student without mutual interference [53] (Figure 78).



***Source*:** Author (student work, 1978)

Fig 78: Preliminary design of an elementary school (Ahmet Hadrovic - student work, 1978)

There is perhaps no better physical manifestation of the Citizen Office concept than Google's iconic Zurich headquarters. The office plans emerged from a detailed survey of its employees – its 'Zooglers' – to determine the

type of workspace they needed. The result was an office that truly functions as a self-contained city, catering to all aspects of an employee's life. The research found that the optimal work environment for Zooglers must be diverse and at the same time harmonious, while making it a fun and enjoyable place to work. The research also showed that while personal workspaces should be functional and more neutral, communal areas had to offer strong visual and aesthetically pleasing and fun qualities to encourage creativity, innovation and collaboration. While Zooglers favored dispersed communal spaces – you can even slide down fire escapes to quickly get from one floor's communal space to another – workers demanded a variety of spaces where functional and neutral workstations for the individual coexist with aesthetically pleasing and socially stimulating spaces for groups. In this diverse environment, collaboration may be the focus, but the needs of introverts are not forgotten (Figure 79).

***Source*:** https://www.archdaily.com/215703/caring-for-your-office-introvert, Accessed: May 22, 2025.

Fig 79: Google City: introverted spaces in an extroverted building

The ING House in Amsterdam is an extremely extroverted building in appearance. The highly sophisticated form and materialization of its envelope attract the viewer's attention. However, the interior design of this building provides a series of spaces of finely nuanced privacy and togetherness. The head office of the ING group is located on a long, narrow site next to the southern part of Amsterdam's A10 ring road. Bordered on one side by the South Axis business district and on the other by the green zone around the Nieuwe Meer (New Lake), the building maintains a low profile on the side facing the green, with a cantilevered section occupying the auditorium, rising from the city side. The office building stands on V-shaped columns, nine to twelve meters high, allowing highway users to see the green zone behind the building, while ensuring that no employee is condemned to a view of the highway embankment. Raising the building in this way also provided space on the ground floor for a spacious entrance area. The glazed entrance lobby is surrounded by green lawns. An access road for taxis, buses and board members' drivers runs underneath the building. The car park and bicycle garage are located below ground level. The auditorium and its lobby can be used by the entire ING group and have their own entrance with lifts. The building responds to its surroundings with an 'intelligent' façade design. The double-layer façade ensures a pleasant indoor climate for everyone, with the possibility of natural ventilation. On the south side, solar blinds hang in the façade cavity; a natural chimney effect extracts the sun's heat. The glazed cladding on the motorway side is closed, and the cavity is supplied with fresh air drawn in from the south. The spaces in the building are naturally air-conditioned by means of a metal climate ceiling. The hot and cold water required for this is provided by an underground thermal energy storage system; at both ends of the site, wells have been dug to the groundwater level at 150 and 200 metres below ground level. Thanks to these and other measures, the building has very favourable energy consumption. The atmosphere inside the building is richly varied, with an alternation of open and sheltered spaces. Atria, loggias, courtyard gardens and terraces arranged at different levels of the building create the impression of a single, continuous space with numerous views forward and backward. There are areas with panoramic views, such as the restaurant, a large conference hall and auditorium, as well as introverted work environments [8] (Figure 80).

***Source*:** https://www.archdaily.com/568127/ing-house-mvsa-architects, Accessed: May 22, 2025.

Fig 80: ING House, Amsterdam, 2002 (Architects: MVSA Architects)

5. Conclusion

There is a wide range of natural environments on Earth. There is also a wide range of different social environments. Man has inhabited almost the entire surface of the Earth. Some natural environments provide difficult conditions for human life, while others provide exceptional benefits. The social environment is created by people in mutual interaction, and as such is a historically changing category. This paper presents architecture as a unifier of the natural environment, the social environment and man in their synergy. Sometimes the result of this synergy can be read as introverted architecture, and sometimes as extroverted architecture. Also, some architectural realizations are ambivalent, that is, they are introverted and extroverted at the same time. The aim of this paper is to show the reasons why some architectural realizations are introverted and others are extroverted. In doing so, none of these two (or three) approaches can be favored, because they are equally natural.

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