

The Reconstruction of Aleppo's Historic Center

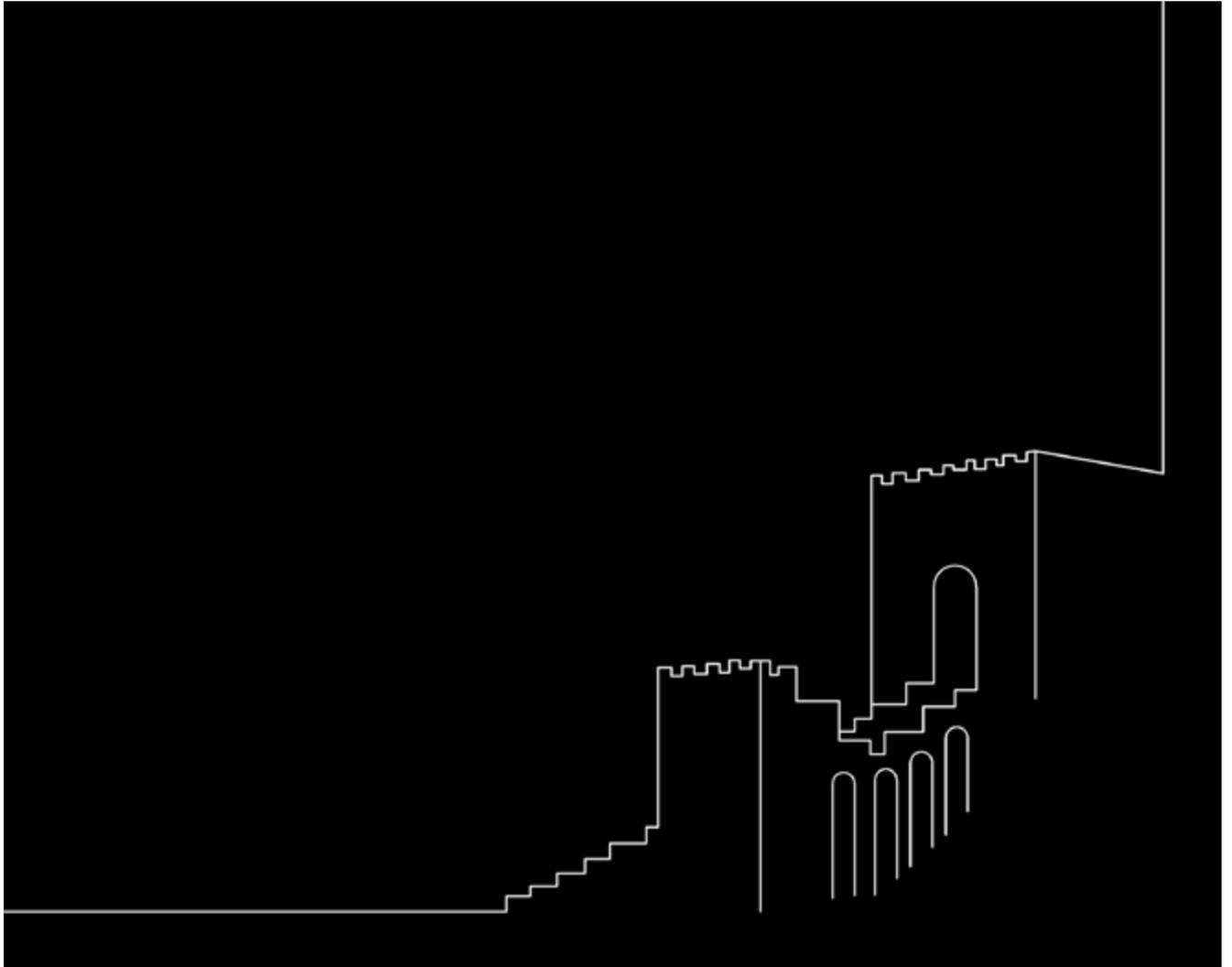
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POLITECNICO
MILANO 1863

SCUOLA DI ARCHITETTURA URBANISTICA
INGEGNERIA DELLE COSTRUZIONI

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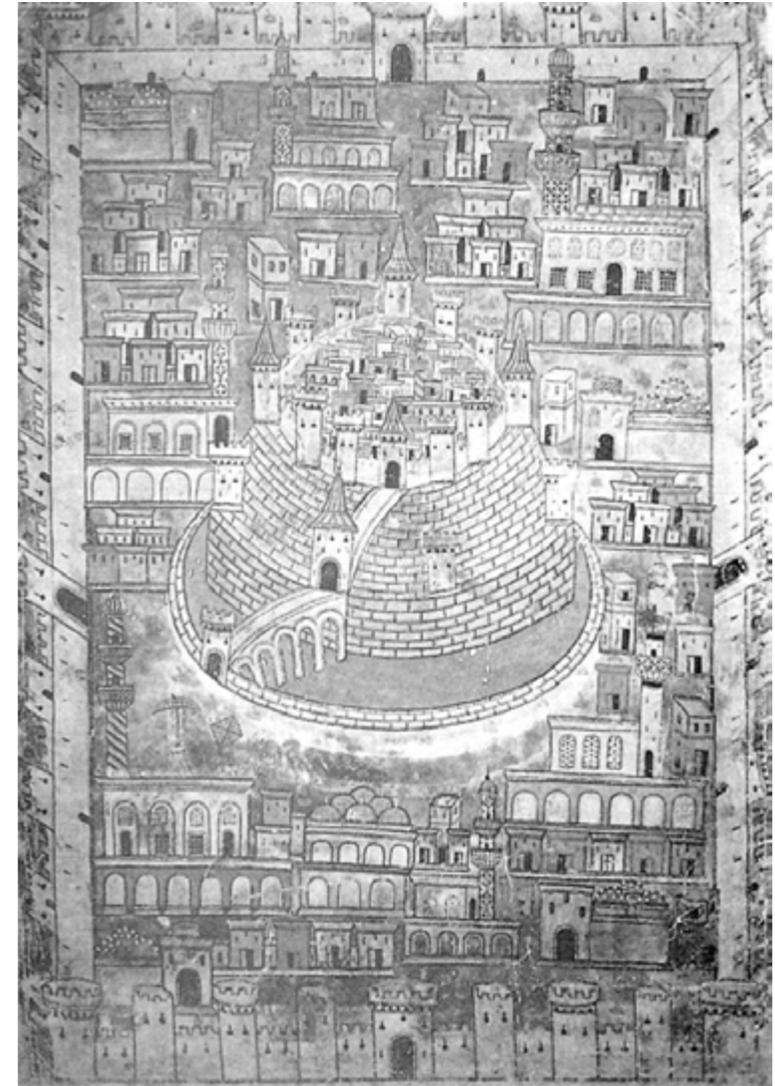
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The evolution process of the city

From ancient time to present day



The eternal city, Aleppo, is one of the few cities among the Syrian “first-born” that are still teeming with life. It has been perpetuated thanks to its immutable and tight traces, in which exchanges took place in response to needs and production: the buildings destroyed after a defeat or a looting, the men killed or sent into exile, have always replaced to maintain the efficiency of this place.¹

It is difficult to determine the precise age of first settlements in Aleppo, because ancient traces of the city have been obliterated by modern buildings, thus, limiting archaeological research. It has believed that the human history of Aleppo begins during in the third millennium BC. Since the antiquity it has always been famous being one of the few important centres of long-distance trade in the Old World. The city is situated in the heart of an area of intensive economic interaction between the east and the west. According to that, the city has been ruled by the most relevant governors of Mediterranean history, such as Hittites, Assyrians, Akkadians, Greeks, Romans, Umayyads, Ayyubids, Mamelukes, Ottomans, French and many others.

For this reason, Aleppo cannot properly be defined as Islamic city in its traditional origins and configuration; rather it represents the co-presence of the Classical-occidental with Islamic-oriental city. In fact, through the reconstruction of the alignments of the walls of the buildings, the reading of the urban fabric reveals that Aleppo in its original quadrilateral

configuration was entirely planned in the classical period. In the course of time, an Islamic scheme was superimposed on the classical one, and the city today is the result of this superimposition. Thus, different developing system, like the typical cul-de-sac, disrupted the ancient geometrical street pattern in order to allow access to the courtyard buildings, which were created through a division of and encroachment on the older classical-domus and courtyard houses lots.²

Built in Islamic times right along the main street of the old Hellenistic city plan, the bazaar of Aleppo and its shopping arcades expanded until the 1930s. The Aleppo souk covered 160.000 square meters, in which one can still find sail makers, copper beaters, soap makers and every kind of urban market good.

There was a central market in every big capital which provided a passage for international trading of goods, but apart from this, there were also local markets with traditional exchange customs which existed since the earliest times of Islam. The goods were laid on the ground and displayed upon the view of the customers. This informal pattern was extended in the fabric of city and villages, with sellers benefitting from the pedestrian flows in many important locations in the city: around the gate, close to the mosques and the main public buildings. All together, these buildings constituted the core of the main Islamic cities, like Aleppo, cha-

1 DAVID JEAN CLAUDE, *Alep* (2002), p. 9

2 NEGLIA ANNALINDA GIULIA, *Aleppo. Processi di formazione della città della città medievale islamica* (2009)

racterizing them by their economic power over the others.

The oldest “lives” of Aleppo have left almost nothing visible and the image of the original city is not clear except from the times of the Crusades, when, becoming a strategic point against the Frankish kingdoms of the Holy Land, it has been partly rebuilt by its prince Nur al-Din. Almost everything that has existed before has been rebuilt or restored. The remains, accumulated over five thousands of years, constitute the informal matter of the subsoil, and this past, since it cannot be read by archaeology, can only be measured by the meter of the considerable depth of the “stratigraphic layers”.³

3 DAVID JEAN CLAUDE, *Alep* (2002), p. 11



1.1 The prospect of the city of Aleppo in Ottoman times.

The Ancient Era

3500 b.C. – 312 b.C.

The most ancient archaeological finds concerning the origins of Aleppo date from the second half of the 3rd millennium BC, the Acadian period during which the natural environment was changed into an anthropic structure and the primitive settlements were founded, with the resulting modification of the natural structure of the land and the formation of a series of tell: artificial or semi-artificial high grounds, with a regular form, formed over the centuries as a consequence of the superimposition and stratification of fictile materials used to build the settlements. The tell correspond to the first anthropic “building”, even if still unplanned, of the Middle-Eastern pre-historic landscape and characterize the structure of the urban and extra-urban landscape of Aleppo. The main tell in Aleppo, the acropolis of the pre-Islamic city and, currently, the archaeological area of the first Ayyubid and then Mamluk citadel, is a jutting semi-artificial high ground, a remodelled calcareous outcrop, made higher by human work over time. The strong symbolic character of this truncated-conical outcrop, about fifty metres higher than the surrounding area, almost immediately determined its specialization, representing since prehistoric times an important place of worship on a regional scale. Later, when the secularization of the Syrian society induced to move the political and administrative centre to the place which once was the religious capital, it became the military and civil centre.⁴

4 NEGLIA ANNALINDA GIULIA, *Aleppo. Processi di formazione della città della città medievale*

Texts found in Ebla, refer to a shrine of the storm god located on the main tell yet in the 3rd millennium BC. Since these early times, the name of the storm god has been closely associated with Aleppo. Later known as Addu, he regained importance in the eighteenth-century BC when Aleppo enjoyed its first political and economic peak as the capital of the kingdom of Yamkhad, under king Jarim-Lim. At one time, this territory extended from northern Mesopotamia to the Mediterranean, but the large empire was short-lived, and Aleppo was soon dominated by the Mittani and, later, from the middle of the fourteenth century BC, the Hittites. As a result, the city lost in significance and became a centre of only regional importance. By the end of the second millennium BC, when immigrant Semitic Arameans and Indo-European Luwians shaped the history of Central and Northern Syria, Aleppo continued to be famous as the spiritual home of the storm god. The remains of an extraordinary monumental temple with rich decorative reliefs devoted to this deity have recently been excavated on the citadel hill by a joint Syrian-German team. This is one of the most important recent archaeological discoveries in Syria because for the first time it documents Aleppo’s history for the entire period between the early Syrian and the Aramean eras.⁵

islamica (2009)

5 GONNELLA JULIA, *Introduction to the Citadel of Aleppo* (pp. 103-138), in BIANCA STEFANO, *Syria - Medieval Citadels between East and West* (2007)



1.2 Image description.

Another tell, the Tell el-'Akabé (the slope) is within the walled Mamluk city, near Bab Antakia, aligned in the direction of the main tell along the east-west link road. It is about fifteen metres higher than the urban area and J. Sauvaget identified it with the place of the primitive settlement of Aleppo.

There is a great number of artificial hills in Syria, present-day archaeological sites, two hundred of them on the territory of Aleppo. They represent the traces of the first modification of the natural structure of the area, dating back to prehistoric times, and are a sort of "first natu-

re": together with the territorial routes and the natural elements, they represent the morphological structure from which one can begin a reading of the different phases in the formation of the urban fabric of the Syrian city.⁶

6 NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

Hellenistic-Roman Time

312 b.C. – 325 a.C.

The conquest by Alexander the Great and the subsequent rule of the Seleucids marked the beginning of Syria's Hellenistic age, blending Western with Eastern religious values. Seleucids Nicator revived Aleppo as a capital between 301 and 281 BC under the name of Beroia.

The territorial and urban structure of the Hellenistic refoundation of Beroia, was not dissimilar from that of the other Seleucid colonies in Syria, founded in a short lapse of time, following the rules of a scheme easy to be realized and replicated in sites which were chosen for their identical aptitude to be settled: in correspondence of fords, of important nodes along the main caravan routes, in order to control traffic and commerce.

The first anthropization of the city of Aleppo carried out in this phase consisted in the strigatio of the valley along the course of the river Quweyq. This operation satisfied two basic needs: it served as a drainage of the territory in the area surrounding the river, and it allowed to easily subdivide the urban territory to be settled into a series of regular-shaped blocks whose structure is still legible (although the thorough Ottoman renewing of the building fabric) in the urban fabric of the district of al-Medina and, in particular, in the central souk around the Great Mosque.

Starting from the studies carried out by J. Sauvaget¹, which provided fundamental intuitions

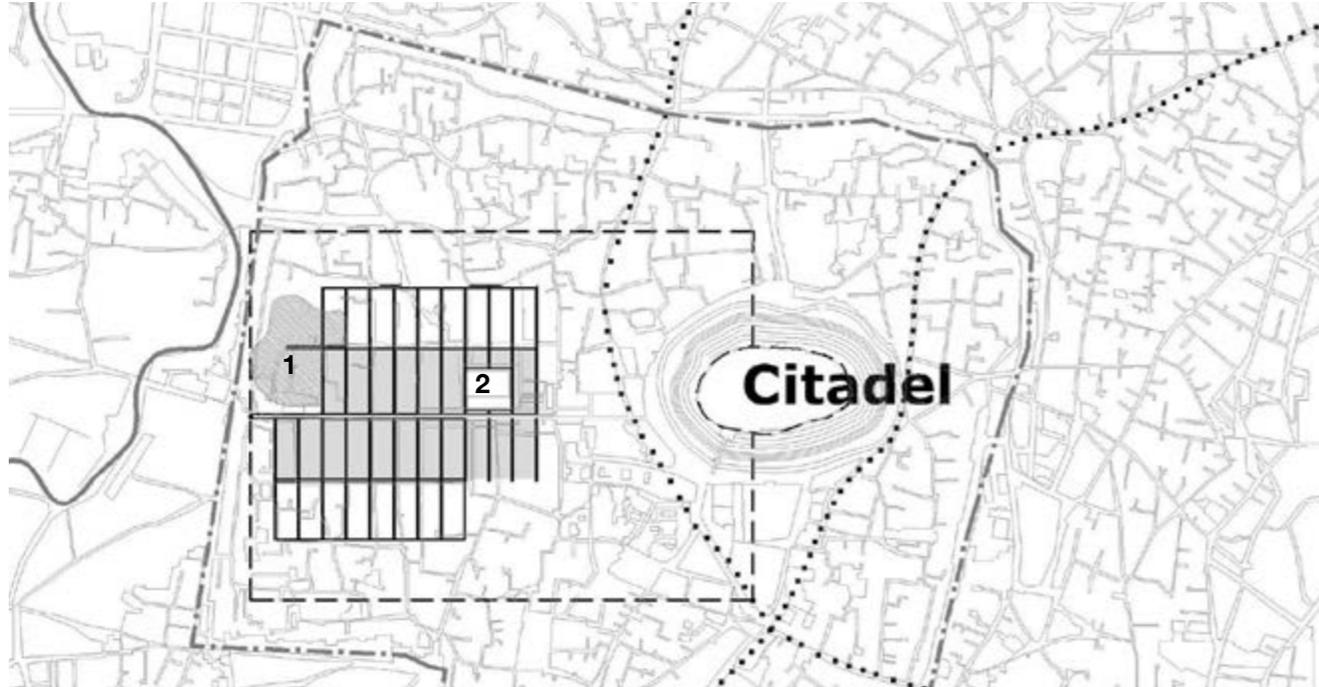
1 SAUVAGET JEAN, Alep. Essai sur le développement d'une grande ville syrienne, des origines au milieu du XIXème siècle (1941)

about the urban morphology of the Hellenistic Beroia, the structure of the building fabric of Aleppo has been the object of several scientific analysis and has resulted as being a mono-directional structure in which the *via recta* (the main axis of the settlement) was laid in an east-west direction and was delimited, on one side, by the main tell, and, on the other side, by the Gate of Antioch (Bab Antakia). During its course, the *via recta*, a wide colonnade road, was tangent to what has been identified by J. Sauvaget as the Tell el-'Akabé, the primitive settlement which, in this phase, was still located beside the Seleucid planned town.² On the citadel itself, there is evidence of the Hellenistic settlement, with some layers up to two metres high, and it is suspected that a larger building, possibly a temple³, was located north-east of the excavation site of the storm god temple; thanks to this clue the historians claim that the citadel hill was at that time the Acropolis of the city of Beroia.

64 BC Pompeius deposed the last Seleucid ruler and created the Roman province of Syria. So far, few traces of Roman times have been found on the citadel, which remained the religious reference of the city. In 363, emperor

2 NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

3 GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, Syria - Medieval Citadels between East and West (2007)



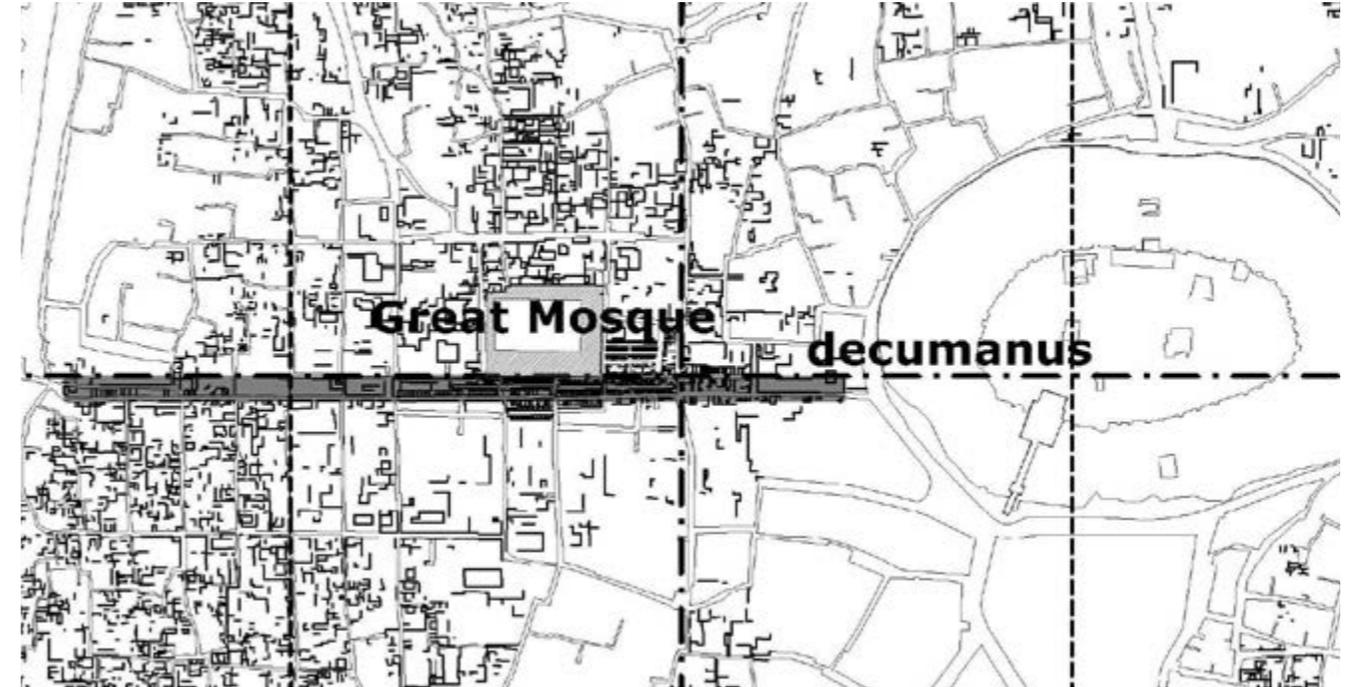
1.3 Scheme of the Hellenistic refoundation of Beroia: Tell el-'Akabé (1), Acropolis (2), Agorà (Citadel).

Julian came to Aleppo and from his notes is understandable that worship of the storm god was transferred to Zeus and survived into Late Antiquity.⁴

The information of a historical-archaeological nature about the urban structure of Aleppo in

4 GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, Syria - Medieval Citadels between East and West (2007)

Roman epoch is scarce or almost nonexistent: even if the city seems to have played the role of provincial centre of the region of Antioch, since the conquest of the region and the birth of the Syrian Province, the Roman presence in Aleppo is witnessed only by a few archaeological finds. The favourable geographical position of Aleppo with regard to traffic and commerce, makes it plausible to hypothesize that the town represented an important nodality for



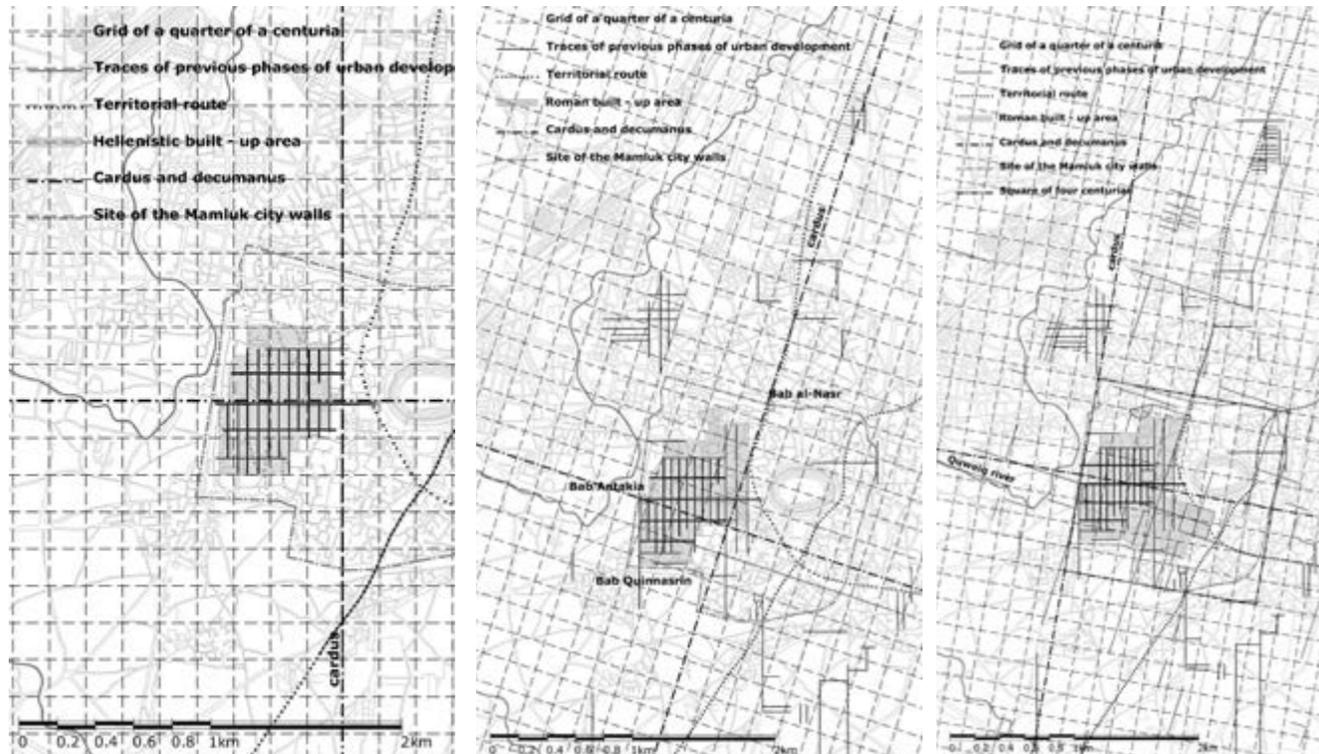
1.4 Scheme of the first Roman settlement.

traffic and commerce within the Roman-Syrian urban system and that the form, the orientation and the structure of its building fabric derived from its role on a territorial scale. Thus, the main tool to obtain some information on the extension and the structure of the urban fabric of Roman Beroia was represented by the reading of the orthogonal alignments of the building fabric.⁵

5 NEGLIA ANNALINDA GIULIA, Aleppo. Pro-

Roman urban settlements derived from territorial planning that includes different steps of urban evolution based on different rules and recognizable by different alignments: limitatio secundum coelum was the first step, followed by two similar steps, delineation secundum naturam I and II, with slightly different orientations.

cessi di formazione della città della città medievale islamica (2009)



1.5/6/7 Scheme of the Hellenistic refoundation of Beroia: Tell el-'Akabé (1), Acropolis (2), Agorà (3).

The first Roman town plan of Aleppo was a continuation of the Greek and probably consisted simply of an adaptation of the earlier urban layout to meet the needs of the new inhabitants. Traces of this plan are legible in the widening of one or perhaps two blocks to the east of the agora and in the presence of domus agglomerations laid out in north-south direction scattered around the periphery of

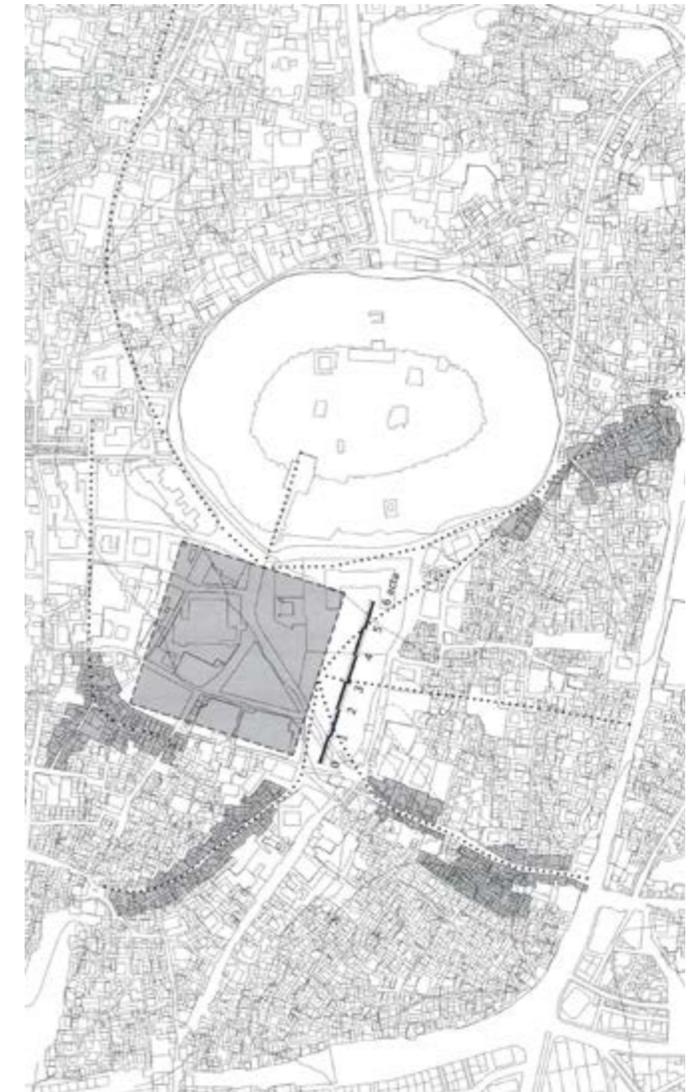
the Greek city.⁶ The first significant change in the urban fabric started on second roman planning phase that belongs to the roman territorial planning which clearly considers to the orographic conditions.

6 NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

Observing the portions of urban fabric still recognizable as the roman plan secundum naturam II, with the direction deviated by 18° westward, it's evident that these alignments are prevalently set around a wide empty space, apparently amorphous, located at the foot of the citadel. Two routes which seem to indicate the presence of two corners whose limits are non-existent today delimit and give it a form. Thence, we could think that in the second phase of the Roman anthropic organization of the territory of Aleppo, was a built-up area or, maybe, an enclosure: a "square enclosure" whose main axis horizontally coincided with the decumanus of the city (considering the 3rd roman configuration) and vertically with the axis of the entrance to the acropolis, parallel to the main cardus of the structuring.

For its form and position one could think that this enclosure could have been the castellum, or a small military stronghold, with the function of controlling an important route whose position and orientation are closely derived from the secundum naturam form the town assumed in this phase. Indeed, given the small dimension of this "square enclosure", it is plausible to hypothesize that it was a small fortress to strengthen the system of the acropolis in its weakest point and to control an important route for traffic and commerce.⁷

7 NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009), pp. 141-144



1.8 Individuation of the castellum

Byzantine Time

395 a.C. – 634 a.C.

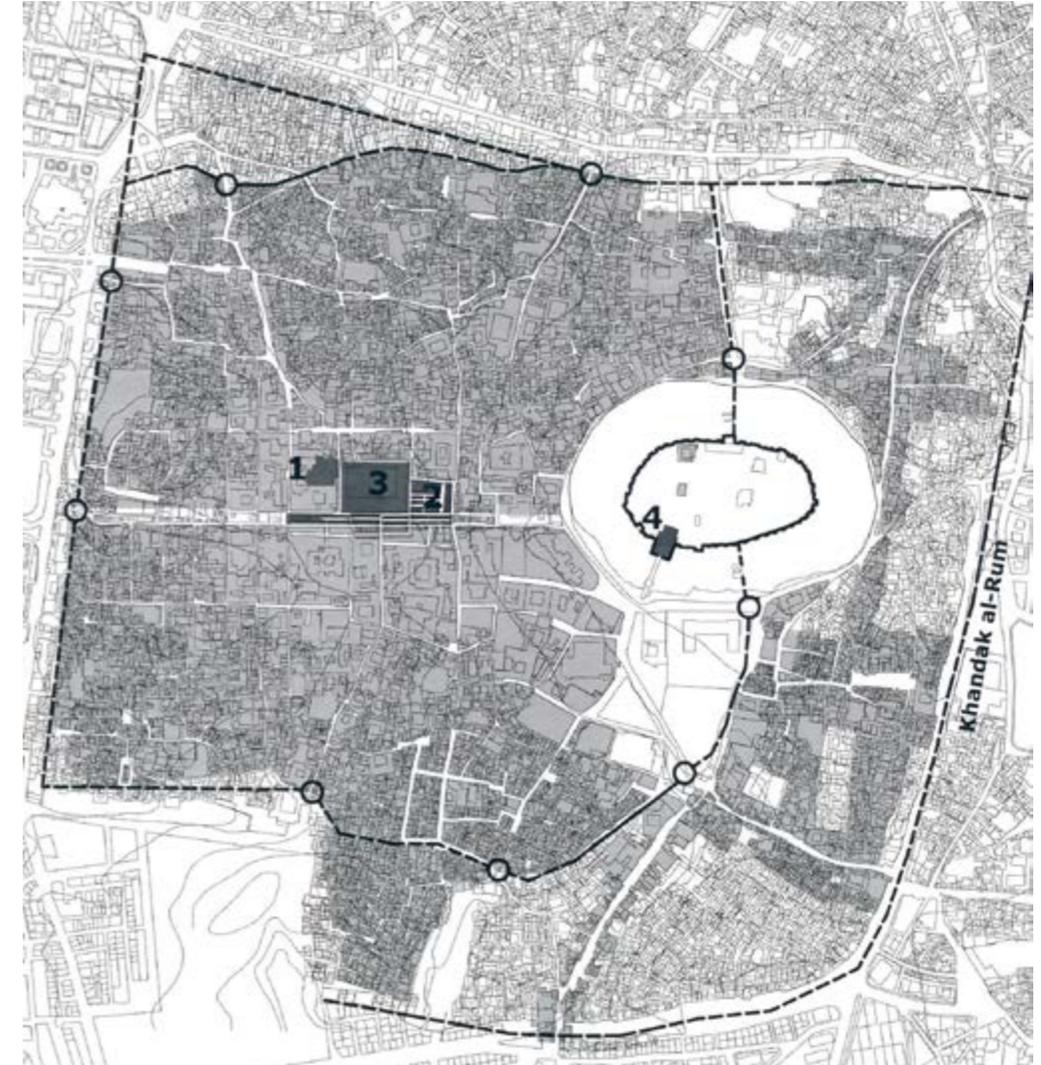
In 395, the Roman empire was divided, and Syria came under the control of Byzantium. The various plans developed so far represented the substratum of the urban and building structures of medieval Islamic Aleppo, whose development upon their traces and the remains of the public and defensive architectures of the Hellenistic-Roman town came about gradually, not because of the deterioration of the Hellenistic-Roman structures, but for a progressive change of the settling models at the basis of the construction of the anthropic space of the different cultural groups who settled in the Syrian town.

What we call the medievalization process, from the morphological point of view, of the urban fabrics of Aleppo is not a process of deterioration of the Roman planned structures due to the inability of the new conquerors to handle extended and regular plans but rather a process already begun in Byzantine epoch because of the probable building of a new wall circuit or the strengthening of the existing defensive system and of the resulting urban contraction and congestion of the building fabrics. This process, moreover, involved an already complex and apparently disordered urban structure due to the progressive superimposition of three different plans of Roman epoch on the Hellenistic one.

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The beginning of the process of contraction, congestion and medievalization of the urban fabric of Aleppo can be dated to the 6th century AD. This phase belongs to the reign of Justinian and is chronologically later than the earthquake of 526, which severely damaged the Syrian cities, and the Persian invasion of 540 led by Khosrau I, events that mark the first moment of arrest in the urban growth, which had been virtually uninterrupted in the long Roman phase.



1.9 The Byzantine City with the new wall.
Cathedral (1), Forum | Cemetery (2), Synagogue (3)



1.10 The Cathedral (2) with respect to the forum (1) and the axis parallel to the colonnaded via recta

We have little information of a historical nature about the city in this phase, but we do know that the work of urban and architectural renewal following the Persian invasion consisted of rebuilding the fortifications and reinforcing them with a system of double walls and trenches in the weakest areas to the south of the citadel, rebuilding the defensive system of the citadel by creating the moat, restoring the colonnaded street, and rebuilding the Byzantine cathedral (now the Halawiya madrasa).¹

¹ NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

Islamic Times

636 a.C. – 1516 a.C.

When the Arabs conquered Aleppo, they took over a city and a territory that already had a disordered form, reflecting the coexistence of the various superimposed Roman plans of different spontaneous growth phases of the restructuring of the Byzantine city. From a morphological reading of the building fabrics and from the comparison with the historical data, in fact, we inferred that a long time after the Muslim conquest and in particular for all the Umayyad age, the urban fabric of Aleppo was not substantially modified.

Nonetheless, from the moment of the occupation onwards, a slow process of transformation of the fabrics and of the building types began, clearly manifesting itself from the 10th century, as a consequence of an actual change in the social and civic order of the population of Aleppo and of the region.

One can identify at least three macro-phases in the typemorphological process that characterized the transition from the structure of the Roman Byzantine city to the medieval Islamic city and the first phase corresponds with the Arab conquest of Aleppo, during the Umayyad and Abbasid caliphates.

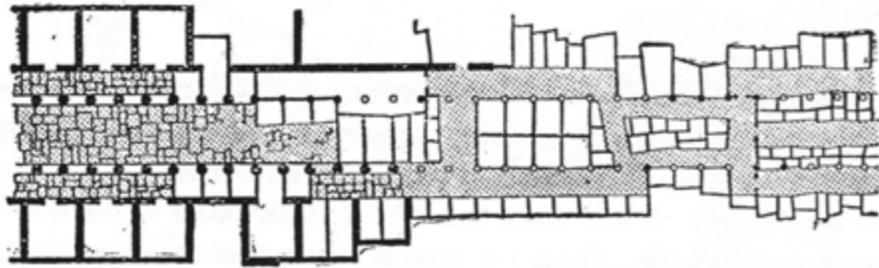
In 636-37, the city was captured by Muslim troops under the command of Khalid ibn al-Walid. In those days, Aleppo was only a provincial town, and the Umayyad and Abbasid rulers considered the city to be on the boundary of their territories. The occupation of Umayyad came about peacefully and left intact the existing civic structure, especially because the Umayyad had Roman Syrian cities as both the

centres of their caliphates and their cultural points of reference. This situation allowed the Byzantine urban landscape to remain nearly the same for a very long time, even if, a series of minor modifications were carried out at an architectural level.

The first Umayyad intervention at the architectural scale, which deeply modified the structure of the city, is represented by the edification of ash-Shuabiya, the very first mosque of Aleppo, built near the Bab Antakia and encroaching on the Roman monumental arch. The use of such a small structure as the main place of prayer of the city demonstrates that the Muslim troops in Aleppo were made up of just a few warriors, who did not need wide areas to pray. This operation brought about considerable morphological changes in the urban fabric at the centre of the city, altering the structure of the main street axis which was now blocked at both ends. On the Bab Antakia side, the colonnaded street was blocked by the presence of the new little mosque and at the opposite end by the presence of the citadel.¹

¹ NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

The beginning of the Souk



1.11 A schematic illustration of the process of transforming the colonnaded decumanus into the souk of medieval Islam.

From this moment onwards, the process of transformation of the colonnaded street into a souk began: the space of the colonnades and the central lane were initially encroached upon by commercial building units that transformed the main street axis of the city into two, three, and four parallel commercial roads. This process of congestion of the colonnades corresponds to a phenomenon common in other Hellenistic-Roman Syrian cities.

Since the commercial vocation of the colonnaded street was already affirmed in the imperial age, the congestion of its colonnades with shops corresponds to the formalization of a phenomenon that had already been widespread for centuries.

Actually, while the Hellenistic agora represented the centre of the political and economic life of the Syrian cities, the forum represented just the political centre, with the economic activi-

ties, the exchanges, commerce and negotiations being carried out under the porticos of the colonnaded street.²

In essence, the market was firstly shifted from the agora to one of the city gates, housed in a building rather like antecedents of a khan, with a central courtyard surrounded by stalls and shops attached to the surrounding wall fronted by a covered portico which ran all around the court. However, all the shops displaced from the ancient agora could not be accommodated in this new market and had to find other locations along the colonnaded street. Since the built of ash-Shuabiya, the decumanus ceased to be the major traffic route as the Romans conceived it, as long as the small mosque in

² NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

the triumphal archway blocked its egress.³

This new commercial activity was the reason for the construction of parallel rows of little stalls and huts, which eventually grew together and split the large avenue into a number of parallel smaller lanes. Later the informal arrangement was replaced by vaulted architectural structures which “monumentalized” the original pattern, retaining the additive structure of small cellular shops and the constituted pedestrian flows.

A reading of the structure of the urban fabric reveals that the shops of the souk conserve – in the rhythmic dimensions of the width of the commercial cells (2.66m for the main module) and the thickness of the walls (0,88m) – the dimensions of the original intercolumnar structure and the diameter of the columns of the colonnaded street, in spite of the large amount of reorganization that took place over time in this part of the city (especially in Mamluk and Ottoman epoch).

It is plain that the first area to be involved in this transformation process was the nearest to the Great Mosque, considering its original relevance and considering the subsequent construction of the main religious building.⁴

³ GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, Syria - Medieval Citadels between East and West (2007)

⁴ NEGLIA ANNALINDA GIULIA, Aleppo. Processi di formazione della città della città medievale islamica (2009)

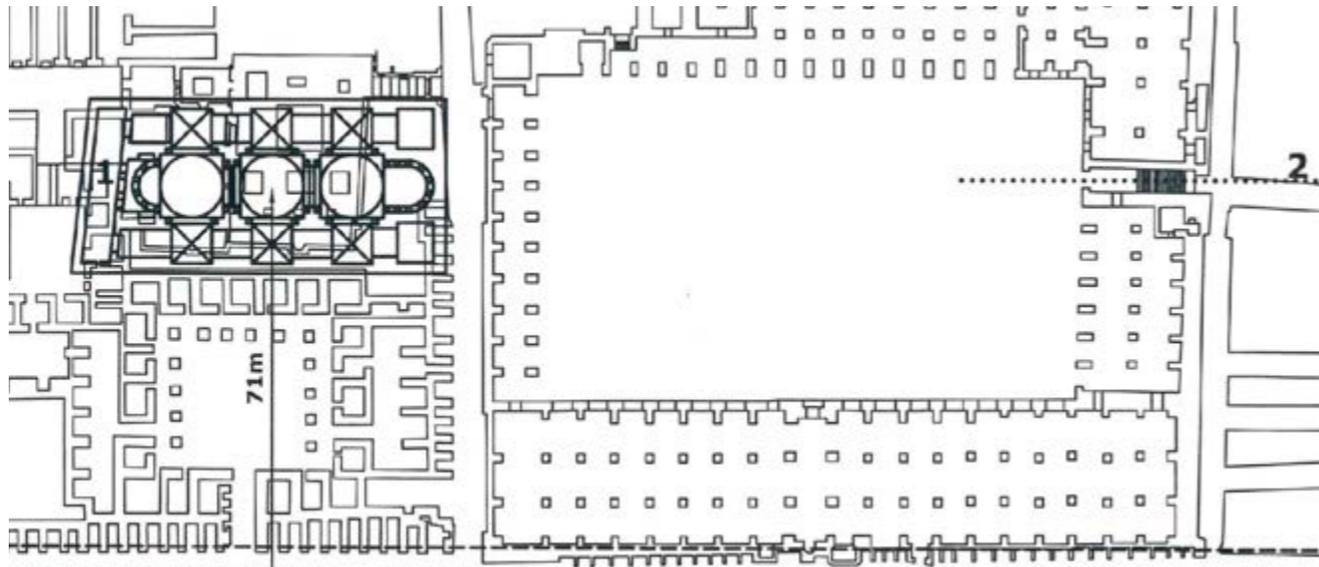
The Great Mosque

When the Arabs conquered Aleppo, they built a small mosque under the Roman monumental arch, announcing a new era for the city. After almost a century since the capture of Aleppo, the urban structure of the Byzantine town remained mostly unaltered and the need was felt to build the first congregational mosque of the city. Thus, in 715 when the Muslim presence in Aleppo increased, the Caliph Suleyman ibn Abdel Malek decided to build a mosque that would rival the work of his brother al-Walid in Damascus.⁵

The Great Mosque was built in the only open space available in the city centre: the site previously occupied by the Hellenistic agora, the Roman forum, and Byzantine cathedral cemetery; while the heart of the city centre was chosen for the site of the Friday Mosque. In this way, the former site of political activity and the sacred place of Christianity, was replaced by a building symbolizing the new political and religious power.

Like in Hama, Damascus and in many of the Syrian cities of pre-Islamic foundation, the construction of the Great Mosque on the site of the Hellenistic agora (later the site of the Roman forum) was facilitated by the fact that throughout the Middle East one assumes that the qibla faces south and so it was easy for

⁵ GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, Syria - Medieval Citadels between East and West (2007)



1.12 The Great Umayyad Mosque and the relationship with the old Byzantine cathedral (1); First entrance of the Mosque

Muslims to adapt pre-Islamic urban structures and specialized buildings for worship, while at the same time avoiding any significant reorganization of the urban fabric and surrounding buildings.

The type of Syrian Umayyad mosque, indeed, with one nave and two aisles parallel to the wall of the qibla, directly derived from the reuse of the Byzantine cathedrals, changing the prayer orientation from east to south.

From the reading of the structure of the mosque, and the urban fabric around it, it comes out indeed as, in this phase, the main entrance of the Great Mosque was one of the entrances

to the forum on the east side of the sahn⁶. In the Abbassid period, a new entrance was opened on the west side, while at the same time a planned route orthogonal to the axis of the souk was built. In the Zengid period the entrance to the al-Halawiyya Madrasa – built by adapting the remains of the Byzantine cathedral – was opened on this new route.⁷

⁶ The courtyard in religious Islamic architecture. Most traditional mosques have a large central sahn, which is surrounded by a riwaq or arcade on all sides.

⁷ NEGLIA ANNALINDA GIULIA, *Aleppo. Processi di formazione della città della città medievale islamica* (2009)

During the Abbassid caliphate, the process of spontaneous development of the urban fabric, typical of the medieval city, was accentuated. In a phase of urban growth in which commerce began to become the most important aspect of the city, transferring the functions of the agora to the souk and the specialized buildings around it seems to correspond to the initial phase in a process of monumentalization of the agora that would eventually turn the souk into grand architecture on an urban level in the Ottoman period.

In this phase, the first khans for housing merchants and their wares were built next to the souk. The archetype of the khan is to be found in the agora, the function and structure of which is reproduced on a smaller scale in this new building type. In addition, with the specialization of three sides of the Great Mosque as part of the souk (Suq Al Halawiya, Suq al-Hibal, Suq Sirmayatiya, Suq New Istanbul), commercial activity became closely linked to public and religious activity.⁸

Aleppo gained more prominence during Hamdanid rule (750-1258) and it is during this period that the city's landmark, the Citadel, was converted and gained the role of a fortress. Built on the site of the former Hellenistic-Roman acropolis this military fortress was commissioned by the Hamdanid prince Sayf al-Dawla after he established Aleppo as the capital of northern Syria in 944. Thanks to him

⁸ NEGLIA ANNALINDA GIULIA, *Aleppo. Processi di formazione della città della città medievale islamica* (2009)

Aleppo begin to enjoy a political and cultural renaissance. This short period of prosperity was followed by troubled years, bringing several invasions by Byzantine troops and regular raids by Bedouins. The city was temporarily under the control of the Egyptian Fatimids and later under the rule of two Arab nomad dynasties, the Mirdasids and the Uqailids.

The twelfth and the thirteenth centuries were marked by battles with the Crusaders. Aleppo was on their route to Jerusalem and they attacked the city shortly after they had conquered Antioch (1100 and 1103). Under the leadership of the Zangid prince, Imad al-Din Zangi (ruled 1127-1146), and his son, Nur al-Din (ruled 1146-1173), the Muslims succeeded in containing the expansion of the Crusaders. Both father and son were feared military commanders and strong-willed politicians, devoted to the ideals of the jihad (holy war) and the unification of all Muslims.⁹

For the first time in centuries, Nur al-Din succeeded in unifying Damascus and Aleppo under one rule, and he made great efforts to develop both cities. New public institutions in the city were established, including a courthouse, the central hospital and numerous hammams. The Great Mosque was restored and expanded by the Zengid sultan Nur al-Din in 1159 after a great fire that had destroyed the earlier Umayyad structure.

⁹ GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, *Syria - Medieval Citadels between East and West* (2007)



1.13 The Zengid | Ayyubid city:
Madrasa al-Halawiyya (1), the first souk (2), the Great Mosque (3) and the citadel gateway (4).

In this period, Aleppo became a main stop for merchants traveling on the Silk Road trade route that extended from the Far East to Europe. This strategic location influenced the development of Aleppo's mercantile architecture – its bazaars or souks, and its merchant quarters, khans – in the city centre, creating a commercial hub. In addition, since the end of twelfth century, the Turks imported in Aleppo their own styles and building methods. According to the that time, the new designs were “glamourized” with an innovative amount of niches, complex, multi-lobed arcades and geometrical interlacing. The iwan which is a vaulted hall opening onto a courtyard or open space, is a structure that originated in the East and first made its appearance in the Zangid era belongs to the Seljuk's as well.

In Aleppo, Nur al-Din fortified the city walls building towers and fortified gates, most of which remain today, and the citadel, he created a new brick-walled entrance leading up to the hill and he rebuilt the two mosques founded by the Mirdasids.

But the citadel's importance peaked during the period of Ayyubid rule, in particular under prince sultan Malik al-Zahir Ghazi (1186-1216) who was appointed ruler of Aleppo by his father Salah al-Din (Saladin). Sultan Ghazi fortified Aleppo into a strategically important stronghold against the Crusaders in the north and built his palace right in the centre of the citadel.

Initially, sultan Ghazi's plan envisioned a total rebuilding of the city wall, including new gates.

Subsequently he changed his plans and decided to extend the city wall towards the south and the east in such a way that the eastern and southern suburbs were also enclosed. The citadel no longer formed part of the fortification but was now located in the centre of the fortification itself. Ghazi strengthened the walls, smoothed the surface of the outcrop and, most importantly, had sections of the glacis near the entrance area covered with stone slabs. The depth of the moat was increased, filled with water and spanned by a tall bridge-cum-viaduct which today still serves as the entrance into the citadel. Under his rule the citadel was not only a formidable garrison, but also the luxurious residence of the Ayyubid court, consisting of several palaces, baths and gardens.

In this period, they commissioned the construction of a multitude of mosques, madrasas (Koran schools), and mashhads (shrines), reasserting Aleppo as a city of religion and piety. The most prominent examples of the Ayyubid contributions to the historic fabric of the city included al-Firdous Madrasa, al-Sultaniya Madrasa, al-Zaheriya Madrasa, Mashad al-Dikka, and Mashhad al-Hussayn. Like much of the built environment in Aleppo, these monuments were constructed in limestone due to the abundance of quarries near the city. This rich resource created a unique city of stone that differed greatly in architectural form from its closest rival, Damascus. The Aleppine masons cut and carved the stone into geometric patterns which covered the buildings' surfa-

ces with ornate cornices, muqarnas and ma-shrabiya.

In 13th century the Mongols defeated the Ayyubid and stormed the citadel, but right after that, the Mamluks conquered Aleppo. From 1260 the Mamluks ruled over Syria from their capital in Cairo. In the early years, they showed little interest in rebuilding Aleppo. Sultan Qala'un (1279-1290) first began restoration work on the citadel, which was completed under his son, sultan Ashraf al-Khalil (1290-1293).

After the terrible onslaught by Timur (Tamerlan), the Mamluks immediately regained and rebuilt Aleppo. They restored all fortifications and extended the city walls towards the east. In particular, governor Jakam invested a great deal of energy into the rebuilding of the citadel. To the north and the south, two advance defence towers were added at the foot of the citadel, and in 1406-1407, the governor had the impressive throne hall built on top of the Ayyubid gateway.

In those years, the city underwent major restoration and reconstruction efforts re-emerging as a spiritual centre. Aleppo's economy simultaneously grew stronger, to become a leading Mediterranean exporter of various goods, including pistachios, silk, cotton and spices. Khans, such as Khan al-Sabun, Khan Court Bek (Khan Cordoba) and Khan Khayr Bek, were built at this time to accommodate visiting merchants and their merchandise. The khan served as a trading base and hostel for merchants and usually provided storage spa-

ce for commercial goods, stables, and a mosque. In addition, a new Mamluk palace was constructed at the Citadel, rising higher than the two entrance towers.¹⁰

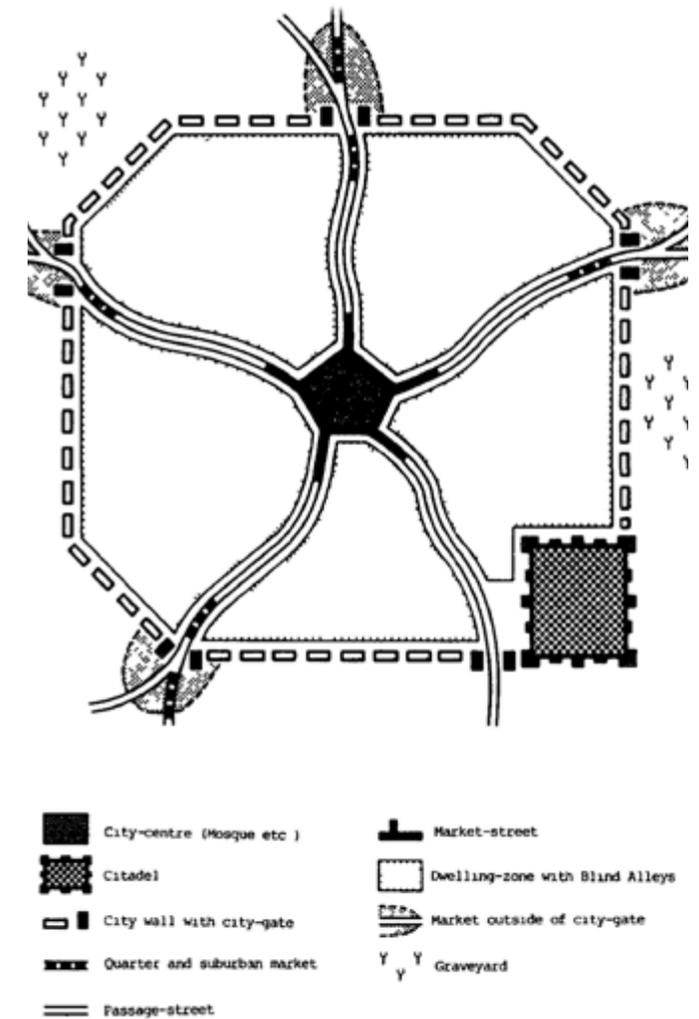
10 GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, Syria - Medieval Citadels between East and West (2007)

Urban model of the Oriental City

The new age of Aleppine urban development has begun with the Islamic conversion of its inhabitant. According to E. Wirth¹¹ Islamic cities have a different model of city formation with respect to the Hellenistic-Roman one (Fig. 10). The city centre should be the public (built) space such as mosque, palace and so on. From that centre the "main streets" run to the several city gates. This radial structure of "main streets" was used not only for religious and political reasons, but also for economic and cultural activities. In the outskirts and direct areas inside of the city wall different kind of markets flourished. Around this main structure, innumerable blind alleys led to the dwelling areas.

The specific composition of the public (open) space and the private (closed) space should be the main feature of the Islamic urban topography. H. Gaube and E. Wirth have found such a radial street system and a contiguous relation between public spaces and private spaces also in Aleppo. The core of the city is the Great Mosque and the neighbouring Souk. Several "main streets" run to the city gates, from west to east, Bab Antakiyah, Bab al-Jinan, Bab al-Faraj, Bab an-Naṣr, Bab al-Hadid, Bab al-Nairab, Bab al-Maqam and Bab Qinnasrīn. The contiguous relation between public and private spaces has been conserved through the Islamic age till now.

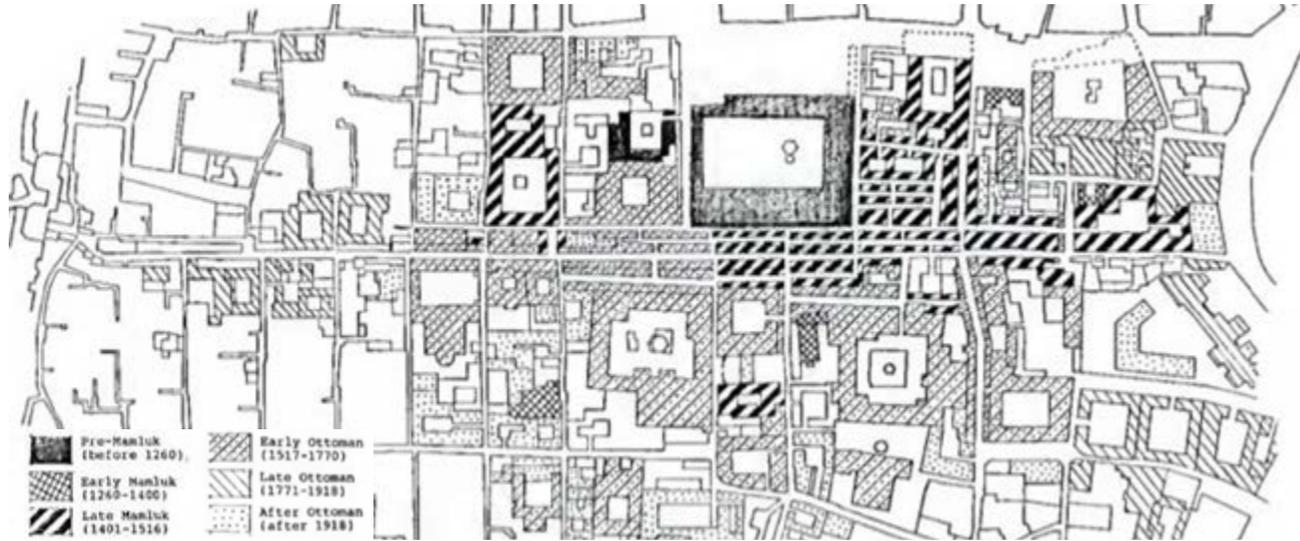
11 GAUBE HEINZ, WIRTH EUGEN, Aleppo (1984)



1.14 Scheme of the Islamic traditional urban layout.

Ottoman Times

1516 a.C. – 1918 a.C.



1.15 Historical changes in souk area

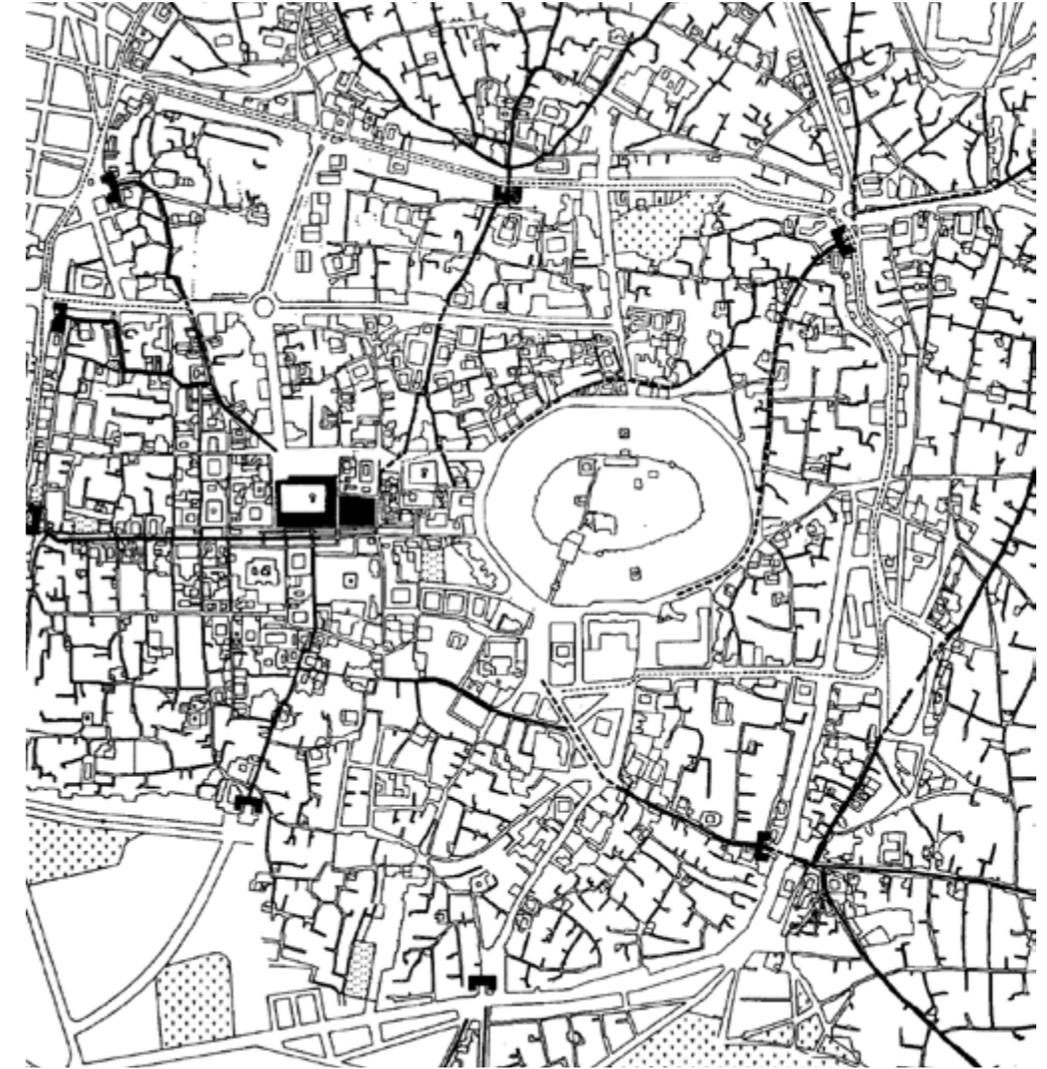
Despite systematic fortification, developed by the Ayyubid, of the main outposts on the northern frontier of the Mamluk empire, the Ottoman conquest could not be prevented. In 1516, sultan al-Ghuri died in the decisive battle of Marj Dabiq, not far from Aleppo.

The Aleppines welcomed the conquest by the Ottomans, since the city would benefit from the extensive trading network of the large empire that extended from the Mediterranean to the Euphrates. The city was now located in the heart of the empire and threats from external enemies subsided. Thanks to its strategic geographic location on the trade route between Anatolia and the east, Aleppo rose to high prominence, at one point being second only to

Constantinople in the empire. By the middle of the 16th century, Aleppo had displaced Damascus as the principal market for goods coming to the Mediterranean region from the east.

As a result of this economic development, many European states had opened consulates in Aleppo during the 16th and the 17th centuries, such as the consulate of the Republic of Venice in 1548, the consulate of France in 1562, the consulate of England in 1583 and the consulate of the Netherlands in 1613.

Because of this the importance of the citadel diminished, increasing a lot the importance of the souk area. Indeed, it's during the Ottoman time that the souk reached its definitive layout. Many khans were built, and the souk was dra-



1.16 Main streets and the gates of the Ottoman city.

stically enlarged.¹ Also, the “pencil minarets” were added by the Ottomans to the splendid squared-plan mosques that were around or near the citadel.

The souk of Aleppo became the economic core of the city, in which commercial and public life was ruling the market streets. The main buildings such as the Great Mosque, the madrasas, the khans, the hammams, all scattered throughout the passageways of the souk. Apart from the “main” souks in the city, there were often smaller markets in the residential districts providing the residents with their needs.

The city was expanded, both inside, by increasing the density, and outside the walls, as a consequence of the flourish economy and the demographic growing. Ottoman monuments were raised rapidly all over the country, especially concerning commercial buildings (like khans), on the main trade routes which helped Aleppo to become a centre of manufacturing of raw materials and a market for both European and Oriental products.

On that time, a huge building reconstruction transformed the whole city: streets turned out wider and some new district were created. The creativity of Ottoman architecture spread all over the city, to the mosques, madrasas, hospitals, hammams, markets, houses, khans, gates and walls.

1 GONNELLA JULIA, Introduction to the Citadel of Aleppo (pp. 103-138), in BIANCA STEFANO, Syria - Medieval Citadels between East and West (2007)

Thus, in 17th and 18th century, numerous formal and informal measures were developed, including new neighbourhood building systems, bringing about changes in development strategies and importing new typologies. New avenues have been opened and western-like urban plans start appearing in Aleppo.

However, the prosperity Aleppo experienced in the 16th and 17th century started to fade as silk production in Iran went into decline with the fall of the Safavid dynasty in 1722. By mid-century, caravans were no longer bringing silk from Iran to Aleppo, and local Syrian production was insufficient for Europe’s demand. European merchants left Aleppo and the city went into an economic decline that was not reversed until the mid-19th century when locally produced cotton and tobacco became the principal commodities of interest to the Europeans.

In addition, internal religious issues caused the schism of the Catholics of Aleppo, marking their separation with the Orthodox. A popular riot against Ottoman power happened in 1819, followed by the city siege, for four months, by the army.

The economy of Aleppo was badly hit by the opening of the Suez Canal in 1869. This, in addition to political and religious instability that followed the implementation of significant reforms in 1841, contributed to Aleppo’s decline and the rise of Damascus as a serious economic and political competitor with Aleppo.

The city remained Ottoman until the empire’s collapse, but was occasionally hit by few ca-

tastrophes, like the huge earthquake in 1822, the attacks of cholera from 1823 and the plague, that in 1827 killed around 20-25 percent of the population.² In 1850 a Muslim mob attacked Christian neighbourhoods, tens of Christians were killed, and several churches looted. Though this event has been portrayed as driven by pure sectarian principles, Bruce Masters argues that such analysis of this period of violence is too shallow and neglects the tensions that existed among the population due to the commercial favour afforded to certain Christian minorities by the Tanzimat Reforms during this time which played a large role in creating antagonism between previously cooperative groups of Muslim and Christians in the eastern quarters of the city.³

The consequences of this slow revolution were deep changes in the Aleppine’s society. An evolution in all domains was ongoing and, under the influence of the West, the country was adopting western policies and it was turning into an industrialized country, with factories and modern transport systems, such as roads, railways and steam navigation. The weight of the West is increasingly felt in the Middle East. From the architectural point of view, up to the mid-nineteenth century, Aleppo fully maintained its traditional features. This is mainly due to the fact that growth stopped with the de-

2 FAROQHI SURAIYA, İNALCIK HALIL, QUATAERT DONALD, An economic and social history of the Ottoman Empire, (1997), p.788.

3 MASTERS BRUCE, The 1850 Events in Aleppo, (1990), pp. 3-4.

cline of commercial activities and the drop of the population. After the Egyptian occupation (1831 - 1840), a new centralized administration - the Serail - was created, and in 1868 the city acquired a western style Municipality. The increase of western influence was also marked by the foundation of the new Azizie district, the first to be entirely separated from the old city, with wide streets and a chessboard plan. This district was inhabited by the Christian middle class.

In 1882, the Ismaeliyeh and Jamiliya districts sprang up to the west of the city, separated from the old quarters by the gardens and orchards of the river Quweyq. Here the Muslim and the Jewish middle classes predominated. The construction of a railway station in 1905 accelerated the urbanization. Other new residential areas were built in 1887 and in 1907.

After 1882 the first elements of a modern centre (i.e. warehouses, horse stables, blacksmiths and mechanical workshops, hotels, restaurants, coffee-houses, cabarets, theatres, offices, etc.) appeared to the west of Bab al Faraj, and quickly expanded. The establishment of this new centre at the north-western corner of the walled city was mainly due to the proximity of the new middle-class districts, to the presence of available land near the Medina, and to the excellent connections with the souk through Bab al Faraj. In fact, the old city had previously expanded with its suburbs towards the north and the east, and therefore the area to the west, between the walls and the orchards of the Quweyq, offered the only

opportunity for adding a centre near to the Medina.

After 1890 and mainly during and after the First World War, the wealthy looked for possibilities of investment. Large-scale town planning projects were carried out, completing the new centre and improving the connections with the souk and the residential quarters. One of the major projects, started in 1893, was the transformation of the moat of the northern wall into a 14-metre-wide street bordered by residential blocks, hotels, warehouses and shops.⁴

Anyway, those years are characterized by many interreligious riots and massacres in Lebanon and Damascus. French and British troops intervened, affecting the administrative system as well, imposing several reforms. During the World War I, Arab nationalists refuse to follow the war commitment of the Ottomans with Germany. The armistice of Moudros marks the end of the Ottoman Empire.⁵

4 BIANCA STEFANO, DAVID JEAN-CLAUDE, ET AL., *The Conservation of the Old City of Aleppo*, UNESCO Report, Paris 1980.

5 DAVID JEAN CLAUDE, *Alep* (2002), p. 317

Current Times

1918 a.C. – 2011 a.C.

Syria's independence is proclaimed in 1919: Emir Faisal is the king of Syria and the capital is Damascus. It is immediately persecuted by the French. The Conference of San Remo, Treaty of Sèvres, establishing French and British mandates, according to the secret agreements of Sykes-Picot of 1916: Syria under the French mandate.

The Treaty of Sèvres made most of the Province of Aleppo part of the newly established nation of Syria. However, Kemal Atatürk annexed those to Turkey in his War of Independence. The Arab residents in the province supported the Turks in this war against the French. The outcome was disastrous for Aleppo, because as per the Treaty of Lausanne, most of the Province of Aleppo was made part of Turkey with the exceptions of Aleppo and Alexandretta (the last was annexed to Turkey in 1939 depriving Aleppo of its main port). Thus, the city was cut from its northern satellites and from the Anatolia beyond on which Aleppo depended heavily in commerce. Moreover, the Sykes-Picot division of the Near East separated north Syria from most of Mesopotamia, which also harmed the economy of the city.

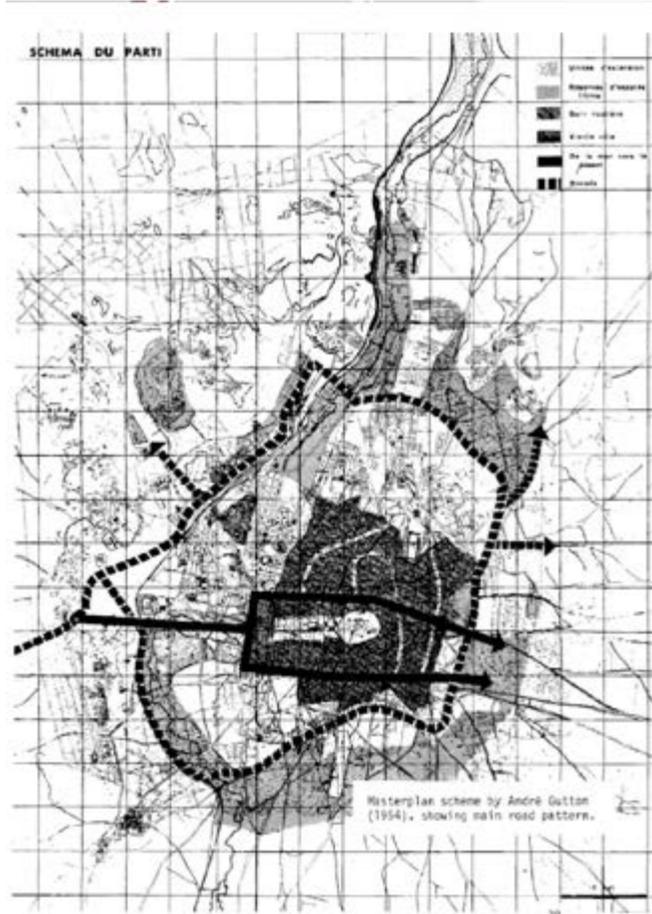
By the onset of the French mandate in Syria, Aleppo had a population of approximately 125,000. Western-style municipal administrative arrangements emerged, including a city planning department, the Service d'Urbanisme. The first modern master plans to control the expansion and growth of the city were created during this period by French architects, one by R. Danger and another by Michel Eco-

chard. These plans, dated to the 1930s, recalled modernist and urban renewal planning principles, as expressed in Le Corbusier's "Charte d'Athènes", that valued the grid as a pattern for organizing urban blocks. The grid prototype was to be used for new developments and for reorganizing the organic pattern of the Old City fabric.¹

However, most of these planning proposals were not realized until twenty years later because of the resistance of the inhabitants of the old town, and the corresponding difficulties in acquiring or expropriating the large amount of real estate needed to execute the plans. In addition, vehicular traffic was still not important enough to justify the ambitious programme of road construction. In 1954, a new masterplan was worked out by the French architect André Gutton. It had a much more serious impact on the development of Aleppo. Although the author claimed that all changes were to protect the historical character of the townscape, it seems clear today that the major elements of his scheme were in flagrant contradiction to conservation objectives. In fact, the basic concern of the masterplan was to stress Aleppo's position as a major node of regional, national and international road connections, with special regard to freight transport.²

1 BUSQUETS JOAN (edited by), *Aleppo. Rehabilitation of the old City* (2006), p. 47.

2 BIANCA STEFANO, DAVID JEAN-CLAUDE, ET AL., *The Conservation of the Old City of Aleppo*, UNESCO Report, Paris 1980.



1.17 Gutton's infrastructure plan.

As a result of this plan, approximately one-tenth of the Old City's intramural urban fabric was supplanted by transportation infrastructure, including a road through the neighbourhood that connected the Umayyad Mosque to the Citadel. The plan gave some thought to separation of housing and traffic in new residential areas, but no consideration to future impact on the old town.

In fact, it suggested that the old fabric should be crossed by two large road channels in the west-east direction, concentrating truck and bus terminals, as well as large modern stores, in front of Bab Antakia (Fig. 1.16). Inside the walls, the Medina was to be separated from the surrounding urban fabric by an interior ring road in order to give direct vehicular access to the khans and souks. The isolation of the historic commercial centre corresponded to the idea of "dégager pour mettre en valeur", this clearance being justified by the idea of "exposing" a monument to spectators.

This concept, however, contradicts the character of Islamic architecture, which is not primarily intended to be seen from the outside but to be perceived from within (as emphasized by the courtyard structure of most traditional buildings). Fortunately enough, only part of the Gutton Masterplan was executed. However, its basic approach and its spirit have been reflected in all the projects and proposals of the Municipality in the 25 years before the Civil War.³

³ BIANCA STEFANO, DAVID JEAN-CLAUDE, ET AL., *The Conservation of the Old City of Aleppo*,

After the French mandate period, Syria began to modernize at a rapid rate. Many middle- and upper-class Old City residents left their traditional homes to live in residential suburbs that could provide more modern amenities. Houses were abandoned, rented out to lower-income families, or subdivided into smaller units and sold out. In turn, some homes became occupied by migrants from the city's rural hinterland.

Other houses became used for commercial activity such as industrial workshops and warehouses. Many lost their courtyards when more than one family would come to occupy a house and partition the central courtyard to create more indoor living space. Furthermore some property owners added an extra story to their homes. As a result many private properties in the Old City suffered from bad maintenance. This contributed to accelerating the decay of the Old City courtyard houses, which were not constructed to withstand such demands. In addition, former khans were being transformed into spaces for storage, many becoming hosts for small-scale industrial and commercial activities, coupled with greater traffic congestion, led to an increase in noise and water pollution for the residents of these neighbourhoods.

By 1974, efforts to modernize Syria had become a national agenda under the rule of President Hafez al-Asad. This program was reflected in urban planning policies across the country, most specifically in Damascus,

UNESCO Report, Paris 1980.

the capital, and in Aleppo, the commercial centre of northern Syria. In the latest, a new master plan was conceived by a French-Japanese architect, Gyoji Banshoya, in collaboration with the central Government. This plan called for additional transportation axes to intersect the Old City. It aimed to connect the main highways to the west and east of Aleppo, through the Old City, which would destroy additional historic fabric. Again, parts of this plan were implemented, further exacerbating the conditions discussed above.

This ongoing destruction of the Old City fabric set a precedent for continued demolition throughout the 1970s, accelerating the physical and socioeconomic division between members of the Old City community and the rest of the population. In less than thirty years, this division had marginalized the historic centre from the rest of the city. However, while the majority of the population and the local government rejected the value of the Old City as a residential destination, it still sustained a population of well over 150,000 people (out of an approximate 1.5 million total population).

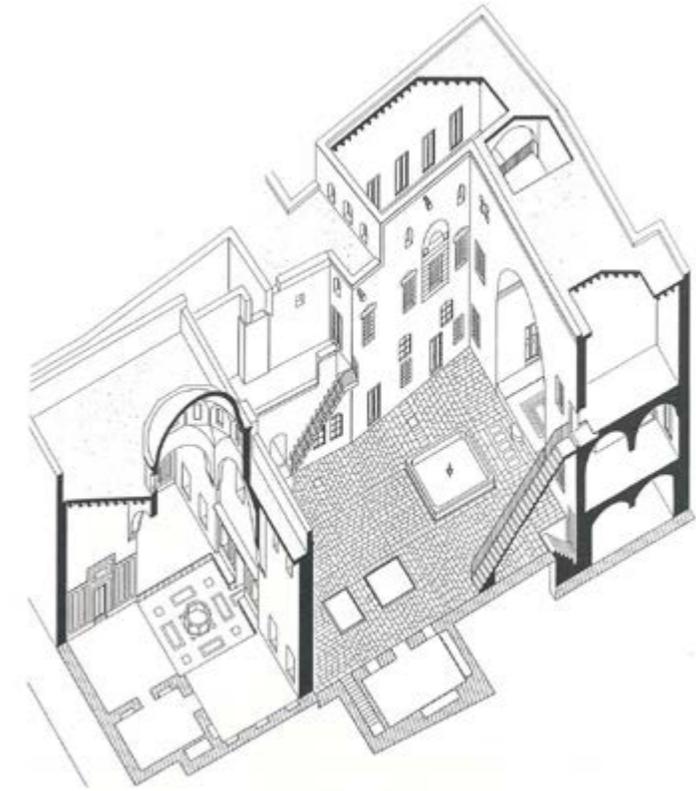
By 1977, the governorate of the city had plans to construct a fourteen-story tower adjacent to the governor's office, directly across from the entrance to the Citadel. At this time, a group of architects, geographers, engineers, and historians lobbied the municipality to prevent construction of the high-rise structure. This team of conservationists was successful in convincing the Syrian Ministry of Culture to list the intramural and parts of the extramural Old City

as a registered national monument, theoretically preventing further demolition of any part of the site by the master plan. At this time, a group of consultants from UNESCO was invited to Aleppo to offer its professional opinion about urban planning policies for the Old City. The report, published in 1980, included an assessment of the current situation and outlined alternative planning opportunities to those detailed in the master plan. Significantly, the report reasserted the historic significance of the area and by 1986, the Old City of Aleppo had become Inscribed on the World Heritage List. Right before the war, much of the Old City was in a state of disrepair, suffering from the development pressures of overcrowding, disintegrating infrastructure, structurally unstable buildings, and poor sanitary and health conditions. The major challenge was to improve the socioeconomic conditions of residents and users of the Old City while preserving the historic integrity of the urban fabric. Together with the German Technical Cooperation (GTZ) the local municipality initiated a comprehensive rehabilitation project to achieve this goal. In addition the Aga Khan Trust for Culture's Historic cities support programme had initiated a major restoration program for the citadel.⁴

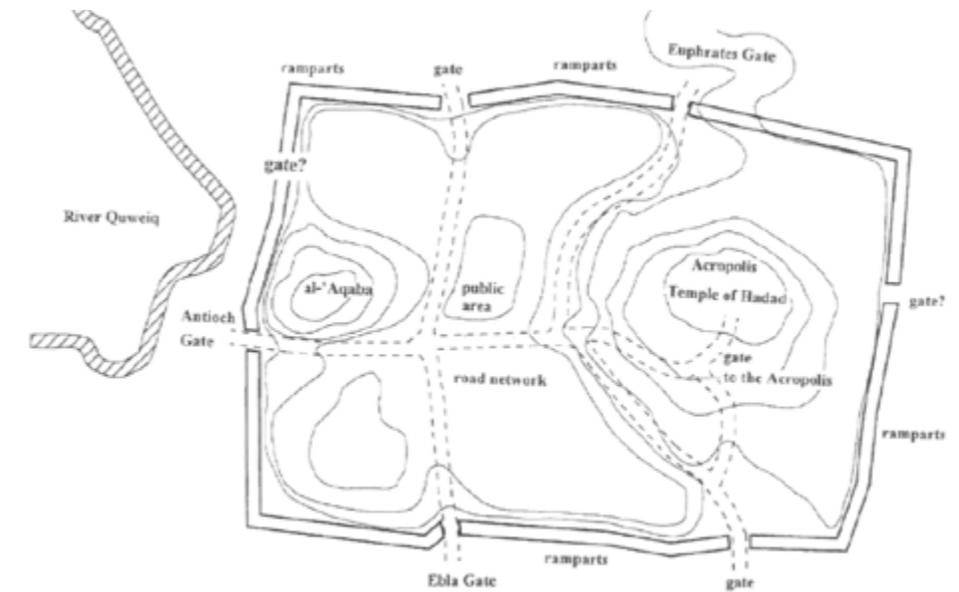
⁴ BUSQUETS JOAN (edited by), Aleppo. Rehabilitation of the old City (2006), pp. 47-50.

Typological Analysis of the Old City

Main features and typological aspects of the urban fabric



Accessibility and urban patterns



2.1 Plan of the Town of Aleppo during the Middle Bronze Age (ca. 2000-1600 b.C)

The historical gates

Six gates of old Syrian Aleppo can be identified today (Fig. 2.1): the Antioch Gate in the middle of the western side, the Northwest Gate opening onto the road through the Nahar Quweiq Valley the fertile region that provided agricultural produce to the town, the North Gate, giving access to the Jabbul Plain, the Northeast Gate, opening onto the highway to the Euphrates, the Southeast Gate which leads to the Lake of Matkh, the shallow marsh depression where the Quweiq River ends, and the Ebla Gate, which opens in the southern

side towards the main road to the south.¹ Some of these gates show a distinct continuity through time; the Antioch Gate (the main city gate on the western side) in the Ayyubid reconstruction exhibits a plan close to that of its forerunner of pre-classical times. The medieval streets approaching the gate have an oblique orientation, which recalls the double

¹ NIGRO, L. "Yamkhad/Aleppo: Investigating the Second Millennium B.C. Capital of Northern Syria through Islamic, Byzantine and Classical Towns." In *Environmental Design: Journal of the Islamic Environmental Design Research Centre* 1-2 (1997.1999) pp. 50-51

The cul-de sac system

On a neighborhood level, the cul-de-sac system (blind alleys that give access to residential buildings) is derived from a process of transformation of the ancient courtyard house lots and their subdivision into more than one housing unit following the resurgence of urban growth. This resulted in the need for more housing space, and the consequent increase in building density. This process is similar to the medievalization that invested the residential fabric based on aggregates of courtyard houses in Italy and led to the complete introversion of the building fabric around the structure of the cul-de-sac, centre of the social life of the clan.⁴

The morphology of the Cul – de Sac can be very complex: Straight sections can suddenly take a right-angled or even a U-turn; covered parts alternate with open-air ones, bordered by houses of differing heights, fostering different feelings of physical compression: occasionally it functions as the neighborhood core, often housing a common service like a fountain or a well: at other junctures houses bridge the Cul-de-Sac, turning it into a tunnel.

The cul-de-sac clearly appears as the result of a process of adjustment to an existing scheme. It is the most reasonable solution to serve houses in the interior of deep urban blocks. The large urban blocks typical of an early sett-

lement shorten the length of the routes, if the access is organized with a cul-de-sac. It is not by accident that the subdivision of the large urban blocks determined by the progressive stratification of the fabric occurs in the Arab city at the expense of the cul-de-sac with an increment in the number of routes.⁵

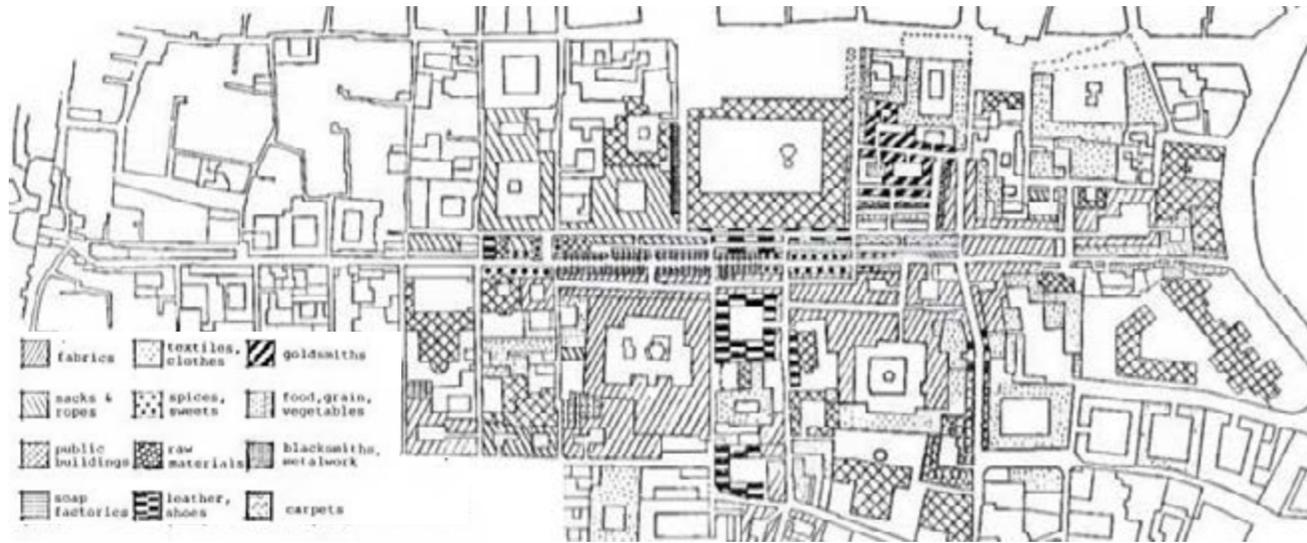
4 SCHRYVER J. Study in the Archaeology of the Medieval Mediterranean -Chapter Five- The Forma Urbis of Aleppo (2010) p. 141

5 PETRUCCIOLI A, After Amnesia -- The Building Tissue (2007) pp.170-173



2.3 Map of the Cul- de-sac system in Aleppo.

The Souk



2.4 Selling of Goods placement in shops, Aleppo

The Bazaar and the principals of its urban configuration

The typical formal structure of many later souks was being formed by so many new shops taking over the busiest parts of public street network. Most shops could have space just for the owner and the stock, and would be able to open from the alleyway. This resulted into the streets becoming a social place.

Souqs are the product of an accumulation between the transformation of an organized space in an architectural presentation, resulted from the social interaction among merchants, sellers, customers, visitors and local people, who give definition to the movements

in a linear way. They reflect memories, behaviors, stories, vital relations and commercial practices. These places are lived, maintained and arranged as a “daily space” and not preserved or restored as a “historical monument”. Textiles, spices and other everyday items were being sold. The workshops and the storage rooms (which can be closed) were also situated in the narrow streets. The vaults were used as a protection for the weather, and as an improvement of the protection from fire.

Regarding the space organization, it was possible either to form linear series of individual shops along both sides of pedestrian roads or composing the shops in an angular way around an enclosed courtyard which can be

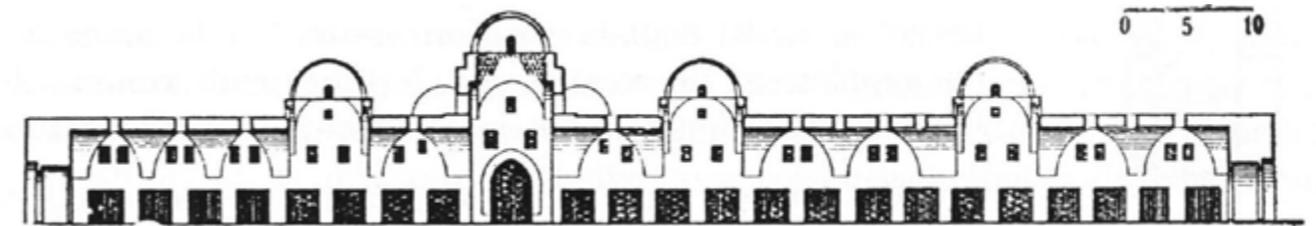
accessed through a single entrance and an exit.

The first possibility (the linear arrangement) produced the structures of the souk as long shopping alleys, which were later divided into smaller sections. Each souk section was secured by gates which would close in the nights, so that the accessibility is interrupted. In the residential clusters it was the same. The individual souk sections could also be duplicated and facing back to back so that more complex market units could be formed inside the city.

The second possibility (the angular composition), instead of creating linear sequences, created spatial “pockets” which resulted in forming the typical structure of the caravanserai (used for storage, production and accommodation rather than retail). Because the caravanserai had enclosed walls and a central courtyard, they could either stand independently or be integrated into the urban fabric. They were located right behind the lines of the

souk and because they had mainly one entry, the entrance was between the shops, thus breaking the continuity of the shops in specific points.¹

¹ STEFANO BIANCA, Urban form in the arab world (2000) pp. 123-129



2.5 Selling of Goods placement in shops, Aleppo

The main features of the souk

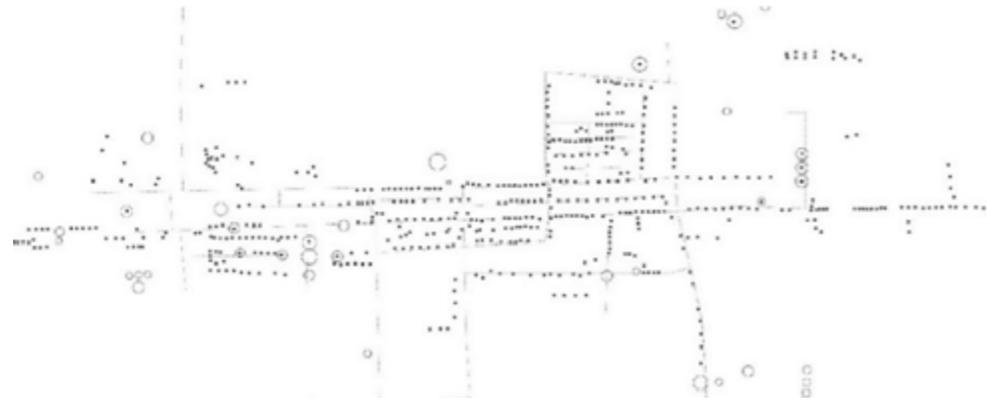
The Souk is a wholly public space, however the perception from outside standing is limited to few meters visually. The system is that the client whenever he comes to visit a boutique, he or she must be able to look at the products and compare with other stores at the same time.

The height of each souq is in proportion to its width; usually the height is twice the width. The primary souqs (lanes), which normally connect the major gates to the souq area, are usually wider, longer, and higher than the secondary lanes. The minor lanes, in most cases, do not progress exactly perpendicularly, but rather deviate to the right or left and disappear around blind bends. The idea behind that, it seems, is to reduce conflict of traffic to a minimum.

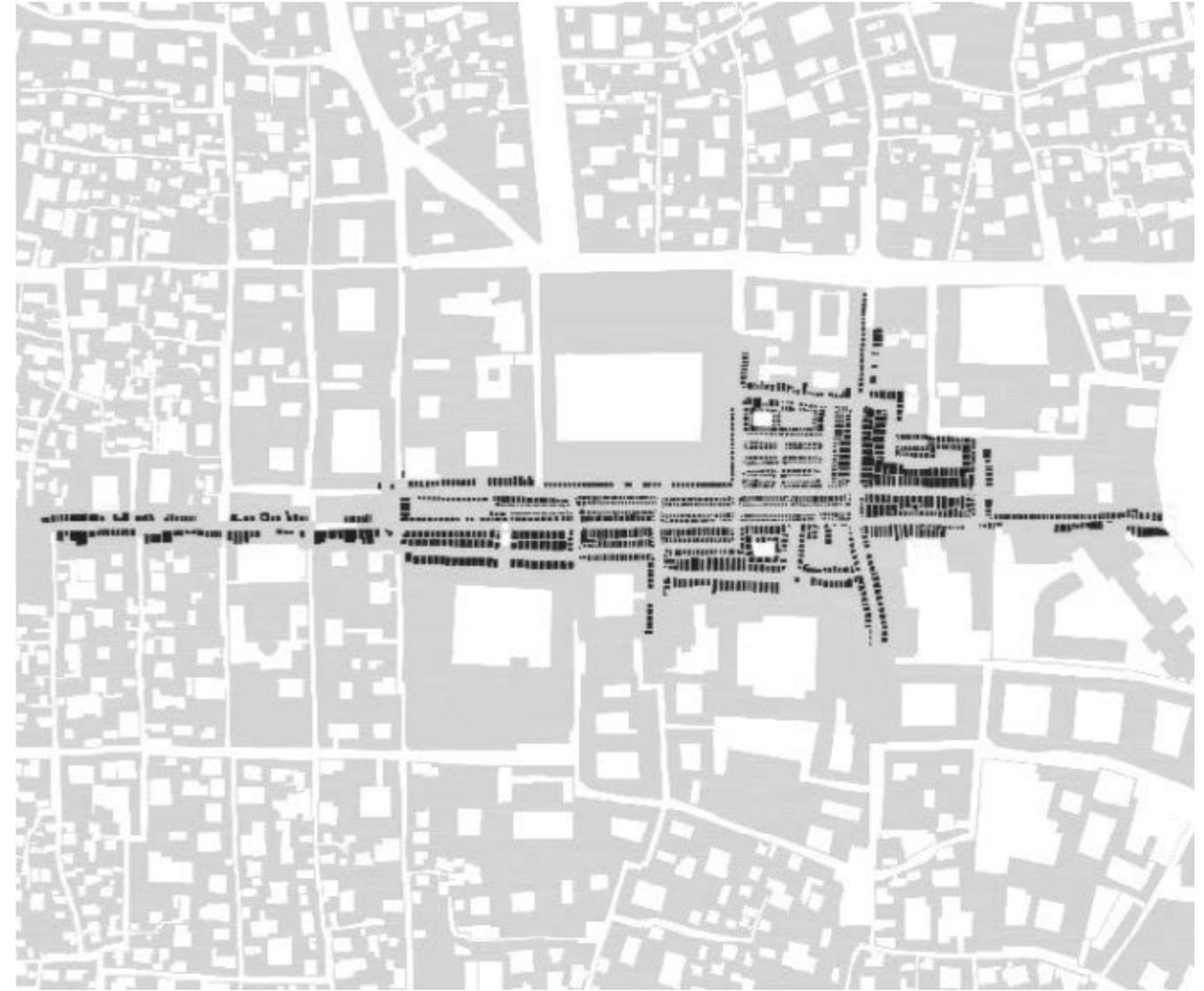
The flooring was usually raised 2 or 3 feet abo-

ve ground level and was frequently extended into the street by a bench. This may be in order to protect the shop from any floods or to keep the merchandise at pedestrian eye level. Commercial sectors are aligned on 2.5 km of the Souk, where 1.5 km are of stone vaulting is applied in them. The rest is open to the sky or covered with some light materials such as tarpaulin, wood, metal frame work, etc. The occupied surface of the old central part of the city which includes Souks, Khans and some other areas, in Aleppo, in the years 1930, has become from sixteen Hectares to twenty nowadays and the number of boutiques in the same period, from 1660 old local's sections to more than 2100 boutiques now thanks to the transformation of certain neighborhood alleys to souk functions.²

² ANDRE RAYMOND, The great Arab cities in the 16th - 18th century (1984) p. 37



2.6 Skylights, domes and path in the souk



2.7 Souk's store pattern

Public and private buildings in and around the souk

The main Mosque is always in the center of old city and followed by the sides of one to multiple Souq's axes. Three big and famous mosques of Ottoman empire were constructed in Aleppo; accompanied with relating buildings such as Souqs, khans, established by very substantial Waqfs where are situated approximately in the heart of central Souq. Although the way Souqs are designed is that you are only able to see the Minaret and the Dome of the Mosque from lateral alleys in the neighborhood and not from covered Souqs itself.

First, there would be a citadel, very often placed on some natural defense work.

Second, there might be a royal "city" or "quarter" which would include the administrative offices. The location could be either around the city center or in the citadel. Third, there would be a central urban complex which would include the great mosques (especially the Friday mosque) and religious schools, and the central markets with their khans. Fourth, there would be a "core" of residential quarters. And fifth, streets would be narrow and winding, especially in residential areas. Other features like hammams (public baths), the surrounding wall, and the maydan (the major open space), are still an argument between scholars.³

Therefore, while local mosques acted as centers of the quarters or neighborhoods, the Fri-

3 MUHAMMAD MUHSIN KHAN, pp. 166

day mosque was, on a larger scale, the unifying factor which operated to consolidate all the quarters of the city, and to become not only the center of religious activities, but also the assembly place of all the Muslim inhabitants of the city. As a result, in order to give an easy and short access for pedestrians from all the residential quarters, the jami' (Friday mosque) should be located somewhere in the middle of the city.

The same principle, more social contact, was applied on souqs. To give an easy and short access, not only for the Muslims but also for other ethnic groups in the different quarters, it was necessary to locate the souq somewhere in the district of the Friday mosque, which is the center of the city. But, the reason behind locating the souq very close to or surrounding the Friday mosque was to make it easier for the shopkeepers and the shoppers to attend the congregational prayers in the mosque.⁴

The transition point between two different merchandising souqs usually occurs at the cross-points of the main routes of the souq network. This area is either covered with a dome higher than the surrounding ones or open to the sky. It was also used as a landmark to indicate the location of other buildings. Small water pools are sometimes located in this area. They help modify the souq's micro-climate during the hot summers.⁵

4 JIHAD ABDULLATIF AWAD, *Islamic souqs (bazaars) in the urban contexts, the souq of Nablus* (1984) p. 35

5 ELEANOR SIMS, *op. cit.*, pp. 100

Other public buildings, such as madrasas, hammams, khans, mosques, drinking fountains and toilets, were built in the souqs area. By the middle of the thirteenth century Aleppo had, for instance, at least 194 public baths.

The most important new edifices were the khans of the central souqs which covered large areas, signifying the amplitude of their trading. Their form is rigorously adhered to; shops and stalls are disposed around one or two courts of unequal size.

These were rented by foreign merchants living on the upper floor, in rooms opening out onto a gallery. Most were highly specialized, such as the 13 khan which was entirely occupied by Venetian merchants.⁶

Mediné is the heart of old city the large commercial center established along the traditional east-west axis of the Hellenistic town, with the main mosque occupying the former space of the Agora. The Medina has a total length of approximately 750 meters, stretching from the Antioch Gate (Bab Antakia) to the foot of the Citadel and extending to a width of approximately 300 meters near the Great Mosque. It is the focal point for all the city's public activities, but contains no private dwellings; these are confined to separate residential areas includes 20 large Khans, which each has almost 3000 m². Most of the buildings are from Ottoman empire around 16th century, where Aleppo was the third commercial city of the world,

6 JIHAD ABDULLATIF AWAD, *Islamic souqs (bazaars) in the urban contexts, the souq of Nablus* (1984), pp. 86

(because of all the negotiations and fabrication of products.)

Khans are the spacious areas which include souks inside, have been constructed in the periods of Mamlouk, late 15th and early 16th century. Khan is the space of a commercial center containing depots of goods, or temporary residential place for merchants to short stays. They were planned to accommodate foreign traders and their goods. Khans, the urban equivalent of the caravanserais, were scattered around the souq or near the city gates in such a way that each group of similar merchandise had its own khan.⁷

With all their facilities, were providing a very important back up for the souk. But one of the most important significances of the khans was the open space which was integrated in them and which provided a change of environment when compared to the busy alleys of the souk. Since many parts of the souk were covered either with gabled roofs, vaulted structures or improvised shading systems, there was a huge contrast offered by the khans because of its open courtyards.

Waqf is considered as a property which is entailed by some private owner or organization, it can be a building or an area of neighborhood. During time the ownership changes by taking over through legal actions. All the related activities in it would be managed and directed by the new owner.

7 JIHAD ABDULLATIF AWAD, *Islamic souqs (bazaars) in the urban contexts, the souq of Nablus* (1984), pp. 58

The other main types

Mosque

Space in the Mosque has to be Two-Directional; The one vertical tending upwards linking it with the sky, and the other horizontal linking it to Mecca. The horizontal direction is due to the fact that Islam is ecumenical. The idea is expressed by having one sanctuary for all Muslims, the Kaaba in Mecca. This direction is indicated by “Mihrab” or “Niche”, but this is not sufficient, and it has to express by building orienting itself architecturally towards Mecca. In the mosques architecture, the presence of rectangular walled courtyards with arcades has been used with surrounded walls and fountains in order to perform ritual ablutions and a pavilion like the one found in both Umayyad mosques in Damascus and in Aleppo. Even though these buildings had courtyards; there are no planted trees or vegetation in the city’s mosques of Umayyad period in Syria.

Some materials used in mosques were granite, marble, stone, wood, and brick. Decoration, texture, materials, form and etc., have a symbolic way in tradition. Tradition embraces the architecture with its totality with all the elements that together make the building religious. Design, concept, space, shape, decorative motifs, color, light and even acoustic in the building.¹

The first mosque in Islam was the courtyard of the Prophet’s house in Medina, which had no architectural refinements. The general plan

consists of a large courtyard surrounded by arched porticoes, with more aisles or arcades on the side facing Mecca (Qibla) than the other sides.² The elements constituting a mosque are: Minaret, Mihrab, Minbar, Ablution fountain, and the main Dome.

Minbar and *Mihrab* is mainly the liturgical qibla axis made visible. It is an early innovation in Islamic architecture, and its origins have been the object of controversy. It entered Islamic world in 707-9 as a concave shape. Mihrab is an acoustic device, a resonator for the voice, shaped to bounce the sound back and magnify it at the same time. The concave mihrab is where the imam (the prayer leader) stations himself to lead the congregation in prayers, therefore it wasn’t fortuitous innovation but the consequence of an order that the Muslims overseers must have given the Copts.

Ablution fountain is the place where Muslims wash some specific parts of their body before starting the prayer with all others

Minaret serves a dual function. It is both a landmark and place from which the call to prayer is broadcasted. The minaret was derived from Syrian architecture. It is tall, slender tower attached to or built near a mosque. The meaning for minaret (manara or manar) in pre-Islamic Arabia was used to designate high places of light or fire. Minarets served also as beacons



2.8 Mihrab, fountain and minaret of the Great Umayyad Mosque

or markers to guide caravans or crusade routes the minarets attached to Islamic fortresses along the Syria were used as light houses or signal towers by the Byzantines. A minaret has a significance at both the spiritual and material level. Standing vertically, it serves as spiritual symbol that links heaven and earth.³

Hajj Mousa Mosque - The mosque built in 1762 by Hajj Mousa Ibn Al-miry, displays the architectural characteristics of both the Mamluk and Ottoman mosques found in Aleppo. In 1986 the acute-arched portico on the north side of the courtyard was converted into “Hijazya” (a private place of prayer or reflection) and a fountain for ablution. Rooms were also built

on the east side of the courtyard for the use of those on duty at the mosque. The northwest corner of the courtyard became an Ottoman elementary school for children. The Ottoman style minaret is located at the southwest corner of the mosque. The main shaft is a 16-sided design and it is crowned with a lead-plated cone.

Al Adlya Mosque - Al Adlya mosque was built in 1555 by the great architect Sinan, under the order of Mohammed Pasha, son of the Aleppo governor Ahmed Dokak, it was the first self-contained mosque to be built in Aleppo in the Ottoman style. The outdoor arena of the mosque is (16m × 16m), and the interior is square in design, with no pillars, it is covered by a large spherical dome, the exterior of which is a domed with intricate pen work.

1 HASSAN FATHY, “Architecture of Mosque”

2 D. RUGGLES. F., Islamic Gardens and Landscapes, (2008), p. 90

3 ROBERT HILLENBRAND, Islamic architecture.

At the front of the mosque, the praying portico is made up of two separate porticos. The open space between them creates an entrance into the mosque, with stone platforms on either side. The Adlya mosque is the only example in Aleppo of an Ottoman mosque with a two-part praying portico. The roof of the first part of the praying portico is covered in lead and consists of 5 hemispherical domes. The second portico roof was made of wood in the original construction, but in 1923 was replaced by steel, and in 1975 by concrete. The side of the praying portico facing the cour-

tyard is designed with acute arches. Rising from the southwest side of the praying portico is the 16-sided minaret. The courtyard can be found on the northern side of the praying portico and the mosque's internal area. It can be accessed from western (mohamas) and eastern (Alsafoheya) directions by two long paths. The central area is hexagonal in shape and has a wooden-domed "shadirwan" (fountain for ablutions). On the western side of the courtyard located several rooms and are used those on duty in the mosque. The whole of the mosque is encircled by gardens.



2.9 Courtyard, porch and fountain of Al Adlya Mosque

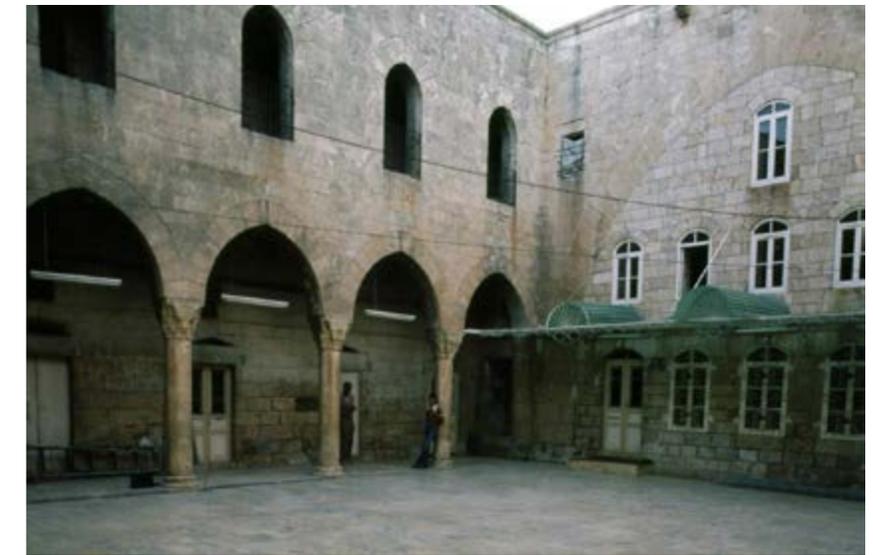
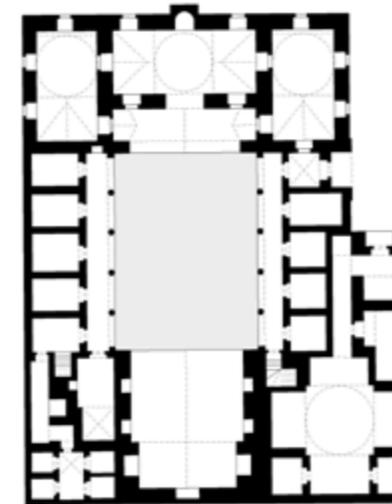
Madrasa

Often translated as "law school" or "theological college", the madrasa is a centre of higher education that is usually designated according to the "madhhab", or the juridical school. As an institution, the madrasa functioned as a centre for higher education, which also offered free accommodation for scholars and visiting guests. The majority of Syrian madrasas followed a local type composed mainly of a rectangular hall in the south suitable for prayer, a main iwan in the north suited to a library, and lodgings surrounding the courtyard often found on the upper floors. Typically, a central basin

furnished the courtyard.⁴

Madrasas were (and still are) the typical Muslim institutions of higher learning, teaching exegesis of the Quran, Muslim tradition and Muslim law, as well as a range of subsidiary subjects. From these came forth, after many years of study, the officials appointed to the main legal and administrative positions of the state. The invention of the madrasa is sometimes credited to the Seljuk visier Nizam al-Mulk, in the late 11th century Baghdad but his interference seems to have been limited to bringing madrasa education under state control, with lasting effect.

4 BIANCA, STEFANO, Urban Form in the Arab World - Past and Present. (2000)



2.10 Floorplan and view from the courtyard of the Madrasa al-Kamaliyya al-'Adimiyya.

Bimaristan

The bimaristan is an important urban construction introduced to Syria by Nur al-Din. The bimaristan, therefore, contributed toward the institutionalization of Islamic medicine and to the professionalization of physicians, features that are also paralleled by madrasas for the juridical sciences.

Inside this structure it was treated both physical and psychological illnesses, offering treatment without charge, and medical education for aspiring physicians. Architecturally the layout again follows the four-iwans-in-axial-symmetry plan, featuring a central courtyard with a pool. The abundance of water was crucial for the upkeep of hygiene in the bimaristan and for the administration of different forms of medication. Generally, bimaristans were soothing places. They had rooms overlooking pleasant views to help patients recover, and



2.11 Floorplan and aerial view from the courtyard of Bimaristan Arghun al-Kamili.

expert musicians playing calming music. The natural ventilation efficiency and thermal performance in traditional Islamic hospitals is examined here. It assesses the effect of various design variables on indoor ventilation, thermal efficiency in patients' wards in traditional Islamic hospitals taking into consideration seasonal weather conditions (summer-winter), and to which extent these buildings adapt climate change passively. Analysis shows that ambient air behavior in courtyard space and larger urban context, and its influence on indoor ventilation and thermal efficiency in patients' wards, clarifies how air moves passively using architectural elements (vaults, courts, openings, water elements). Iwans work as wind catchers, and oriented exactly towards prevailing wind direction.⁵

⁵ BIANCA, STEFANO, *Urban Form in the Arab World - Past and Present*. (2000)

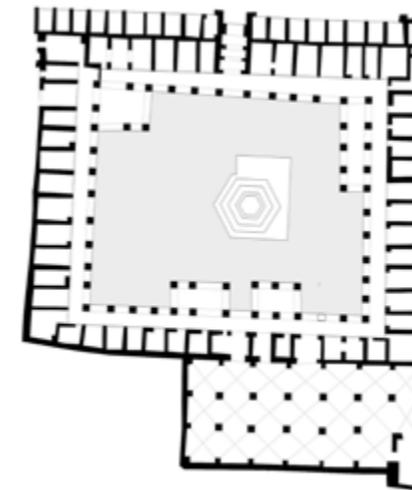


Khan

Khans were considered to be stores for goods, marketing opportunities and exchanging goods beside the markets within the cities. Trade inns consisted of remarkable entrance doors, shops all around the courtyard and colonnades. Shops around the courtyard were formed as two storeys, generally used for the purpo-

se of stores, offices, and depot functions. In the center of courtyards, there were usually a fountain or a small mosque. In some of them, there were barns that could be located in courtyard spaces or outside of the inns.⁶

⁶ Özlem, Atalan & Arel, *Hasan Yüzyıllarda Yapılmış Osmanlı Han Yapılarının Mekânsal Analizi*. (2016)



2.12 Floorplan and aerial view from the courtyard of Bimaristan Arghun al-Kamili.

Houses

In the Islam, the house and the residence are very private realms. Here, the guests are welcomed but in many cases with separation of genders. The courtyard is an exclusively private part of the house and is used only by members of the family.⁷

One of the most common building typologies in Syria is the traditional courtyard house. It can be found in all Syrian cities, just as it can be found in all Mediterranean countries.

This building typology is characterized by a small number of relatively small openings in the external façade, and a large number of openings that open onto the inner courtyard. Traditional houses vary in size and luxury level, and inner spaces vary in number and size from house to house, although they all have one common feature: the open courtyard gives the occupant a feeling of privacy and privileges the relations between the individuals of the family, who develop a strong attachment for the house. The inner courtyard is a garden and the center of household activities: all the rooms are set around it and open onto this gathering place. In large and medium sized houses, a fountain is placed in the center of the courtyard and freshens the air; trees are also grown in many traditional courtyards, adding shade and life to this exclusive area.⁸

7 EDWARDS, B. ET AL., *Courtyard Housing: Past, Present, Future*; (2006), p. 15

8 Levant CORPUS from the article of "Traditional Syrian Architecture"

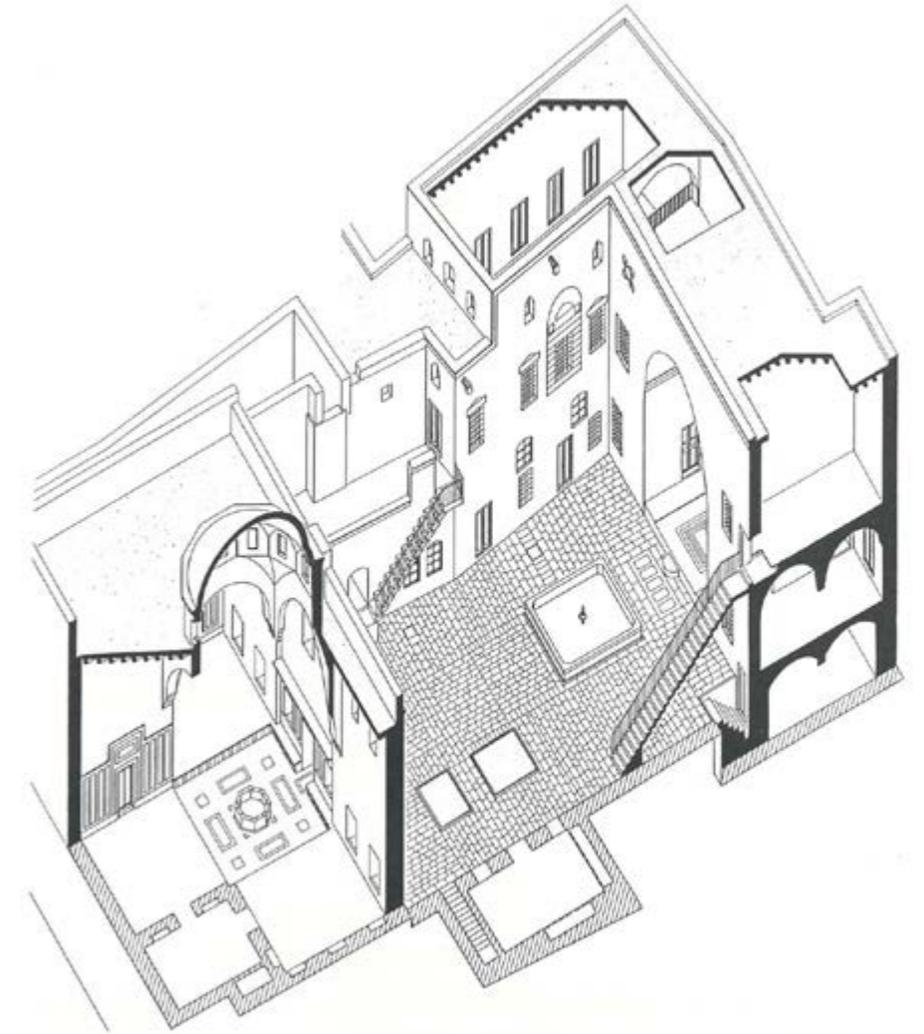
The height of the traditional house is limited, usually no more than 10m for two storeys. Generally, the living rooms and service rooms are on the ground floor whilst bedrooms are on the upper floor. In large houses with over one courtyard, spaces are separated into an area for the owners of the house, another one for guests and a third for servants. But not all large houses are luxurious or rich in architectural features, though they can have more than one courtyard.

In the traditional building the courtyard is accessed by a corridor starting at the house's front door, a design which ensures privacy and security. Moreover, most of the doors and windows open onto the inner courtyard. The openings on the external façade are limited to a few long windows and high windows.

Traditional Arabic houses are known to be welcoming environments, and are friendly in both their design and structure. For example, courtyards are equipped with many elements that help humidify the air (trees and fountains); they also use the *iwan* as an open summer sitting room facing north. The thick walls and roofs are good insulators and help stabilize room temperature, while the variable roof heights and protruding elements in the facade provide shade.

Some elements appeared in the traditional urban house to help increase the amount of shaded areas, such as:

1. The use of protrusions and cornices on the outer facades or on the inner court, facades that look over the courtyard.



2.13 Longitudinal section through two adjacent houses in Aleppo, cutting through the "iwan" and the "qa'a" of both houses.

2. The use of the “Kishks” (protruding wooden kiosk) to cover the openings in the external wall, rarely used on inner facades.
3. Some traditional houses use the roof garden as a way to lessen heat in the house.
4. Covered streets protect external walls from direct sunlight.

Traditional houses in urban areas also contain many architectural elements made to ensure a natural airflow through all the spaces; wind catchers as well as openings opposite each other are used. A great variety of ceiling heights are used and the main spaces of the house are conceived so as to be ventilated by soothing winds.⁹

The courtyard in the traditional typology of a residential building in Aleppo is an important morphological, functional, environmental element supplies natural lighting and ventilation. Most of Aleppo buildings are rectangular shape and the long axis are towards east-west. The exterior appearance of the building presents an important component in the building construction to preserve the cultural heritage of the city; elevations possess varied functions such as resisting the heat transfer through the external walls and reflecting sun radiation to reduce the indoor air temperature. Most of the traditional buildings in Aleppo have a massive construction consisting of very thick walls with minimum external openings to prevent the heat flux into the interior spaces. These buildings used stones as the structural mate-

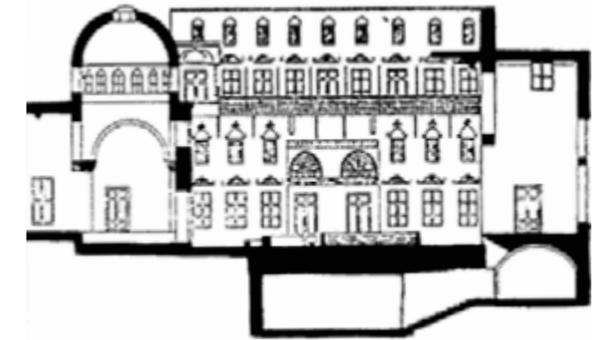
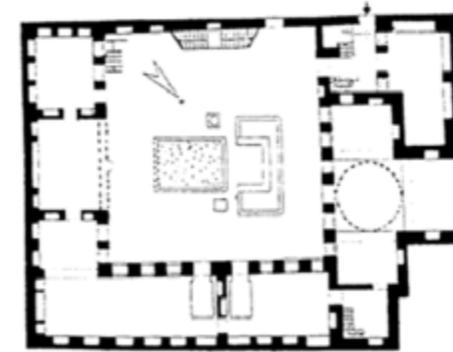
9 Levant CORPUS from the article of “Traditional Syrian Architecture”

rial, which has a high level of heating storage capacity, where the stones store the energy during the day and resend it at night.¹⁰

In Aleppo, the most common type of house is Syro-Ottoman which derives from a fusion of pre-existing courtyard types of different derivations, among the Roman “domus” in a modified version already in the foundation stage. The original module of the courtyard house in Aleppo is rectangular room called the “Bayt” that is 4 meters wide and of varying lengths, corresponding to a multi-functional room; which is grouped in a rather serial way around one, two, three or four side of a rectangular courtyard of wide dimensions that can vary between 12-15 x 8-10 meters. The entrance to the courtyard occurs through a long, narrow corridor placed in a corner position and never axial with respect to the courtyard, whether covered or open.

In the case of large parcelization in the three or four housing units, the regularity of courtyard is lost, and a series of filtering structures from between the courtyard and the street that are increasingly more complex as the new lots formed further inside the lot and thus further from the street. The distribution of the organism involves the entire courtyard-house combination beginning with a long, narrow vestibule that connects the entrance door, element of inside-outside separation, and the real cour-

10 HADYA SALKIN, LAURA GREC. ROBERTA LUCENTE “Towards adaptive residential buildings traditional and contemporary scenarios in bioclimatic design.”



2.14 Floorplan and aerial view from the courtyard of Bimaristan Arghun al-Kamili.

tyard. The vestibule leads into the courtyard which, in the larger complexes where a clear distinction between male and female spaces is possible, takes form of several autonomous courtyards.¹¹

The traditional courtyard house in Syria is composed of three parts: basement floor, ground floor comprising the main living areas called ‘al salanlek’ and a first floor comprising the private area called ‘al haramlek’.¹²

In this private typology, the implementation of a basement floor allows the inhabitants to enjoy an even temperature throughout the year. It is therefore an attractive living space in periods of extreme winter and summer. This basement acts as a thermal moderator during the hot dry

11 PETTRUCCIOLI A. After Amnesia, Learning from the Islamic Mediterranean Urban Fabric. (2007) p. 95

12 Edwards, B. et al. Courtyard Housing: Past, Present, Future; (2006), pp.31

season, as it allows the hot air collected by the wind-catchers to be cooled and humidified before it is released to courtyard space. It is also used for the yearly storage of food supplies as is the case in many courtyard houses of Aleppo, a city that has endured many wars. The courtyard organization is appropriate to hot dry climates because it maximizes shading and allows for the creation of a pleasant microclimate. The availability of the plants and water feature within the courtyard helps in cooling and humidifying the internal atmosphere. Then, speaking about the construction technique, it is based on thick load-bearing stone masonry and it provides an adequate thermal mass. The existence of cooling towers allows for a good summer ventilation as hot air is funneled down into the basement where it is cooled and let out into the courtyard space.¹³

13 Edwards, B. et al. Courtyard Housing: Past, Present, Future; (2006), pp.32-33

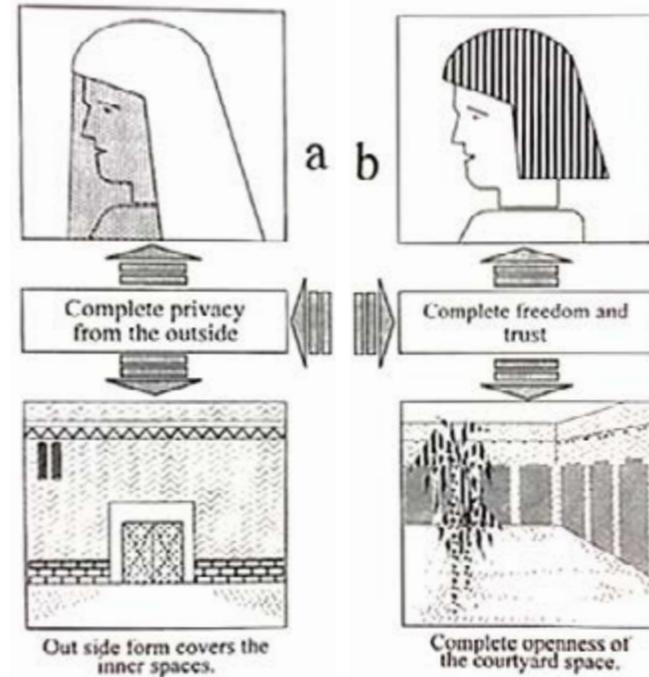
The Courtyard

And its role in different typologies

The idea of courtyards as plan configuration goes back thousands of years, its documented that it started from the Neolithic settlements. In the beginning, the logic behind this type was mainly to provide a protective area from outside forces, such as invasion by human, and wild animals. Over time, it has developed into a solid, logical configuration that maximizes the built-up area in the urban context and allows the control of the sun-light, especially in the regions where it is abundant. The courtyard is one of the most important features from the traditional architecture and the historic urban fabric in the Islamic cities of Middle East as Aleppo, Damascus, and Fes. Since then, it has transcended regional, historical and cultural boundaries.¹

The use of this element has been has a lot of advantages; the first of them it's that it allowed high density in ancient cities which needed to be surrounded by walls in order to protect against the attacks of the enemy as Bagdad, Damascus, and Aleppo. At the same time, in those cramped cities, the courtyard also offered privacy and security. Speaking about the climatic advantages in the desert climates of the Middle East, this typology provided solar protection by having everything open toward this shaded courtyard. To provide light and ventilation to the rooms, the courtyard windows are much larger and are more decorated than in the external facades For the Islamic culture, the courtyard had another benefit

1 EDWARDS, B. ET AL. Courtyard Housing: Past, Present, Future; (2006) p. 15



2.15 The courtyard house reflects the need for privacy, expressed also in the hejab.

which is a sheltered place for plants and fountains, fulfilling a religious purpose as a sign of paradise in the midst of arid country.²

Iwan

The iwan is an important covered open space from which the aesthetic qualities of the courtyard can be enjoyed. It provides a raised platform (by one or two steps), used as pleasant and comfortable open-air reception and seating area and a venue for evening events such as playing traditional music. The iwan is usually located on north-facade of the courtyard to catch the cool breeze during the summer. It also comprises two symmetrical rooms facing each other and it has an ornamental front stone arch facing the courtyard. The transition from the courtyard to the iwan space is marked by a multicolored marbled patterned floor, which resembles an oriental carpet.³

One of the significant bioclimatic architectural elements in the traditional buildings in Aleppo is Al iwan, a semi- outdoor open space closed from three sides and opened from one side by three large arches at the south side of the building. This semi-open space protects the walls from sun penetration in summer and allows it to absorb solar radiation in winter. The origin of this element is from the courtyard house whe-

2 EDWARDS, B. ET AL. Courtyard Housing: Past, Present, Future; (2006) p. 15

3 EDWARDS, B. ET AL. Courtyard Housing: Past, Present, Future; (2006) p. 31

re such element was known as Al Iwan which is a covered open space used as a pleasant and comfortable open-air usually located on the north facade of the courtyard to catch the cool breeze during the summer and oriented to the south side for winter.⁴

Fountain

In the garden the water is located in the center of the courtyards where there is a fountain from which four paths radiate. It is placed at the heart of the garden which gives its many roles into the design; it emphasizes architectural elements, masks the outdoor noise, produces pleasing sounds, refreshes the eyes, cools the body in the high temperatures and provides a space for spiritual contemplation. At the same time it irrigates plants, and soothes the dusty wind.⁵

The main directional view focus is invariably from the peripheral arcade to the centrally located pool or fountain. The courtyard is viewed and appreciated from its surrounding arcade.⁶

4 HADYA SALKIN.,LAURA GREC. ROBERTA LUCENTE, towards adaptive residential buildings traditional and contemporary scenarios in bioclimatic design (the case of Aleppo)

5 HAMED,S.,E., Paradise on earth: Historical gardens of the arid Middle, (pp.84)

6 LEHRMAN, J. B., Earthly Paradise: Garden and Courtyard in Islam, (pp.35)

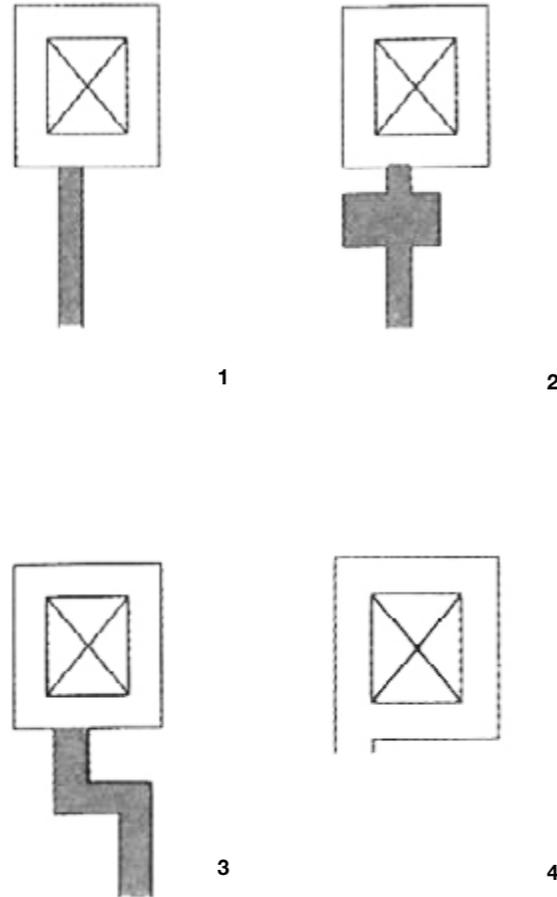
Accessibility to the courtyard

1. Access to the courtyard through a corridor: the access to the inner space of the house from outside is through an intermediate area (an entrance) which emphasizes the distinction between the external public and internal private spaces.

2. Access to the courtyard through another room: the enclosed sanctuary of the house designed to protect the privacy of the family. Means of access and filters are multiplied in order to create different degrees of intimacy as one proceeds from the external public spaces to the internal private ones.

3. Access to the courtyard through a path: this area constitutes a filter which establishes a sequence of penetration and control through changes in direction. It is designed to obstruct any view of the inside, and hence does not give immediate access to the inner courtyard.

4. Direct access to the courtyard: in other types of buildings such as schools, mosques and other public buildings where courtyards are a climatic necessity and there is no demand on privacy, the entrance is open directly into the courtyard.⁷



2.16 Different types of access to courtyards.

Architectural elements

Traditional solutions to face functional and climatic issues

According to Shari'ah, the utilization and sustainable use of natural resources and elements is the right and privilege of all people. This right is to a certain degree considered by Islam as an obligation. According to climate responsive approach, the interactive and adaptive relationship between building, site, and climate consider a basic rule to reduce the environmental impact and improving energy efficiency in buildings.¹

Orientation

The spatial organization of the buildings, streets treatments, and landscape should facilitate wind penetration in the summer time where the desirable breeze come from the west or west-south sides. In the same time, the spatial organization should avoid undesirable breeze from the north side, thus the optimum orientation of the streets grid is the south-east or north-west axis for shading the streets and promote natural ventilation during the hot period. Inspiration of narrow pedestrian tracks from traditional architecture, which reduces the distance between the buildings then minimize the sun penetration of the building walls.

Openings

The term "openings" not only refers to the openings on external façades, such as doors, windows and arches: it also includes open and half open spaces inside the building. The open courtyards and balconies in some building types.

In general, openings are divided into two groups: the first consists of doors and windows, the second consists of arches.

The general reasons for alterations carried out on openings differ from one case to another: they are sometimes carried out to let in more sun and light, they are sometimes due to a change in living standards inside the building, such as a new layout of rooms or a grouping of multiple rooms into one, therefore calling upon new openings that alter the shape of the original openings, arched or ornamented.

Another situation that can be harmful to the building is the case where the inner courtyard in the traditional building is closed, blending partly or fully into inner rooms. This affects the amount of light and sunshine that enters the building, as well as the general shape of the building, changing the typology of the building itself.

Windows represent important elements for air circulation regulation and natural lighting. Traditional architecture had a high care to the windows location and size, to regulate the air circulation and the entry of sun, and for achieving privacy. The placement of the openings at a high level of the external walls and at the

⁷ PETTRUCCIOLI A. After Amnesia, Learning from the Islamic Mediterranean Urban Fabric. (Politecnico di Bari, Italia. 2007, pp.81)

¹ HISHAM MORTADA, traditional Islamic principles of built environment

lower level of the internal walls aimed to improve cross ventilation and to get rid of the hot air. Moreover, to increase heat gain and reduce heat loss in the wintertime the openings size in the south walls should be larger than the north side.

The sizes of openings vary in stone buildings: the borders of these openings are either straight, curved or pointed. It is important to arrange the top part of the opening carefully so that it can withstand loads and transfer them to the jambs. The top part is called the “najafeh” (lintel) and the sides of the opening are called the “fakhdan” (jambs). Many different types of lintels can be found in old buildings, such as the one-piece straight lintel, made of stone for the outside and wood for the inside. Flat lintels are also used when an odd number of stones are arranged carefully and locked into place, with a central stone called the key stone; the resistance of this type of opening depends on the shapes of the stones, and their contact and fitting the stones that rest on the jambs bear the greatest loads from the upper layers. A slightly curved lintel a semi-circle arch, a pointed arch or a horse shoe are sometimes used as well, all structurally performing.

In general, the stone lintel is used on the external façade for all types of arches. On the inside, a wooden lintel is generally put 5cm higher: it consists of wooden logs arranged over the width of the opening, covered underneath with a thin wooden panel called “al twan” (soffit).

In general, the openings in traditional archi-

tecture are small on the external facade and larger on the inner façade, looking onto the courtyard; this architectural style is environmentally healthy and takes privacy into consideration; an essential factor in eastern architecture.²

Shading System

The major part of the heat gain comes from the solar radiation, which plays a crucial role in increasing the air temperature within the buildings; therefore, sufficient shading could reduce these effects drastically. Al Mashrabiyya is a bioclimatic architecture element utilized at the external side of the windows in the traditional buildings for screening the solar radiations in hot periods, enhancing air movement, and achieving privacy.³

Ventilation

The ventilation need is considered a major priority for both urban fabric and occupants, whereas achieving smooth air movement from the exterior to the interior of the building was an important issue in the traditional residential

² LEVANT CORPUS Traditional Syrian Architecture

³ HADYA SALKIN, LAURA GREC, ROBERTA LUCENTE, towards adaptive residential buildings traditional and contemporary scenarios in bioclimatic design (the case of Aleppo)



2.17 Moucharabieh House.

buildings. Al Malqaf was an innovative bioclimatic architectural element in the traditional residential buildings, which consist of shaft high rising above the building and opened from the prevailing wind side, constructed on the north side of the building to capture the cool air and channels it down into the interior of the building. This airflow concept can be applied to all the residential building types in various forms, based on the different climatic factors like humidity, prevailing wind flow, patterns and building materials. In the case of the old city of Aleppo, a special type of Al Malqaf was utilized, where all traditional building had one shaft located at the north side of the building to capture the cool air. Within the shaft

water-filled jars were placed, to increase the internal climate's moisture, in this way the fresh air loaded with water vapor at summer time, could access by using operable windows. On the other hand, one of the effective bioclimatic elements in the traditional buildings of Aleppo was the indirect entrance, which clearly enhanced the privacy and air movement control. The entrance consists of double doors, the first usually led to a passageway and the second led to the courtyard. This design solution could reduce the heat transfer through the entrance in both hot and cold seasons, and improve air circulation inside the building through creating different air pressure between the passageway and the courtyard.

Light

God is the light of the heavens and the earth, says the Koran. There is no more perfect symbol of the Divine Unity than light. For this reason, the Muslim artist seeks to transform the very stuff he is fashioning into a vibration of light. It is to this end that he covers the interior surfaces of a mosque or palace—and occasionally the outer ones—with mosaics in ceramic tiles.⁴

Kishk

Kishk (wooden kiosks) are protruding windows that look like closed wooden balconies. They were used in traditional architecture to ensure the privacy of a house but let inhabitants see passersby and watch the street without being seen; they also provide natural ventilation. Kishks are considered an Ottoman architectural feature that spread in Syria in the Ottoman period. The wooden construction of the kishk rests on stone consoles; kishks were decorated simply; special attention was given to corners, cornices and the “oriel” (underneath the projecting sides of the roof).⁵

4 TITUS BURKHARDT, *art of Islam, language and meaning*

5 LEVANT CORPUS, *Traditional Syrian Architecture*



2.18 Traditional Kishk

Vaults

Roofing using vaults is an old way of covering large halls, crossing areas and passages; no matter how long they are, as can be observed in traditional souks.

There are two types of vaults in traditional architecture:

1. Barrel Vaults: also known as half cylindrical vaults.

2. Cross Vaults: consist of two consecutive crossing and orthographic vaults.

Stone is the main material used in building vaults; both types of vaults have the same building principle. They are structured on a wooden formwork that takes the shape of the vault; this frame is built up to the height of the wall and is supported by horizontal and vertical supports that hold the arch-shaped frame. Mud or lime mortar is used to join the stones and give the whole structure stability.

The thickness of the roof ranges between 35-40 cm, plus the layer of earth filling used to fill the gaps that finalize the shape of the roof: this surface structure increases the thickness of the roof, thereby further improving its insulation properties.

Cupolas

Architects used cupolas as a substitute for the flat roof. Stone cupolas were considered one of the most important architectural features used in roofing: it covers the main spaces

in mosques, churches, baths and some great houses. These cupolas take on different shapes: semi spherical, onion shaped or ribbed; they can also be an egg shape, depending on the dimensions of the space and the ratio of its length to its width. The formwork that is used to set the shape and degree of the stone's curve must be prepared to give the structure a smooth surface from the interior and exterior. The stones are lined up on the formwork, in their final position, up to the final stone, which is called the key stone. The latter can be cut into a star shape, a round shape or a squared shape.⁶

Circular vaulted construction used as a means of roofing. First used in much of the Middle East and North Africa whence it spread to other parts of the Islamic world, because of its distinctive form the dome has, like the minaret, become a symbol of Islamic architecture.

Islam, like other great cultures, has always been sensitive to the impressive effect of domed spaces, from outside to make the building conspicuous from afar, and from inside to awe the visitor. Early domes were cautiously built, normally spanning a square bay, but later it was found to be simpler to heighten the rectangular base of the dome rather than increase span. The earliest large domes were of wood, but the use of baked brick in 'Abbasid Mesopotamia spread rapidly all over Islam. By the 15th century, stone domes were widespread from Syria and Egypt to the Indian subcon-

6 LEVANT CORPUS *Traditional Syrian Architecture*

continent, but even the great Ottoman architects of the 16th century failed to match the span of Justinian's church (now a mosque), the Hagia Sophia, in Istanbul. More recently, ingenious use has been made of mud-brick with an elaborate timber scaffolding to form domes in the Islamic architecture of Central Africa.

One of the main problems of dome construction was the transition from a square space or area into a circular domed area. Usually there was an intermediary octagonal area from which it is easier to convert to a circular area although there is still the problem of converting from square to octagon. Two main methods were adopted, which are the squinch and the pendentive. The squinch is a mini-arch which is used to bridge a diagonal corner area whilst a pendentive is an inverted cone with its point set low down into the corner and its base at the top providing a platform for the dome.⁷

Muqarnas

Muqarnas are a traditional architectural embellishment of Islamic architecture, which resemble stalactite rock formations. Among the most characteristic artifacts and original inventions of medieval Islamic Architecture, they are structures formed out of small pointed niches with rhythmic modularity and infinite compositions.

They were built to break down vaults and do-

mes into multiple facets with the purpose of unifying a dome's transitional zone into a compositional unity.

Arcade

There are many ways to construct arches: these change according to the different building typologies used in the Syrian areas, but in general they are mainly used to shorten the span. Arches are frequently used in urban architecture and are widely used in the architecture of important buildings and religious structures. They are found in the entrances and passages of these buildings, and are used in houses on a smaller scale, mostly in the Iwan. The shape of the arch changed with the change of architectural style and age.

The arches that were used in Syrian architecture depend on the architectural style. Semicircle arches or transcending arches are used in the Umayyad era, with plant ornamentation and elements such as grape vines, palm branches, roses and tulips on their edges. Pointed arches consisting of two sections, an upper flat section and a lower curving section, are originally Persian and were used in the Abbasid age. These were then further developed in the Ottoman age and were modernized, making the flat part of the arch more complex.

Materials

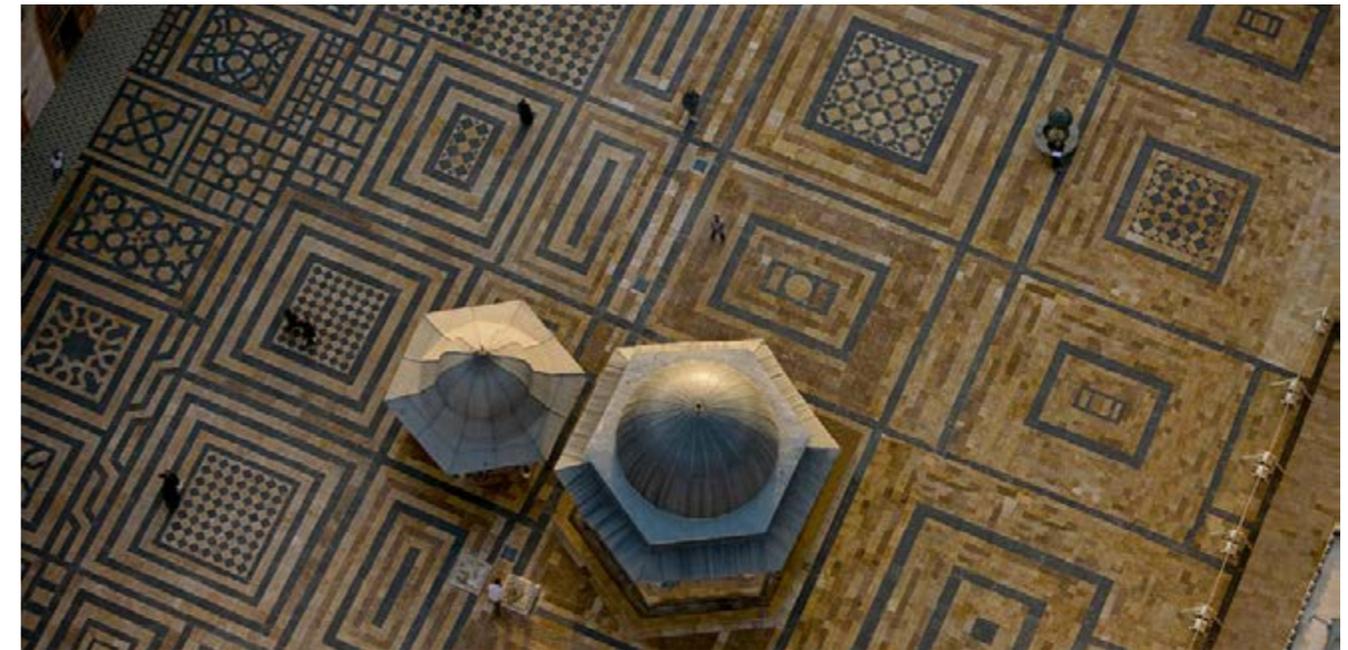
Traditional architecture usually depended on handcrafts, and building materials made from natural components were widely available locally.

These materials differed from area to area, thus conferring particular characteristics to the architecture of every area in Syria: this is noticeable in the style, color and dimensions of buildings, all adapted to local lifestyles and needs. Some of these characteristics have withstood time, others have changed or have

been altered to adapt to modern times.

Lifestyles change from one place to another, and the building materials that change according to availability in the particular area, produced different building typologies in different areas and cities. The building materials available in each area define the building typology as well as the shape of the buildings and their overall appearance.

In cities, stone is the main material used in building; though a few other rare typologies can be found.



2.19 Stone flooring of the Great Mosque's courtyard

⁷ ANDREW PETERSEN, Dictionary of Islamic Architecture

The current condition of the city
Aleppo after the Civil war



The Syrian civil war

15th march 2011 - today

The Syrian Civil War is a proceeding conflict between the Government of Bashar al-Assad with its allies, multifarious forces each other in different combinations.¹ Several armed groups have been involved in the on-going civil war, however, there are five main factions: the Syrian Arab republic and allies, the Syrian opposition and allies, the Democratic Federation of Northern Syria and allies, Islamic State of Iraq and the Levant and allies. The trouble started as an uprising against Bashar al-Assad with the wide wave of the 2011 Arab Spring protests due to the high amount of unemployment, deteriorations and restriction of freedom.

After Hafez al-Assad's death in 2000, his son Bashar al-Assad was elected as President of Syria. Bashar al-Assad and his wife, who is Sunni Muslim born and educated in Britain, infused expectations for democratic reforms. The period of the social and political debate, called 'The Damascus Spring', was held between July 2000 and August 2001 and ended with the incarceration of ten activists due to calling democratic elections and campaign of civil 'disobedience'. However, Bashar al-Assad had failed to serve the promised reforms.² The demography of Syria consists mostly of Syrian Arabs, which are divided in 74% Sunnis, 13% Shias, 3% Druze and 10% are Christians. The rest of the population is composed

by the ethnic minority of the Syrian Kurds in 9%, Turkmens that are approximately 5% and other ethnic groups embrace Armenians, Circassians, Greeks, Mhallami, Kawliya, Yezidi, Shabaks and Mandeans.³

Due to the exaggeration of free market policies by Hafez al-Assad, socioeconomic inequality increased remarkably and it expedited when Bashar al-Assad came to power. With the underlined service sector, these policies took advantage of the minorities; who had connections with government and members of Sunni merchant class of Damascus and Aleppo.⁴ The annual growth rate of 3.39%, is below most other developing countries and its neighbours. Thus, the country faced high youth unemployment rates and it led to uprisings in Syria's poor areas; predominantly among conservative Sunnis.⁵ This came across with the most severe drought ever recorded in Syria between 2011 and 2016 which was followed by widespread crop failure, increased food prices and mass migration of farming families to urban centres. At the same time this migration forced infrastructure.⁶ Therefore, adequate water supply continues to be an issue in the

1 SLACKMAN M., Syrian Troops Open Fire on Protestors in Several Cities (2011)

2 MACFARQYHAR N., STACK L., Syrian Protesters Clash with Security Forces (2011)

3 DAGHER R., Syrian's Alawites: The People Behind Assad (2015)

4 LARSEN R., Youth Exclusion in Syria: Social, Economic and Institutional Dimensions (2011)

5 ASSOCIATED PRESS, Rebels in Syria's Largest City of Aleppo - mostly poor, pious and from rural backgrounds (2015)

6 MUIR J., BBC Report 'Aleppo water supply cut as Syria fighting rages' (2012)

on-going civil war and it is frequently the target of military action.

The human rights situation in Syria has long been the subject of harsh critique from global organizations. Syrian government strictly controlled the rights of free expression, association and assembly even before the rebellion.⁷ Security forces had sweeping powers of arrest and detention.

The conflict started as a protest and uprising against government in Deraa, later it turned into violence, arrests and torturing. After that, opposition supporters started to take force against the governmental forces for pro-democracy demonstrations. The Country started to enter the civil war with armed rebels and jihadist groups. As a result of that there were many war crimes.⁸

To sum up, since 2011, the civil war caused more than 400'000 deads, damages within the country and loss of global power; more than 5.6 million citizens have fled and 6.1 million are displaced inside the country.⁹ The war lasted so long because of the intervention of world powers such as Russia, Saudi Arabia, USA and Iran. That country supports, in terms of military political and financial, made the war last longer. Also, inside the country, the Sunni majority and Shias created such a big divi-

7 OWEIS K. Y., Syria's Assad Vows to Lift Emergency Law by Next Week (2011)

8 CHULOY M., MARSH K., Assad Blames Conspirators for Syrian Protests (2011)

9 BBC Report 'Grafiklerle: Suriye'de 8. yılına giren savaş' (2008)

sion. Jihadist groups' involvement brought the war to another level. According to the UN¹⁰, all groups of conflict have committed war crimes: in 2013, for example, chemical weapons started to being used in the conflict. As a result of all, a huge humanitarian crisis happened.

10 United Nations Human Settlements Programme (UN-Habitat); it was established in 1978 and it is the United Nations agency for human settlements and sustainable urban development; it promotes socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all.



3.1 Who controls what? - Current condition map of Syria

The end of the war and the humanitarian emergency

The Syrian Civil War caused the biggest displacement crisis in the world: millions of inhabitants were forced to move from their home both inside of the country and through the borders. Almost 400.000 people died and 6.1 million people were displaced. Most of the refugees went to Turkey and Lebanon, but also Jordan, Iraq and Egypt took a part of them. These countries have struggled with one of the largest refugee flows in recent history. Turkey hosts over 3.2 million registered Syrians, mostly in urban areas or refugee's camps. More than 1 million refugees live in Lebanon with struggles. Others in Jordan, Iraq and Egypt. About 10% of refugees fled to Europe. The UN reported that in 2016 the humanitarian assistance for the 13.5 million Syrians (including 6 million children) is worth \$3.2 billion.

The remarkable effect of Syrian uprising is mostly observed in major cities due to the large-scale movements of population, the destruction of buildings and infrastructure and the interruptions of markets. One of the main features of the crisis is the lack of information about the decision making, the monitoring of the issues and the evolution of the needs. For instance, the majority of displaced families are finding accommodation through host or rent arrangements, but information on such dynamics is very limited. Without better understanding at family, community and city levels, humanitarian interventions may not be

responsive or appropriate. UN Habitat tried to provide up to date, holistic documentation and analysis of the impact of the crisis in key cities through city profiles, synthesising information and insight from existing sources and priority sectors, which are supplemented by direct field research by UN Habitat teams based in each city, carried out from December 2013 to March 2014.

'Aleppo City Profile' is the primary pilot UN Habitat team has developed with urban analysis, community approaches and crisis context. The city profile is improved by a close association with governorates and municipalities which helps to demonstrate the functionality of the city, economy and services, to understand the capacities and coping mechanisms and to identify humanitarian and recovery priorities. Although it did not supply exhaustive data, it provided a balanced general view. The city profile gives the opportunity to access detailed investigation on shelter and housing issues which are helpful for the shelter assessment process.

Before the conflict had started in 2011, Aleppo was the city with largest population: 3 million, almost 25% of the entire Syrian urban population. The city had a strong economy as a national industry and trade hub, with historic and collaborative commercial relations with neighbouring countries. Because of that, Aleppo was the most charming city for rural migrants and because of that almost 40% of population lived in informal areas. Due to the crisis, the city became a place for Internally Dis-

placed Persons (IDP) from various governorates and cities. At the end of 2012, this IDPs in-migration tendency turned into massive displacement and out-migration, and Aleppo inhabitants fled away to other governorates and outside the country. Almost 1.72 million inhabitants had been displaced by November 2013, and 53% of whom fled the Governorate. Another 48% have been displaced within Aleppo.

- Over 302.000 housing units are partially or fully damaged (end 2013), i.e. 52% of the city's 2011 housing stock.

- Approximately 140.000 labourers in the industrial sectors have been laid off, which has directly impacted the source of income for more than 600.000 city inhabitants.

- The City Profile concluded that 21 of the assessed 125 city neighbourhoods have been heavily damaged and was no longer functioning; they will require wide scale reconstruction for future reoccupation by inhabitants. Another 53 neighbourhoods are partially functioning, despite widespread damages.

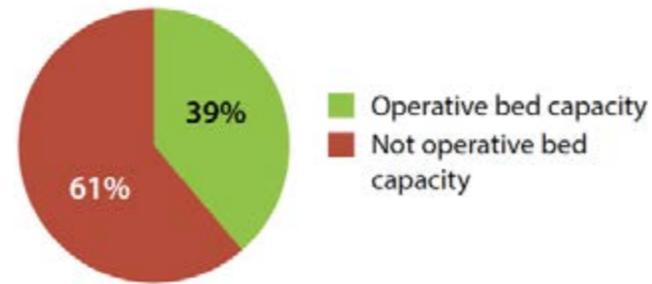
- On the other hand, the City Profile concluded that 40 neighbourhoods are currently functioning since governorate and municipal management still persist, and due to the acceptable level of security. Such factors have made these neighbourhoods attractive to IDPs from more impacted areas, with evident implications for the demand for services and infrastructure.¹¹

11 UN HABITAT, City Profile Aleppo - Multi Sector Assessment (2014)



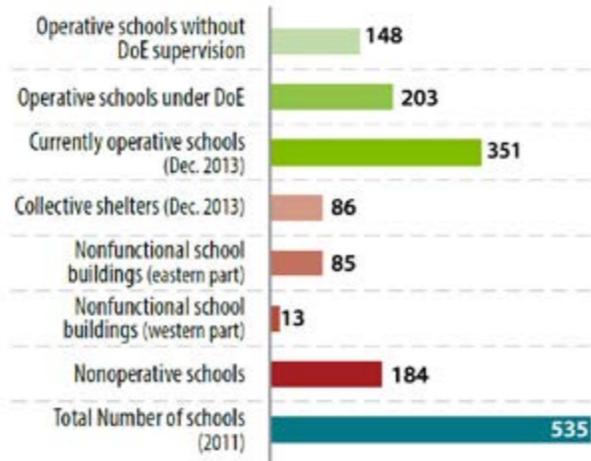
3.2 Image from the area around the Palace of Justice.

Health and nutrition – All operational public and private hospitals are located in the western part of the city and they have encountered a significant decrease in their number (Fig. 3.3). Due to uncollected garbage in the western part, scab and lice, a variety of diseases and epidemics have emerged in the city; especially at schools and clusters of IDP. Moreover, lack of access routes has caused the stop of 70% of Aleppo’s pharmaceutical industry and the production of medicine not reachable for most of the defenceless population.



3.3 Operational status of public health facilities.

Education – Since the direct damage, 34% of schools are not been functioning and this calls for rehabilitation. Moreover, these schools are occupied by collective shelters and other uses with limited facilities (Fig. 3.4). The Governorate of Aleppo led efforts to empty 60 schools of IPDs in order to restore them for educational function. Due to the different factors, attendance rates are low and they slow down the regular education process. The main reasons to abandon education are fear, accessibility and lack of facilities, but also educational materials. In Aleppo all schools are operating in double shifts.



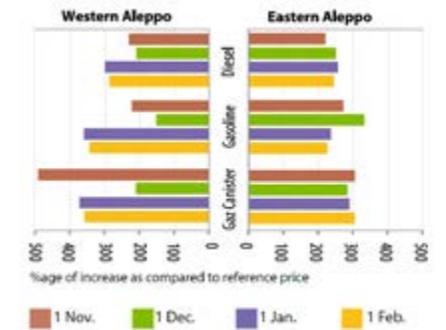
3.4 School facilities operations.

Accessibility – Humanitarian access from Damascus to Aleppo has been seriously affected since July 2013. Eastern and southern parts of the city are still accessible through international road connections. However, western parts are under irregular blockades; so, there are limited-access routes for internatio-

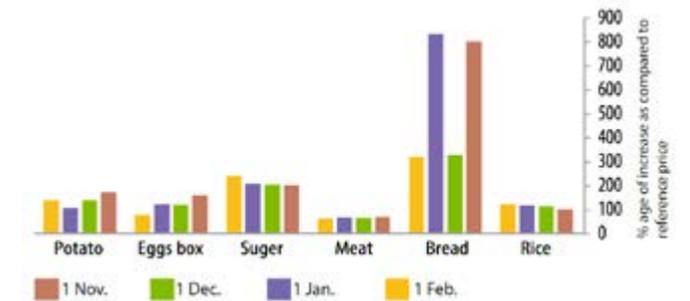
nal airport and other cities’ centres. Aleppo’s airport and railways have been closed since December 2012 and they had reported damages regarding the infrastructure. The public transportation system has broken down but there are still limited microbus services in the western part of the city. The cost of transportation has increased due to growth of fuel price.

Electricity and fuel – Essentially 60% of the city’s power is supplied by the eastern Aleppo thermal plant which is still functioning under crisis. The main factor in the failure of the basic services is the lack of electricity supply. Prices of the main fuel materials rely on the city accessibility and changes in market demand per season. Nevertheless, in the eastern part of the city, prices are less expensive because of the accessibility to the source (Fig. 3.4).

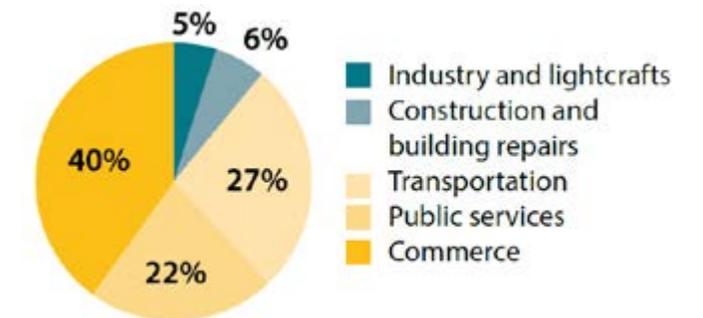
Food and livelihood – In spite of the fact that food is largely available in the markets, it is still the most critical problem for inhabitants. Due to changes in the prices and inadequacy of cooking fuel and impairment of livelihoods, food becomes inaccessible. Although there are no evident problems of starvation, many areas are at risk. There is variation of food prices at both sides of the cross-point: they are generally higher in the west because of the cut offs of supplies (Fig. 3.5).



3.5 Consumer prices of fuel commodities.



3.6 Consumer prices on food items.



3.7 Current sector of employment.

The failure of the industrial and construction sectors that used to be the largest economic drivers, the slowed commercial relations with Turkey, the collapse of the role of the Ancient city of Aleppo as main commercial and tourism hub and the decrease of the agricultural sector caused a negative effect on the livelihood activities. Because of the collapse of livelihood activities, many activities like informal markets, private transportation, and minor repairing activities emerged (Fig. 3.6).

Water, sanitation and solid waste – Although the city benefited by the functional status of the channel from the Euphrates, by the quality of potable water and by the sanitation network, there has been a significant decrease in the level of services because of the damages in the infrastructures; the quality of the water deteriorated due to the lack of sterilization chemicals, the supplying hours dropped and inevitably most hygiene items suffered of inflated prices. Waste management and collection services have become almost non-existent in some areas (mostly in eastern and northern areas), or only continue through the efforts of the people living there.¹²

12 UN HABITAT, City Profile Aleppo - Multi Sector Assessment (2014)

Aleppo's reconstruction

Needs and premises for a reconstruction

The conflict has caused more than 400,000 dead and millions of refugees and around 40 national initiatives are involved in helping the inhabitants, but at the same time the historic monuments and the cultural heritage are being continuously damaged as a strategic tool to destroy the cultural identity of the Syrian population.

As Bianca¹ explained, a city (especially a historic centre) contains the 'spirit' of a culture because it acts as a collective memory for its own society and it shows the attitudes and common patterns of life, hence becoming the source of identity. If the urban fabric is destroyed, the sense of wholeness disappears, especially in traditional Islamic cities, where single buildings were always conceived as part of a comprehensive fabric.²

To protect the cultural heritage, many organizations are monitoring the damage and are starting initiatives to defend it. For example, the association 'Friends of the Old City of Aleppo'³ has supported the collection of plans

1 Stefano Bianca, architectural historian and an urban designer. He is currently working as Director of the Historic Cities Support Program by (HCP) of the Aga Khan Trust for Culture (AKTC) that promotes the conservation and re-use of buildings and public spaces in historic cities of the Muslim World.

2 BIANCA S., Urban Form in the Arab World. Past and Present (2000)

3 For more information see: www.aleppofreunde.de/language/en/about-us/

and historic photos to create a digital archive on the basis of the Cadastral plans of the Old City; they also gathered documents about single monuments, the development of public spaces, the urban structure of the traditional historic quarters and the typology of housing. This documentation is the basic instrument for future strategies in order to reconstruct in dialogue with the existing city and with the cultural heritage. In this complex process, it is important both the participation of former and actual inhabitants of Aleppo, as well as the contribution of experts in the matter (such as urban planners, architects, archaeologists and local craftsmen).⁴ Besides human help, many political, ideological, religious, social and economic aspects will influence the development: according to A. Gangler⁵, it should start from the top-down with legally-binding instruments like qualitative and quantitative land use plans on different planning levels (regional and city level; old city and quarter level; housing level).⁶ When the war in Syria ends, people are expected to return, hence, there will be a demanding need of accommodations. Re-

[nde.de/language/en/about-us/](http://www.aleppofreunde.de/language/en/about-us/)

4 GANGLER A., Aleppo - The Old City at a Glance (2016) p. 17

5 Anette Gangler, architect and urban planner from the University of Stuttgart. She has professional experience in town planning, urban planning and regional planning in different, complex social environments in Southern Germany and in the Arab World.

6

building the destroyed residential quarters is urgent and the necessity for rapid re-housing through temporary buildings has to be a priority; although, rebuilding historic monuments and restoring the image of the city could also be done as a starting project. The way a city is rebuilt post-disaster is critical in defining both its urban as well as its historical continuity.⁷

Certainly, many problems linked with reconstruction already existed before the conflict: the rapid urbanization and demographic changes led to a loss of meaning of the historic part by the whole city. The lack of governance, maintenance and public investments in the past permitted the negligence of the historic centre as a cultural heritage. But then again city centres are subject to change so the main task of renewal and rehabilitation should be about managing it in order to retain cultural significance rather than reducing it.

As claimed by J. Qudsi, to achieve the proper reconstruction it should also be taken into consideration other factors: for example, there needs to be an awareness and aversion to a 'Beirutization'; moreover, there should be researches and analysis of various cases of urban reconstruction of other post-war cities (such as Berlin, Dresden, Hamburg); finally, it is important to remember that the city of Aleppo belongs to its citizens, so public opinions should matter and be consulted during the reconstruction.

7 QUDSI J., *Rebuilding Old Aleppo. Post-war Sustainable Recovery and Urban Refugee Resettlement* (2016) p. 03

City's damages

The battle of Aleppo began on 19 July 2012 and was part of the ongoing Syrian Civil War. A stalemate that had been in place for four years finally ended in July 2016. For this reason, the city of Aleppo has also been badly damaged in the conflict (Fig. 3.10 - next page).

The changing of the old city of Aleppo is comprehensible with the passing years (Fig. 3.8 and Fig. 3.9).

The UNESCO team reported extensive damage at the Great Umayyad Mosque, the Citadel, mosques, churches, suqs, khans, madrassas, hammams, museums and other significant historic buildings in Aleppo. According to a preliminary assessment, some 60% of the old city

of Aleppo has been severely damaged, with 30% totally destroyed.⁸

Of the locations examined, 104 have sustained damage, while roughly a fifth of the sites are completely destroyed. Inspection of the imagery suggests that within the World Heritage Site, the area to the east and southeast of the citadel towards Bab Antakya is the most affected, particularly between the citadel and the Umayyad Mosque; large parts of this area are no longer present.⁹

8 UNESCO, *Reports on extensive damage in first emergency assessment mission to Aleppo* (2017)

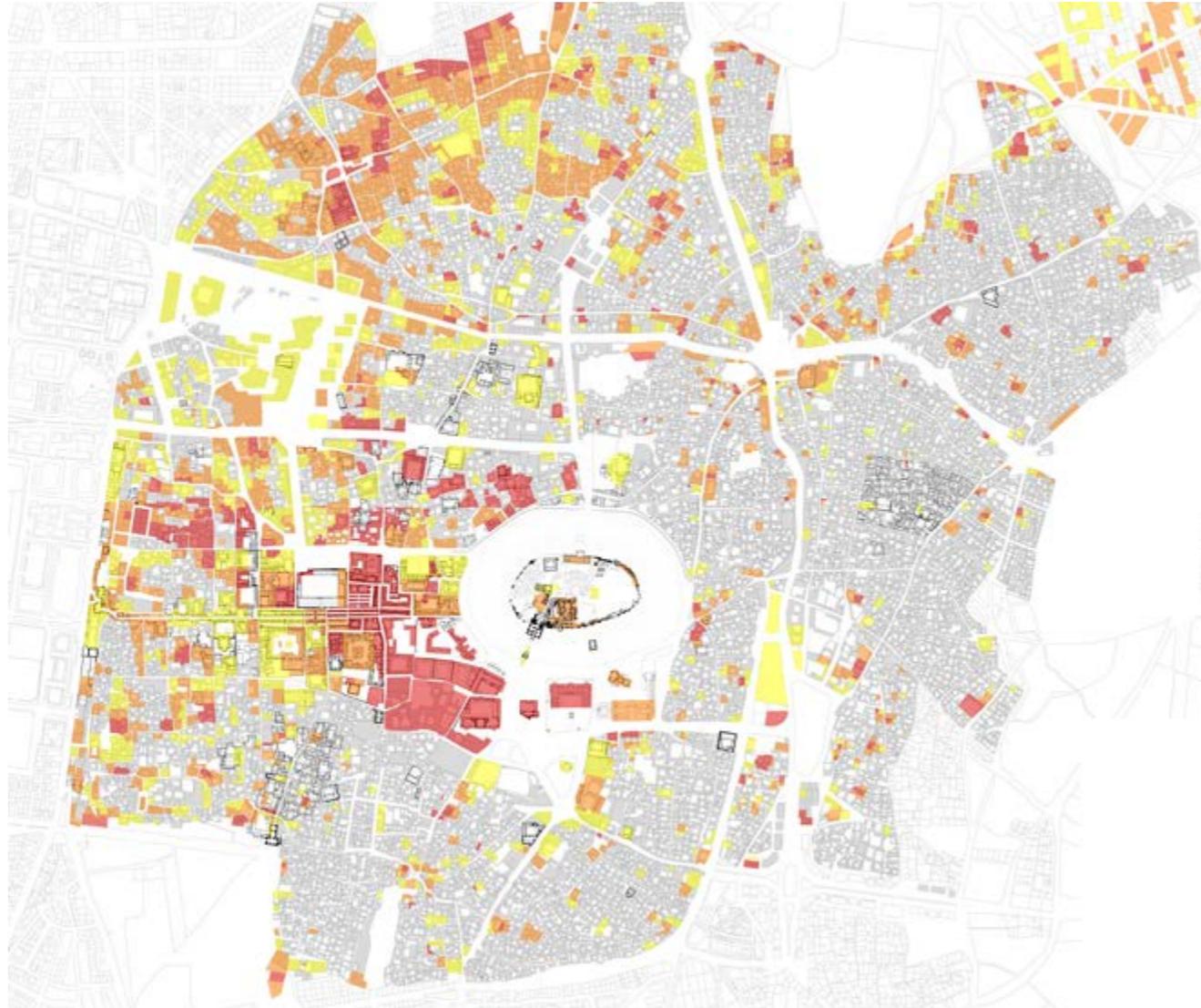
9 UNITAR, *Satellite-based Damage Assessment to Cultural Heritage Sites in Syria* (2014)



3.8 Top view of the Souk-Citadel area - 2012



3.8 Top view of the Souk-Citadel area - 2016

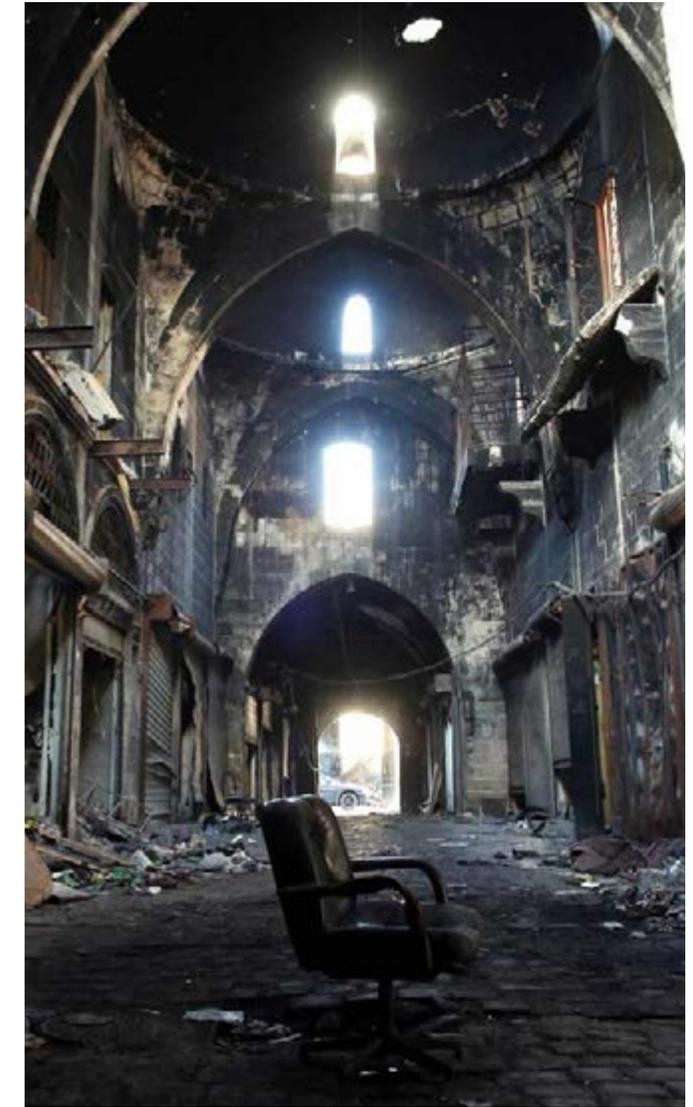


3.10 Destroyed Building Map of Aleppo (Red-Destroyed, Orange-Severe Damage, Yellow-Moderate Damage)

Souq – Many of the souqs were badly damaged in 2012. Imagery verified visible damage to 34 of the 45 souqs examined; a 35th souq was reported to have been damaged, but damage could not be confirmed. Additionally, 20 of these 35 souqs contained 1,121 shops supporting the official estimate that 1,500 of the 1,600 shops were damaged or destroyed. Of the 20 souqs which sustained damages: 4 souqs sustained a minimum to moderate damage and at least one is suspected to have severe damage inside; 19 sustained severe damage; and 11 have been completely destroyed.

City walls and gates – Bab al-Nasr gate and Bab Jinan gate have sustained moderate structural damage. Bab al-Hadid gate has been severely damaged. Damage has been reported to Bab Qinnasrin gate, but this is not visible. However, the section of the city wall to the east of that gate does show severe damage.

Great Umayyad Mosque – The Umayyad Mosque is perhaps the worst affected of Aleppo's monuments. The minaret was destroyed during gutting in 2013; its rubble is clearly visible in the image. There appears to be severe damage to the eastern outer wall, the southern part of the eastern gallery, and the northeast corner of the northern gallery. It was destroyed by the same way which ravaged the rest of the gallery and destroyed the library in 2013. In addition, the marble-tiled courtyard has been



3.11 Souk al Medina

partially destroyed. Lastly, the garden is severely damaged as is the entrance to the souq from the eastern gallery.

Aleppo Citadel – Impact damage is visible on the stone cladding of the glacis (the damage largely dates back to 2012. Minor structural damage is visible on some of the other structures, including some of the towers on the wall. The worst damage was done to the Temple to the Storm God. A roof was constructed in 2005 to protect the excavated area; this is no longer present. The state of the excavation underneath is unclear in the imagery, but appears as if it may have been disturbed. Although the Gatehouse is known to have sustained minor to moderate damage from an attack in 2012, damage cannot be verified with the image.

Jdeide Quarter – Little damage was visible on the buildings in this area after review of satellite imagery. However, the area (including the historic buildings in it) is reported to be heavily damaged. Therefore, these buildings represent most of the sites marked as possibly sustaining damage in the Annex.

Aleppo National Museum – Potential damage to the south-eastern section of the roof was visible when satellite imagery was examined. This may be a result of reported shelling of the building, however most damage may be to the facade of the structure, so is not visible in the imagery.¹⁰

¹⁰ UNESCO, Reports on extensive damage in first emergency assessment mission to Aleppo (2017)



3.12 Entrance to the Citadel before and after the conflict.



Strategies for a coherent reconstruction methodology

In this chapter some methods and guidelines for the city's development and reconstruction will be discussed and compared. The first that can be mentioned is the one by Bianca even if it was formulated before the beginning of the war. The need of reconstruction has been constant during the history of Aleppo and, in modern days, some problems of the past that needed yet to be solved, are made worse by the conflict and they are still a concern.

The biggest problem he encountered in the city is the integration between the modern urban fabric and the historic one: the existing masterplans didn't propose any kind of solutions and this led to the absence of development strategies and negligence of the historic fabric; it is also mentioned that once it is established a relation between both urban fabrics allowing both for development of the new town and for rehabilitation of the old town, the remaining problems will be discussed with a greater chance of success.¹¹ This is also the reason why in the report 'The Conservation of the Old City of Aleppo', he first proposes general guidelines for the entire town, then he focuses on the Bab al Faraj and Bab Antakia areas, which are critical for the transition between the old and the new fabric. The

¹¹ BETON Y., BIANCA S., CHAUFFERT-YVART B., DAVID J.C., RIZZARDI G., The Conservation of the Old City of Aleppo (1980)

real challenge for a new strategy is how to deal with the historic core: the old town needs to stay alive and viable, but it still needs to be protected against too many activities that will overload its capacity.

« A key could be to filter and adapt the dynamic input by controlling the traffic-related activities, which are the main cause of dynamism within the urban system, in order to reduce the impact upon the old town. »¹²

Applying these principles to the current post-war situation can be difficult because of the lack or severe damage of activities and buildings in the historic centre, but Bianca's methodology can still be applied when talking about interventions in selected areas. In 'Designing Compatibly Between the New Project and the Local Urban Traditions' he claims that most of the interventions made where either new large-scale development promoted by modern economy and technologies, or attempts at conservation that are often sterile since they do not consider the requirements of a living city;¹³ his main goal is to find in-between solutions that will produce appropriate developments that can interrelate conservation and innovation.

The principles to reach this goal are:

a. An integrated planning framework: all aspects of planning must be considered in mutual interrelation.

¹² Cit. Ibidem, p. 36

¹³ BIANCA S., Designing Compatibly Between the New Project and the Local Urban Traditions (1984) p. 22

b. An appropriate transportation strategy: the vehicular accessibility of the city centre should be limited and the coherence of the fabric and environmental values should be protected.

c. A well-adapted land-use scheme: rules of compatibility have to be established between certain types of historic architectural structures and the activities they contain to reach a balance of the urban system.

d. A comprehensive urban design strategy: conservation and development in historic areas should be considered as a single action; conservation should involve different kinds of interventions such as restoration, functional rehabilitation, renovation and also replacement (according to strict typology criteria). Bianca also focuses his analysis around the effects of modern town planning, mostly imported by European countries and planners, in Islamic cities. He underlines how masterplans often rely on isolated blocks and use the historic fabric to create new open spaces; moreover, since the block typology is not compatible with the contiguous cellular structure of the traditional Islamic fabric, the connection between the two different urban structures becomes a serious problem. In addition to the change in typology, many modern interventions often vary the size of the development, which leads to larger open spaces around them interrupting the continuity of the fabric; this may also cause climatic and social problems and produce high concentrations of activities that cannot be absorbed easily.¹⁴

14 Ibidem, p. 21

This set of problems is also the base of Cantacuzino's¹⁵ strategy defined in 'Aleppo: Bab El Faraj. The importance of townscape in reconstruction'. There he expresses the importance of the townscape concept, which is a matter of relationships that can enhance the reality of a living city and not turn it into a static museum: « It is the relationship of buildings and features, enlivened by people and by their activities and expressions, as perceived by the static or moving eye. »¹⁶

There are five principles of townscape:

a. High density without height: a site could be developed with the same amount of floor area in several different ways (high-rise, medium-rise and low-rise); the traditional Arab town with its courtyard houses not more than two-stories high, is a perfect example of high density without the need of very high buildings.

b. Continuity and contiguity: the courtyard plan produces continuous walls and buildings touching and merging with the next ones; this results in a compact urban scale fabric and character, as well as liveable spaces in-between buildings like streets, alleyways, small squares and courtyards.

15 Serban Cantacuzino, architect, founder and president of 'Pro Patrimonio foundation'.

16 CANTACUZINO S., Aleppo: Bab El Faraj. The importance of townscape in reconstruction (1984) p. 24

c. The informality of public space and the formality of private space: the typical Arab town is an aggregation of formal private courtyard spaces with the streets as informal left-over space along the natural lines of communication; from a visual point of view, both the tortuous street and the rectangular courtyard (of mosques, madrassas, khans and houses) are essential elements of the townscape that needs to be protected, so importing the European formality of public spaces feels foreign and wrong.

d. Mix of people and uses: the tendency of modern development is to separate and to concentrate uses; each of them is given its own separate building and then grouped with others according to function producing specialised zones. Yet in the middle east there is the souk, which is the most developed example of mix and the physical expression of a particular culture.

e. Scale and Frequency of movements: movement in cities, both pedestrians and vehicles, is largely determined by mix. If in a given area there is a lot of mix of activities, there will be more movement than if the same area is re-developed with superblocks.

The IUSD Lab's workshop 'Scenarios for Post-War Reconstruction in Aleppo' was developed around the idea of focusing on the urban fabric of the Old Town, beyond monuments, as an integrated part for future global sustainable

development. During the introduction presentation Gangler, stated that strategic planning cannot be adopted easily from one culture to another: cultural, political and economic conditions must be analysed as well as natural conditions such as climate and local ecosystems.

« It is necessary to develop adapted planning instruments and to learn from experiments, to work into detail but to reflect its interaction with the city system in a parallel fashion. »¹⁷ One of the contributors to the workshop is G.A. Neglia,¹⁸ who spoke about a strategy for the post-war development in her presentation 'A Methodological Approach to the Post-War Reconstruction of the Aleppo Building Fabric Morphology'. Her main concern is the reconstruction of residential and mixed-use historic neighbourhoods, since they represent the greatest part of the damaged areas, with a method that allows for both shelter for the inhabitants and to face future reconstruction. Moreover, the post-war reconstruction should be planned as a rehabilitation of Aleppo's cultural heritage with the aim of giving back to the Syrian people their cultural identity, their homes and their urban spaces.¹⁹

17 GANGLER A., Aleppo - The Old City at a Glance (2016) p. 16

18 Giulia Annalinda Neglia, architect and professor at Politecnico of Bari. She is a researcher and she got a PhD in Architectural Design for the Mediterranean Countries with a thesis on Aleppo.

19 NEGLIA C. A., A Methodological Approach to the Post-War Reconstruction of the Aleppo Build-

It is important to rebuild the urban fabric 'in continuity' with the past and with the traditional structure of the Old City, but also to avoid the risk of globalization given by economic interests. With the aim of regaining the original urban landscape, it is necessary to guide the spontaneous reconstruction actions that the Old City inhabitants are currently carrying out by developing a methodology that will give directives to rebuild neighbourhoods.²⁰ Furthermore, different approaches should be adopted according to the different layers of the built environment such as monuments, archaeologies and traditional courtyard houses.

The strategy outlined indicates that:

a. All the urban layers related to the morphology of the Old City should be considered, especially, the courtyard houses layer, which defines the city's urban landscape. The typo-morphological approach is the most suitable to face cases of housing reconstruction: it allows to interpret the urban fabric and to propose design solutions that are 'in continuity' with the historic structure. Therefore, understanding and following the 'typical behaviours' of the building fabric means proposing a gradual design of shelters for the Old City's inhabitants inside their own houses; by giving them methodological tools to progressively re-build their own houses, the emergency could be the first step of the reconstruction process.

ding Fabric Morphology (2016) p. 33

20 Ibidem, p. 36

b. There is a need to upgrade historic courtyard houses typology to modern living standards while still preserving their main architectural and morphological characteristics. Recovery plans should include specific guidelines for a typological self-reconstruction of undocumented historic courtyard houses; several different layouts for their partial or total reconstruction should be also proposed according to the logics of gradual settling of rooms around the courtyard.

c. Building techniques of traditional courtyard houses are necessary to provide self-construction skills (perhaps re-using destroyed building materials).

d. Urban landscape characteristics of the Old City areas that were heavily transformed because of the construction of multi-story buildings be improved to recover from the cut within the ancient fabric. These buildings will need to be reduced in height or demolished in some cases; in particular, it could be an opportunity in the middle-term perspective to solve emergencies by using these empty plots for inhabitants.

e. The archaeological layer within the reconstruction plans should not be neglected. This could present a chance to integrate archaeology with architecture into the Aleppo's renewed urban landscape.

f. Public open spaces need to be implemented

into the city in order to recreate sociality and to give urban security; therefore, some housing lots could be left un-built to this aim as well as to create a visual connection between past and future.²¹

Other strategies that will be analysed are those that already have been used in post-war reconstructions: cities like Beirut, but also Berlin, Dresden, Cologne and other European towns, could offer practical examples of the outcome of different methods. The case of Beirut, is the prime example of extensive reconstruction where the town was not rebuilt how it was. The city had sustained immense damage between the years of 1975 and 1990 after a lengthy civil war and by 1990, Beirut resembled a ghost town.

Soon after the end of the war, however, most of the buildings in the old centre were demolished even if not all of them were damaged beyond repair.²² In 1994 prime minister Rafiq Hariri founded 'Solidere',²³ a real estate company that carried out the reconstruction of downtown Beirut over the following years resulting in the most westernized urban area in the Middle East. The reconstruction effort rapid rate and high standards for design and

21 NEGLIA C. A., A Methodological Approach to the Post-War Reconstruction of the Aleppo Building Fabric Morphology (2016) p. 36-39

22 SARKIS H., Resilient City: How Modern Cities Recover from Disaster (2005), p. 283

23 Lebanese Company for Development and Reconstruction of the Beirut Central District.

infrastructure have been the basis for the company's claim to creating an economically viable downtown that will lead to economic growth. However, this caused rapid investments just in the downtown, while the rest of the city remains still stagnant today.²⁴

The reconstruction of the Souks, vital parts of Islamic cities, should also be mentioned in order to understand better the methodology and if it can be applied to the Aleppo's Souk. The new structure was developed by Rafael Moneo and it had the goal of preservation through an architectural and typological perspective. The site, suitable for a large-scale project due the tabula rasa plan, has been constructed to revitalize the character of a souk with a contemporary retail setting within the new financial and commercial centre. The criteria for reconstruction emphasize the importance of previous street patterns, old functions and their form and it takes into consideration pre-existing axes. In this new souk, however, the local crafts are replaced by corporate brands that need a different space configuration: hence, the scale and size of the shops is increased, but this may result in the loss of character and identity proper of the Souk's structure.²⁵

Other examples are given by many World War II cities that saw their historical quarters destroyed in the conflict; while they can appe-

24 QUDSI J., Rebuilding Old Aleppo. Post-war Sustainable Recovery and Urban Refugee Resettlement (2016) p. 06

25 EL CHAMI Y., From Multipli-City to Corporate City in Beirut Central District (2012)

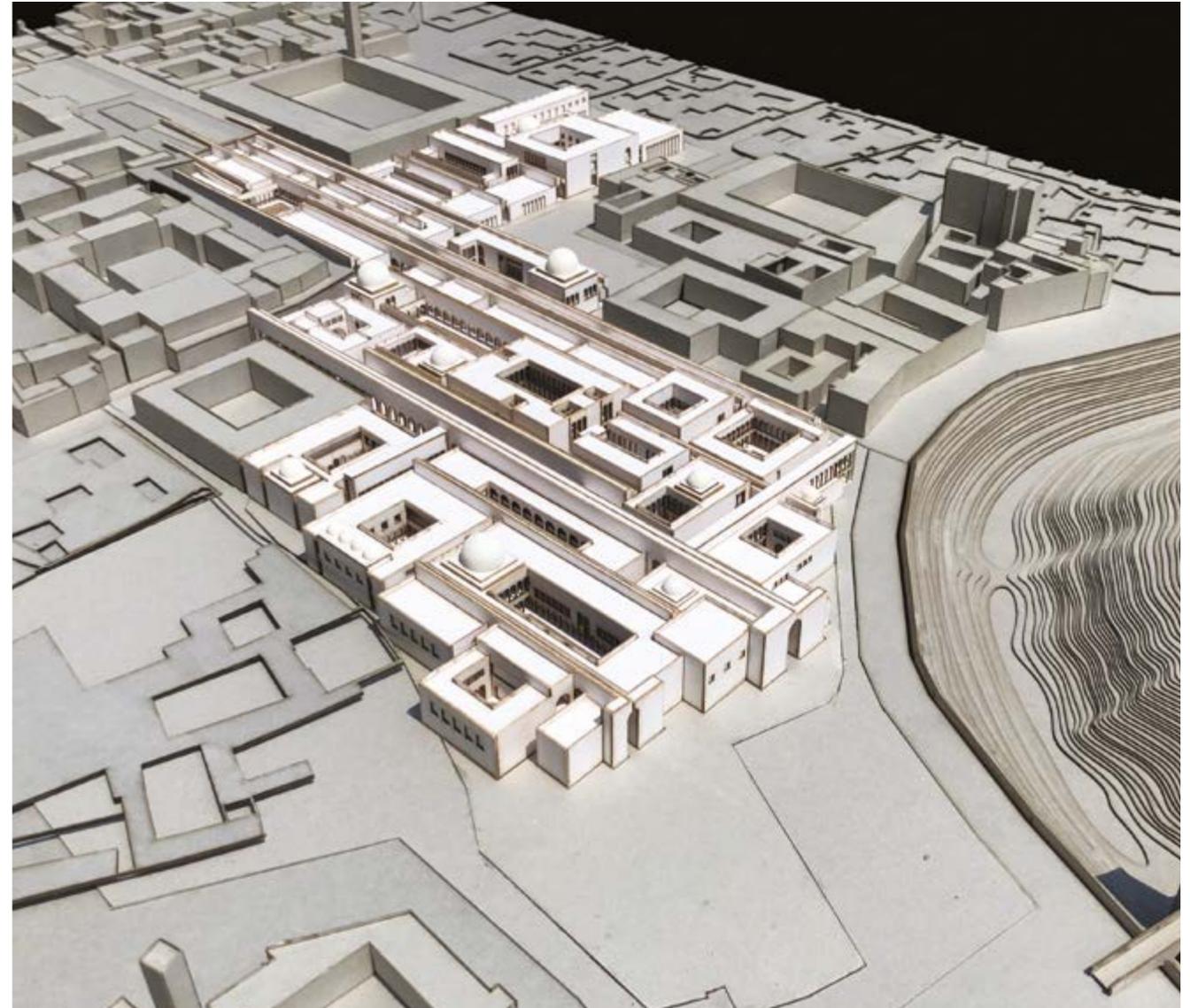
ar too foreign to the Aleppo context because of different cultural backgrounds, techniques and even historic period, it is still significant to analyse the theoretical strategies and results developed as a follow up from a similar common ground (i.e. the urban destruction following a war).

One of the most cited heritage reconstructions is the city of Dresden. In 1945, Dresden was carpet-bombed by allied planes, an estimated 35,000 people were killed and the historic heart of the city was destroyed. Today, the old quarters of the city have been precisely rebuilt with very little evidence the destruction ever occurred. In fact, planners sometimes went further than simply returning monuments to the state they were right before the war: there was such a strong will to restore the grandiosity of German historical architecture that certain monuments were recreated identical to their older versions like the Residenzschloss Palace, which was restored to its 16th-century version.²⁶ Dresden is not alone in the list of cities where historical cores were identically rebuilt: Mostar and Warsaw are other notable examples.

26 BREBBIA C. A., JAGER W., *The Revival of Dresden* (2000)

The Reconstruction of Aleppo's Historic Center

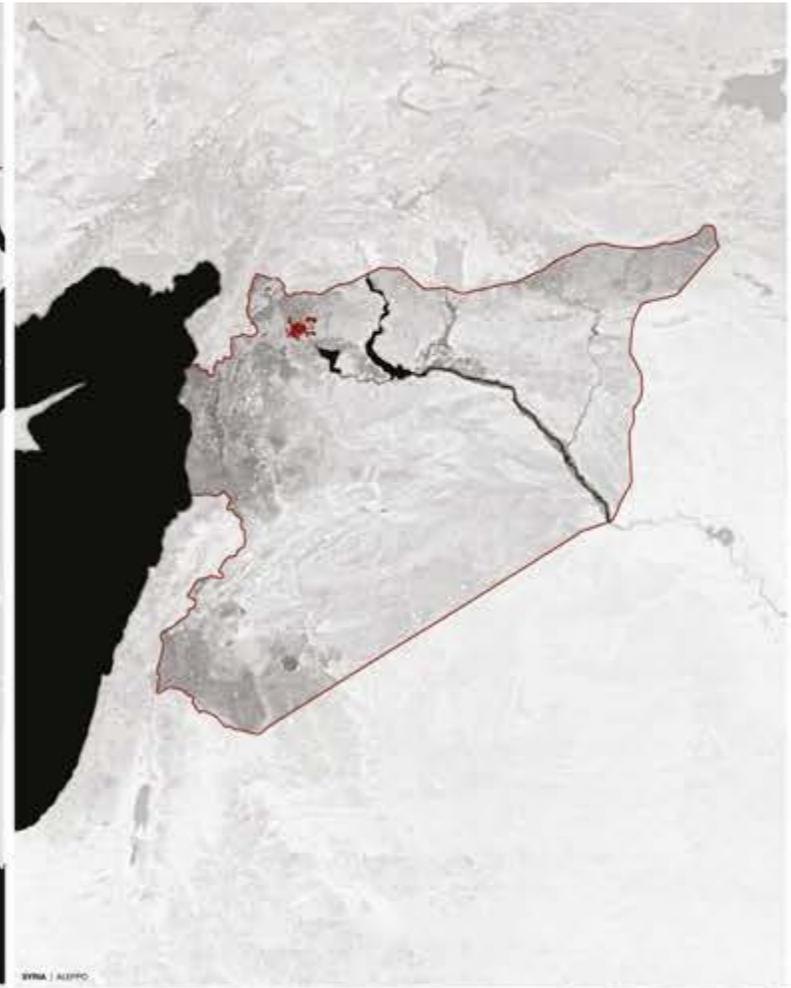
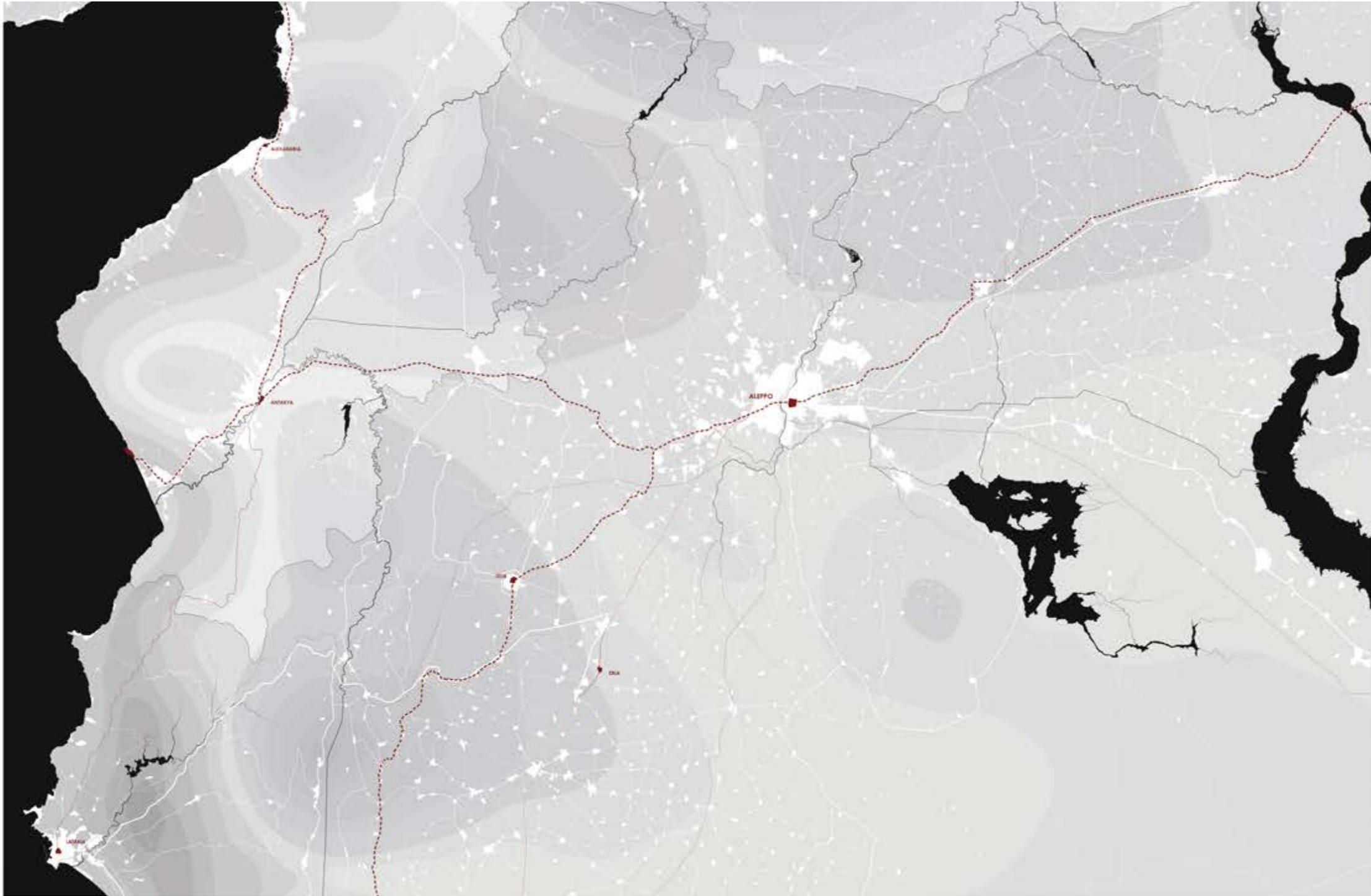
Project Proposal



Abstract

Obeying the historical and cultural heritage, it was aimed to reconstruct the buildings and areas that were damaged and devastated during the war in the historical region of Aleppo. With this purpose, taking all the architectural elements into consideration, the design is made by contextualizing with the city texture. A new meaning has been given to the Souk system and it has been aimed to be interaction with the current Souk. According to the possible future needs, function propositions have been made for the architectural structures located in the work field. It is aimed to be a reference point for the future projects and any restructuring work.

L'obiettivo é; ricostruire gli edifici ed i siti danneggiati/demoliti dopo la guerra nell'area storica di Aleppo, conservando la sua identità storica e culturale. Per raggiungere questo scopo; tutti gli elementi tradizionali architettonici sono stati presi in considerazione e progettati associando con il tessuto urbano della città esistente. Uno nuovo commento é stato suggerito per il sistema di 'Souk' e stato interagito con il sistema esistente. Nell'area di progetto, le nuove funzioni sono state proposte per gli edifici in base all'esigenza future. Questa tesi ha lo scopo di essere un punto di riferimento per i progetti future o qualsiasi lavoro di ristrutturazione.



Introduction

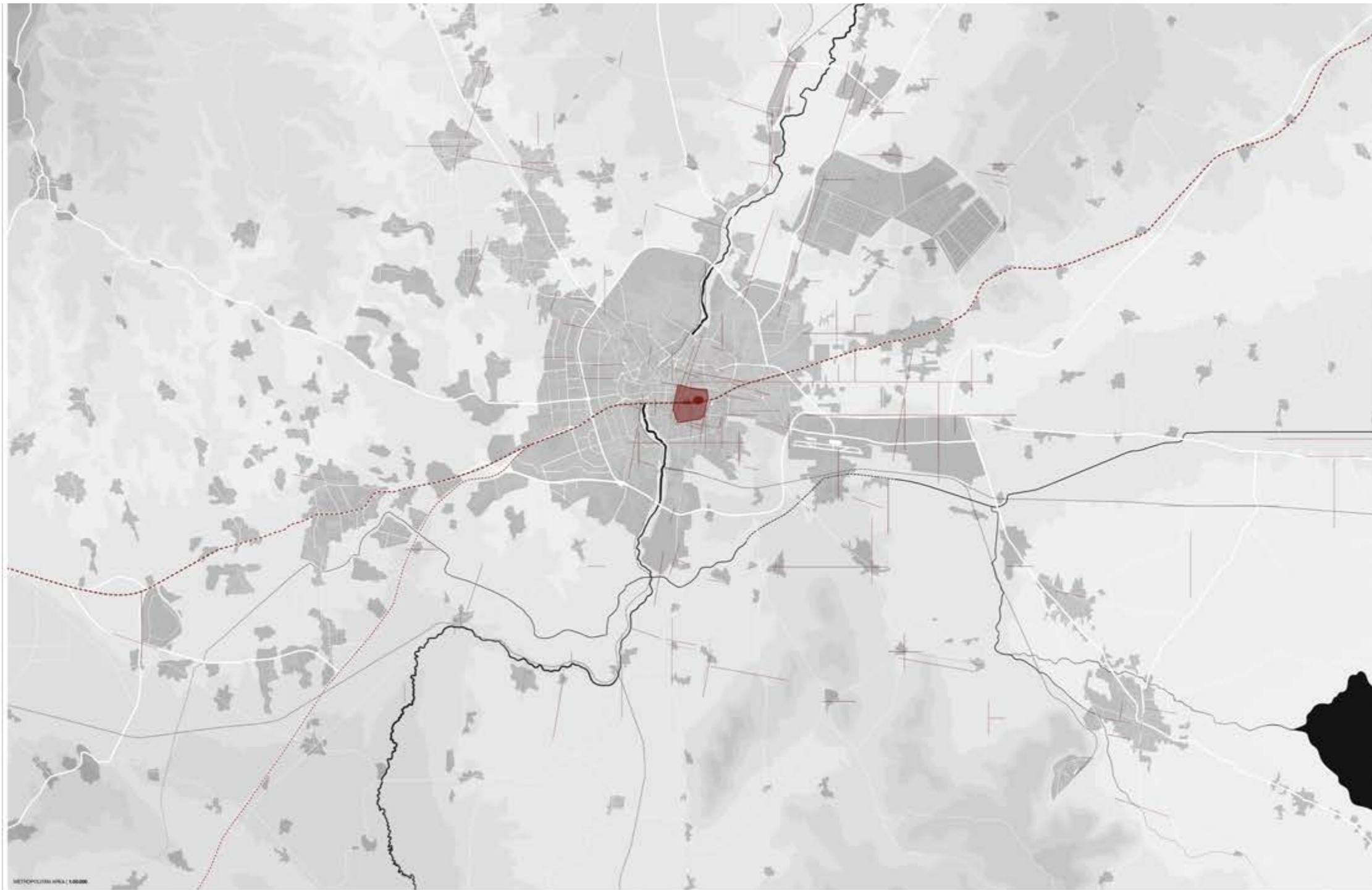
While being one of the oldest cities in the world, Aleppo is also located in the south of Turkey and west of Iraq. It is at the junction point between Anatolia, Mezopotamia, Mediterranean and Iran. It has been a home to many civilizations and it is one of the biggest two cities of Syria. Aleppo is an important point on the Silk Road and this has caused the development of the city in socio-economic aspect. It is also known as a commercial city. In centuries it has been a resort to merchants. It is also one of the most affected cities from the domestic war started in 2011 and still ongoing.

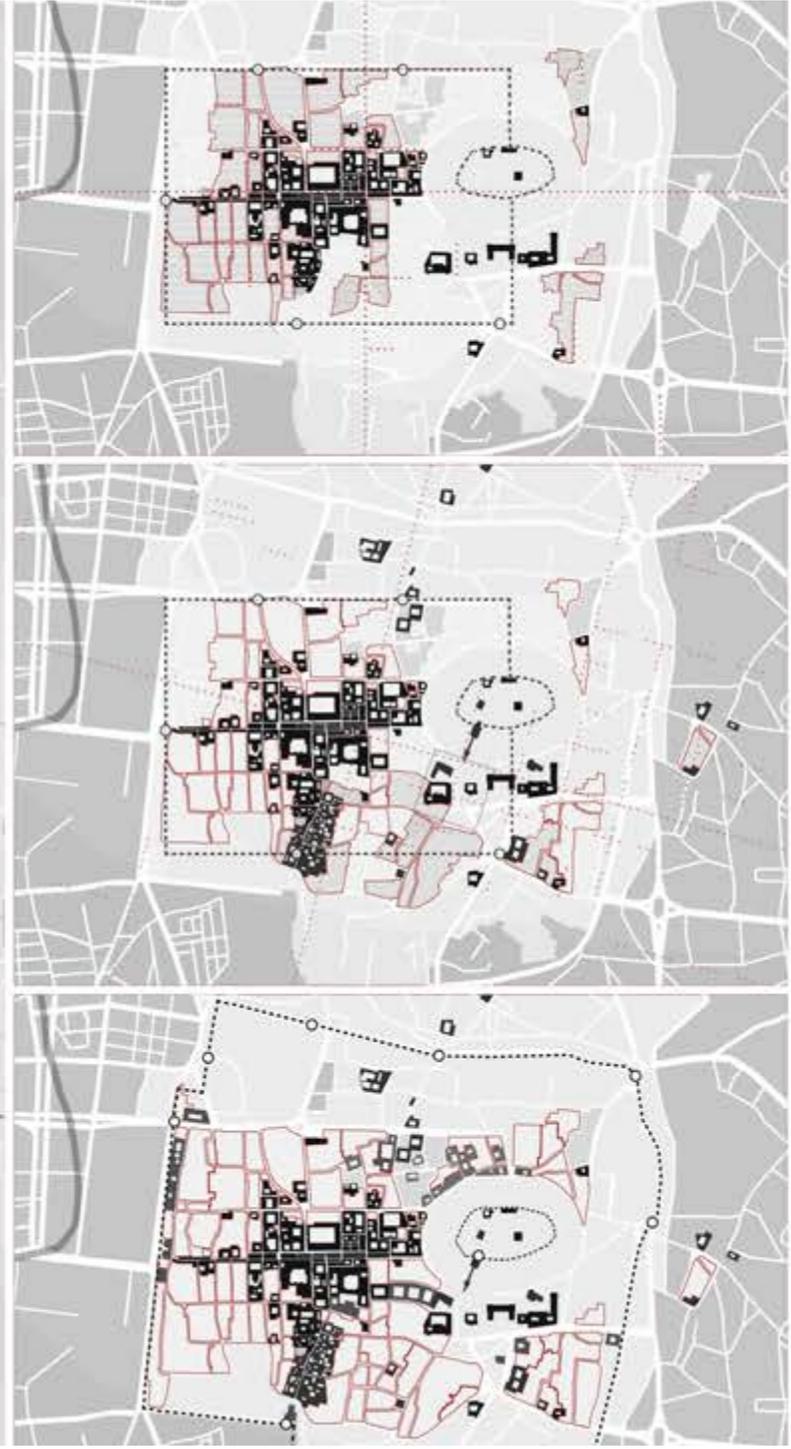
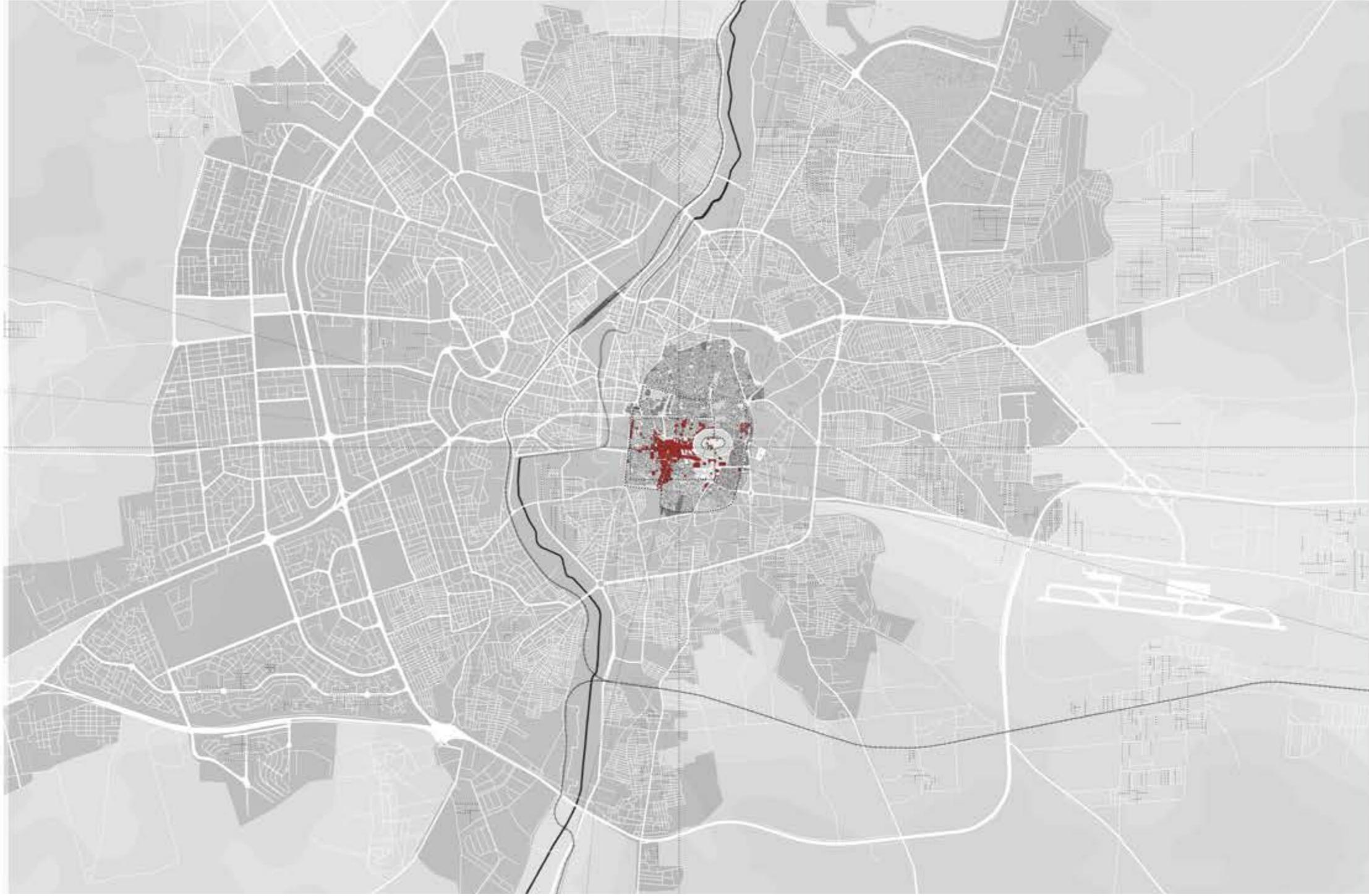
This war has been affecting the historical places and many historical buildings were damaged including the symbolic ones such as the Souks and the Great Mosque. Entirely demolished old hotel area close to the Citadel is one side of the working area while the other side includes some parts of the Souks and the wall of the Great Mosque. According to the analysis in the city scale and historical research, it has been revealed that the city texture holds several axes. It is seen that each axis reflects a certain period. The city has expanded with respect to these axes. In this context, main decisions about the restructuring have been taken and it has been sought to find a solution and notion in the city scale. Entire database has been scrutinized in order to understand the reasons of emergence. Souks, citadel, courtyards, khans, Turkish baths, madrasah typologies, mosques, traditional houses of Aleppo, streets, pedestrian paths and such architectural data and progress of structure have been observed.

Focusing on a main concept, shaped the whole project and the relation between the idea, souks and khans. Starting point of the idea is the first settlement reason of the city and its location on a trade route. Because of that there was the need to construct souks and khans. The orientation of the souks between the borders of the city (the gate of Antioch and Citadel), has a great effect on the design process. New construction area will be the continuity of the existing texture and it will be an important gain for the city itself. In this way, unity of the city is provided.

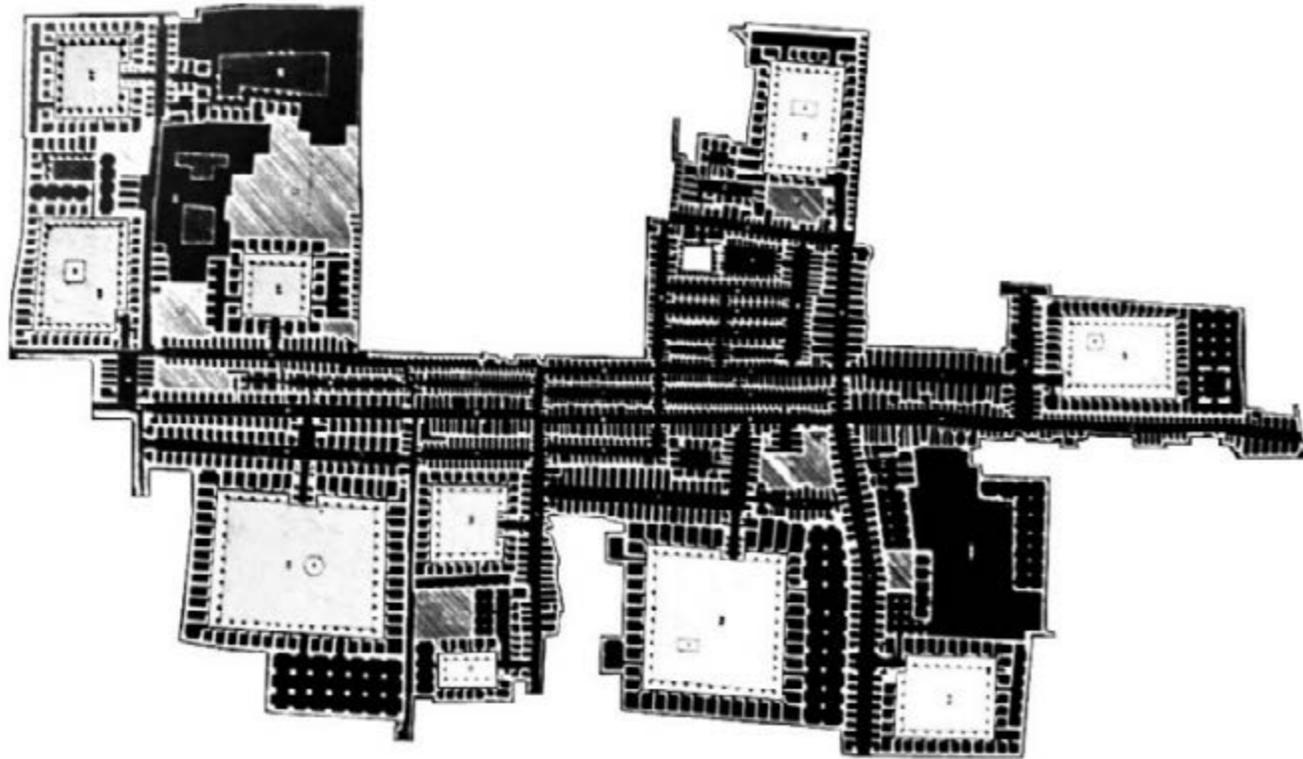
In a small scale with the perception of khans and souks, balance between the open and closed areas is achieved by creating a contrast to closed construction and large openings of existing typology and designing small and multiple openings in the project area. With that approach, in larger scale, the pattern in the demolished area is completed with the architectural design.

As a conclusion, traditional architecture style of Aleppo, streets, access to the project area, interpretation of axes, use of materials, all architectural elements and the local history have been influential for the project. The main characteristics of the project are simplistic representation of today's architectural design, variety of size, adaptation to daily functions, new forms which shape the project but at the same time that adapt to the city texture, use of old lines, reducing the layers and showing the differentiation by changing materials, mixing different historic elements of multiple cultures, using irreplaceable elements of history such as domes and arcs in the project with a harmony.

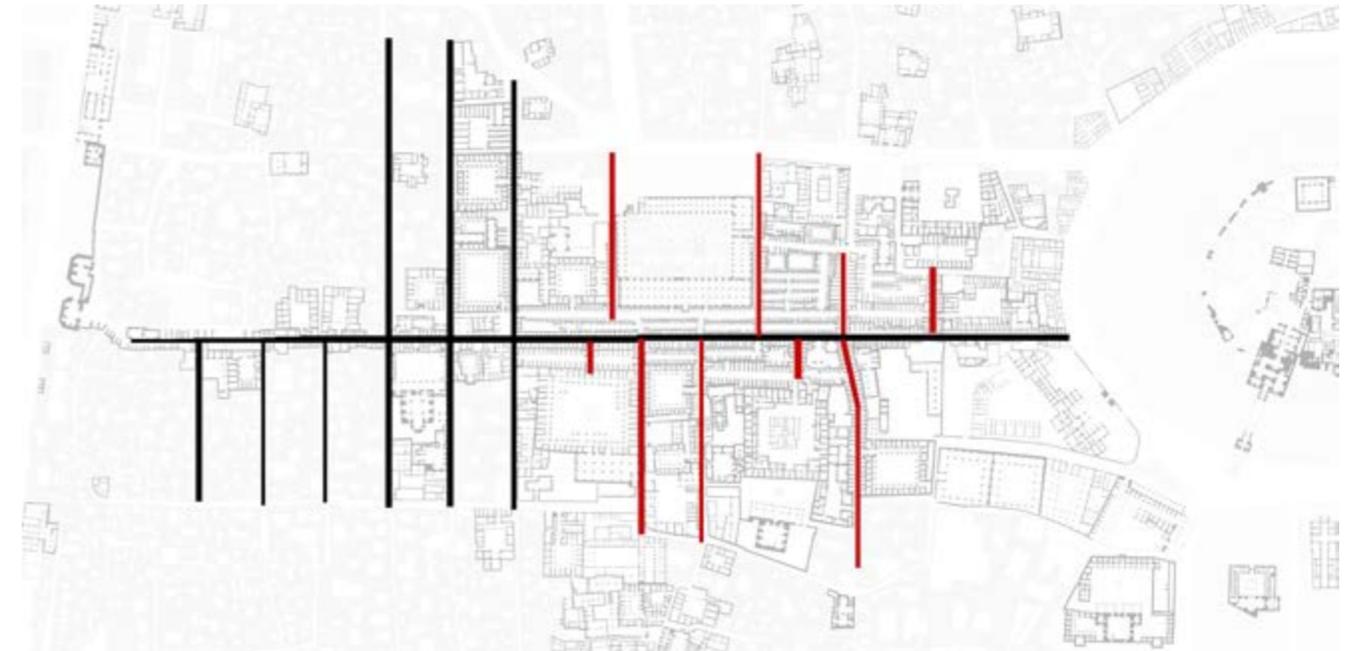




Urban Analysis of Aleppo's Old City



4.1 Souq's boundaries and open internal space

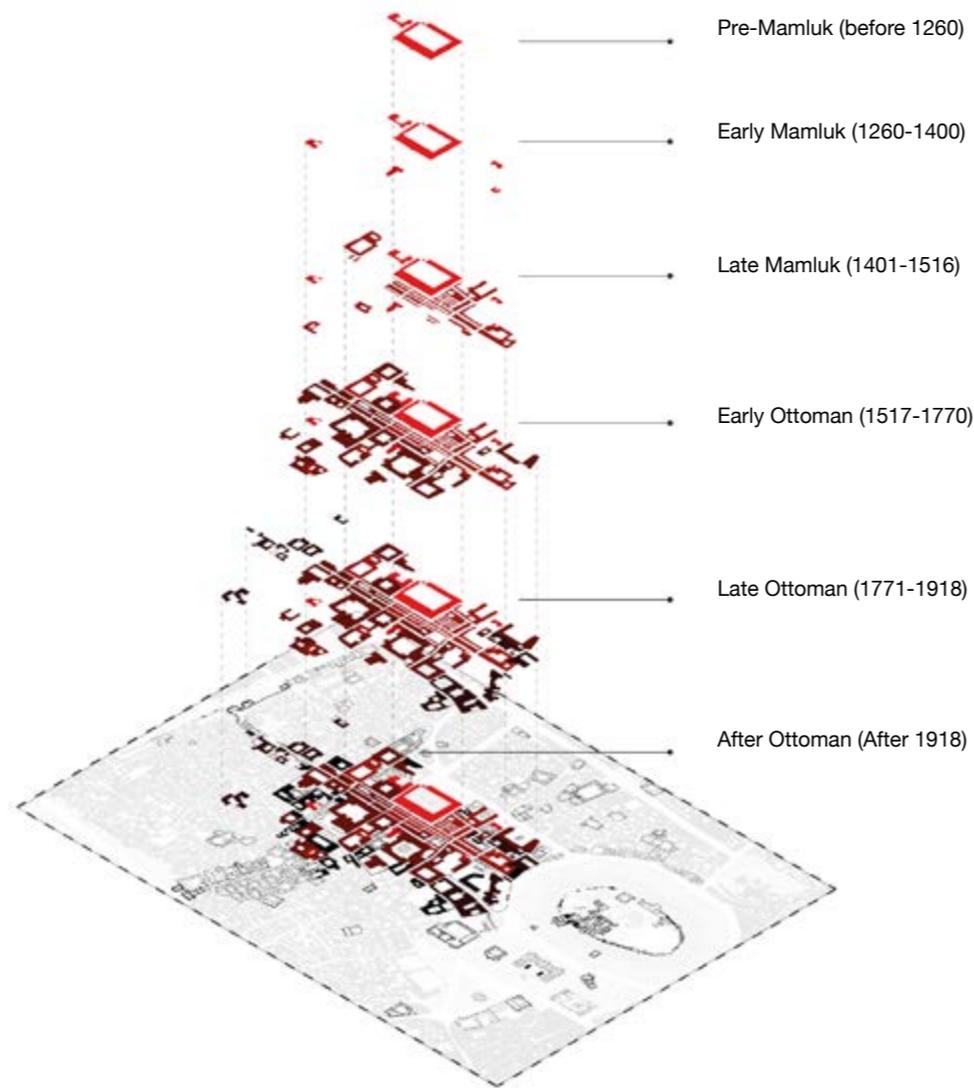


4.2 Orthogonal axis system, vertical streets and horizontal main axis (black: regular, red: irregular)

Aleppo has an important role because of its location and history. It shelters lots of cultures and that enriches the story of the city. In the Hellenistic era, borders of the city was planned between the gate of Antioch (Bab Antakia) and the hill of Citadel. It is called as an historic center because it was the first settlement area in that era. The city started to rise on a strong axis between east and west direction. This orientation causes an orthogonal pattern which shapes the morphology of the city. In addition to the positioning, locating on an important trade route and the activity in the city shows the reasons of formation. For this reason, the souqs and the khans have an important role in the city fabric. The concept of this project also formed around those two main architectural

items.

The linearity of the existing souk system is visible in the area. In the existing situation, there is a horizontal distribution of the souqs which shapes around the khans and crossed perpendicular by the narrow streets. All buildings are located around the souqs and this situation represents the dense existence of close spaces. The function of the city creates the need of retails and having the retails around the souqs brings out the requirement of a place to accommodate for traders. During the empire of Mamluks, construction of khans started as a solution to this problem. The structural openings of the mosques which built in Islamic era and the architecture of khans create a balance between the dense texture of the shops.



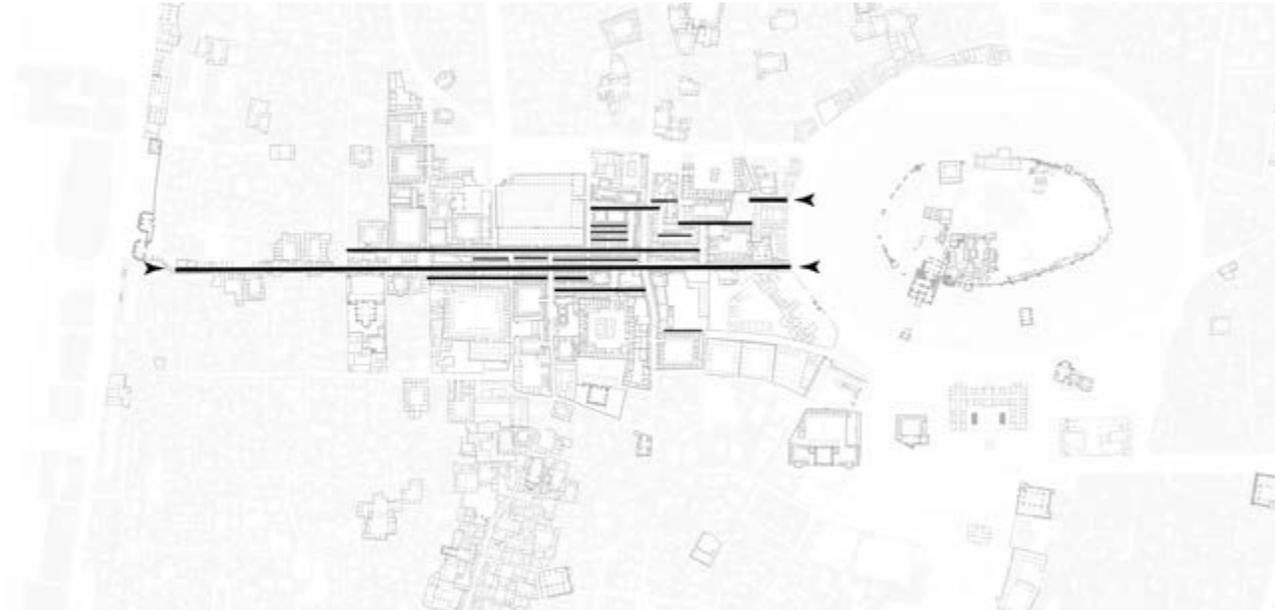
4.3 Process of souk and khans improvement in time

Also, the big square of Hellenistic era which is called Agora, easily adapted this texture by this planning system.

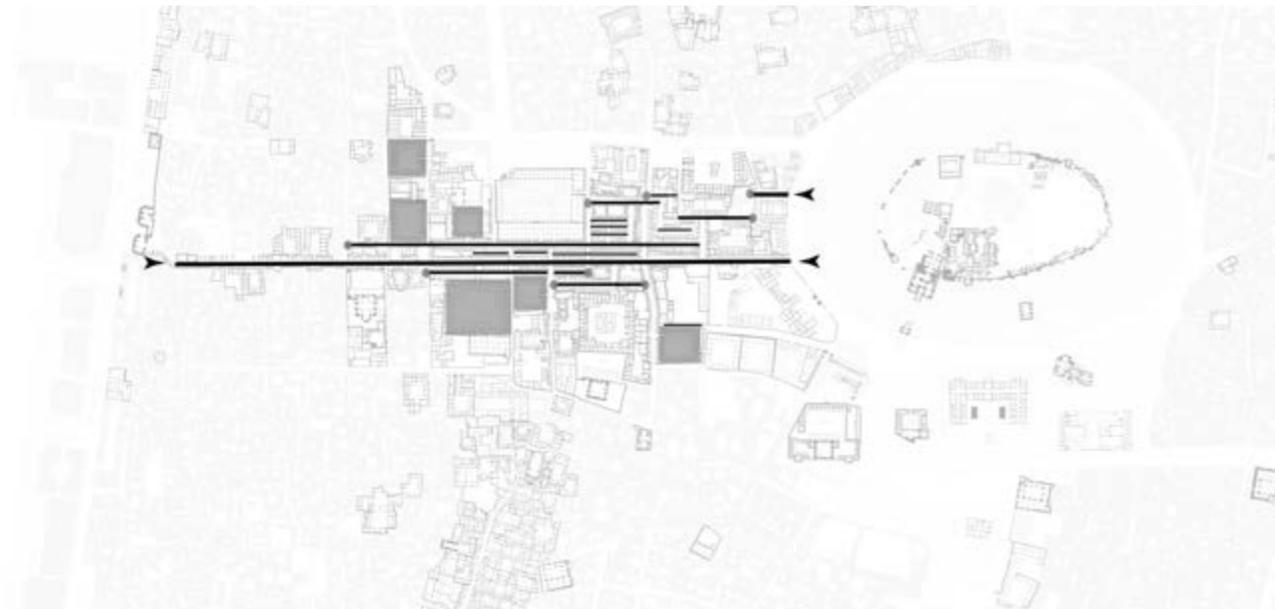
Agora of the Hellenistic times that is now called by the name of 'great mosque' is right next to the gate of Antioch within a parallel axis. This placement shows that this axis works like a spine for the whole structure of the city from past to today. All of the khans and streets are spread from this main path to different parts of the city.

Observation of the relation between khans and souks shows that, the orthogonal grid system of the city planning in Roman times changed into more organic texture in Islamic era with crossing streets and change in direction of the souks. In the places close to the gate of Antioch, there are continuous perpendicular streets. The change in the grid system of streets is visible around the khans of Memluk times. They branch into two streets from a main axis and shift at some points. This branching creates a disorientation and disconnection of the horizontal development of the souks. It can be analysed that, each continuous vertical streets and horizontal souks are blocked and changes its direction because of an existence of a khan or a mosque.

As a conclusion, those blocked horizontal circulation system increased its number in the north-south direction in parallel with the main path. The paths become denser and create a pattern while they are closer to the façade of the citadel. This layout explains the main idea of the project and reveals the idea of linearity.



4.4 Texture of horizontal traces and location of existing gates



4.5 Relation of horizontal traces and khans

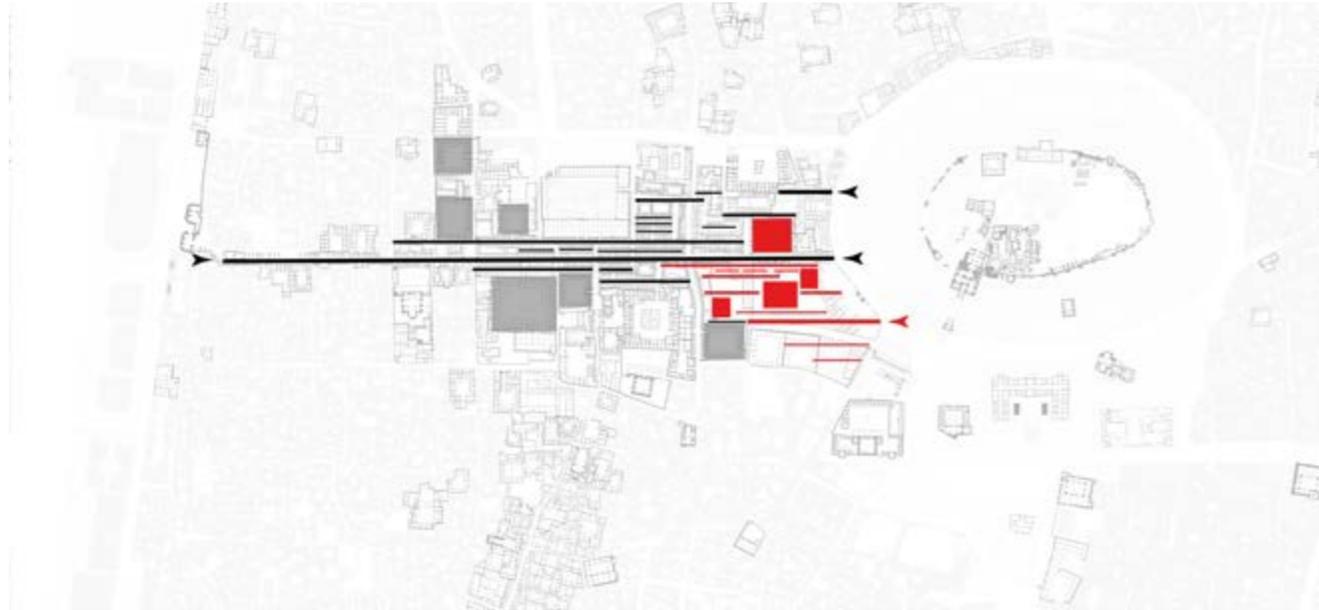
Main Concept according to Existing Traces such as souks, streets gates and courtyards

Linearity

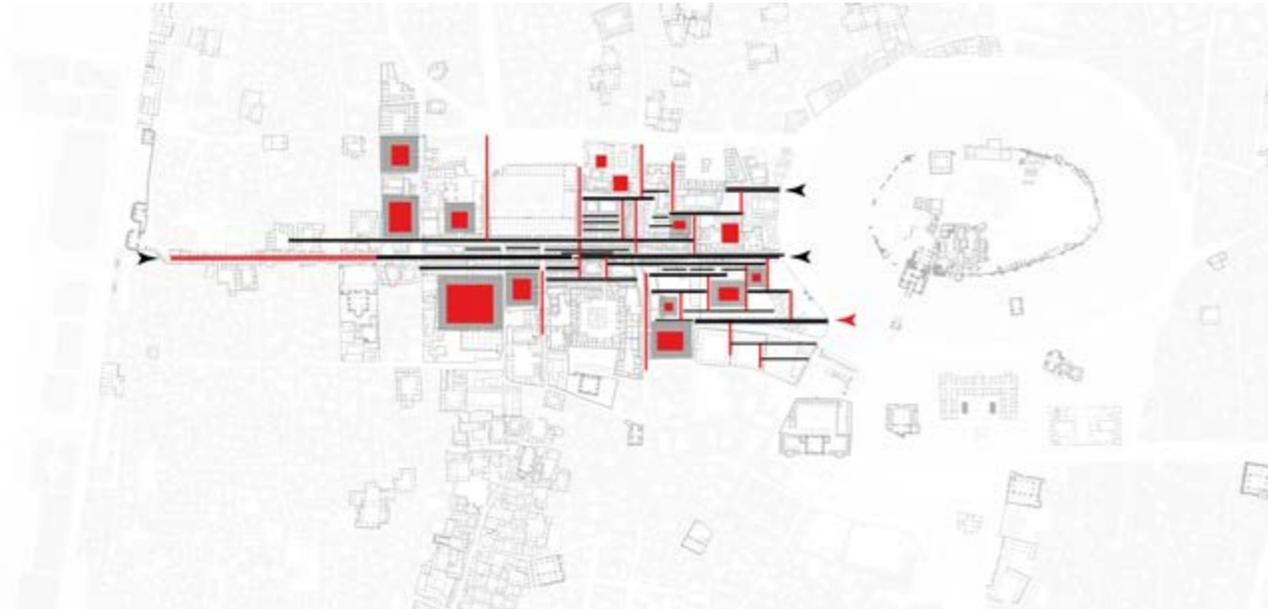
Through time, development of the souks was in the horizontal direction. It gave the main idea of the project: working on a linearity. In order to show the old souks as a reference, inside the demolished area, new axes were designed. Single main street starts the circulation from the gate of Antioch and it branches through the path to Citadel. This brings up the idea of having a new gate to the project site. New gate is designed as similar as the existing main axis and it is constructed in the same linearity. Other horizontal lines are discontinuous similar to the old souk and khan relationship. The number of the lines increased as parallel lines and they are all connected with the vertical streets. This design supports the historic development of the souks as well as it coordinates the circulation through the shops.

Traditional Narrow Streets

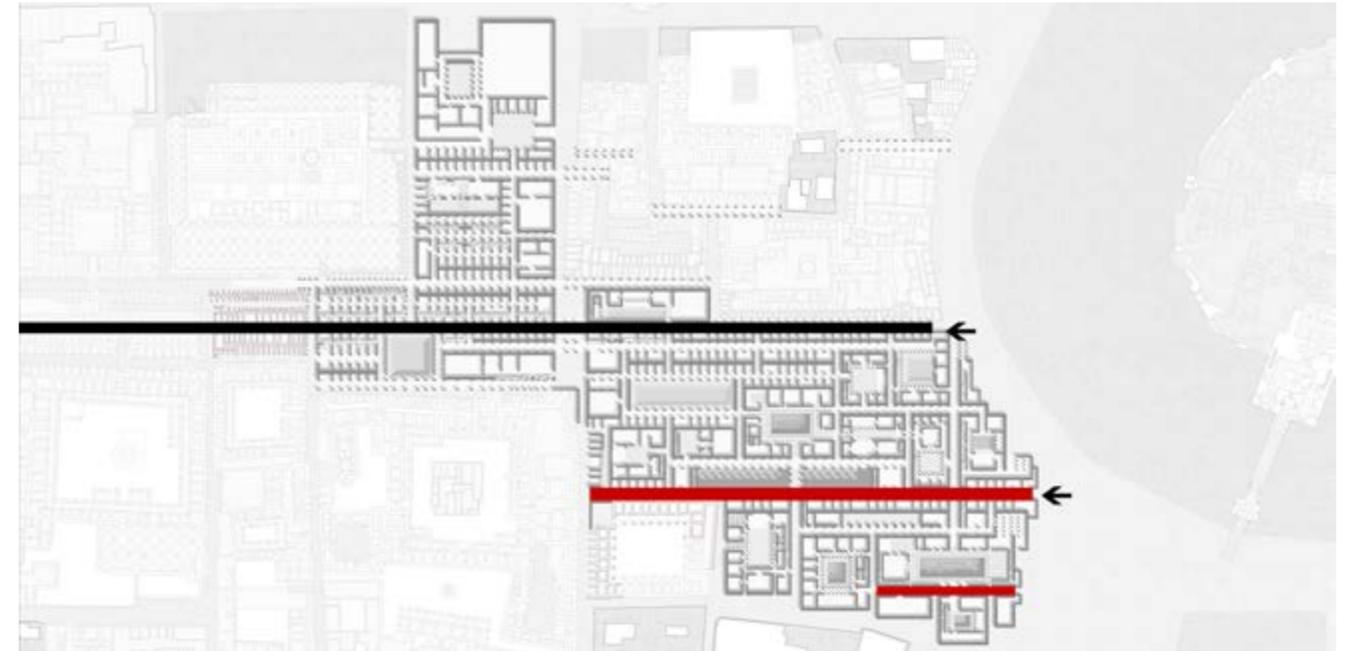
Aleppo is located in a warm climate and it affects the architecture. Through time, having narrow streets is indispensable for this kind of hot places. They create shaded area all day long and it helps to have coolness. Because of that, surrounding streets have been a reference for the tightly designed circulation paths of the project. The narrow streets, which connects the souks that ends with blind walls, are classified as negative circulation paths of the project area. Having streets with vertical alignment also help the natural ventilation in the project. They also work as an escape point from the long and closed souks



4.6 Explanation of linear concept with souks,gates and courtyards.(black:existing souks,red: new adings,gre:existing khans)



4.7 Adding vertical streets and see the compare old and new urban fabric.And balance of open and closed Areas(black:closed,red:open areas)



4.8 New and old gates of bazaar area(black:old,red:new)

New Gates

The proposal of new gate gives the possibility to have a closer entrance to the front structure of citadel and splits into two the pedestrian crowd passing through the road. This second gate works as a distributor through the project area and it represent the effect of the main axis on the design. It is surrounded with commercial spaces like its old situation.

On the old axis, all destroyed and demolished souk areas totally restored and reconstructed by keeping the old functions.

There is a second access proposition from Citadel area, but it is not functioning as a gate. It can be called as a closed street between the buildings and it serves an extra entrance to the buildings

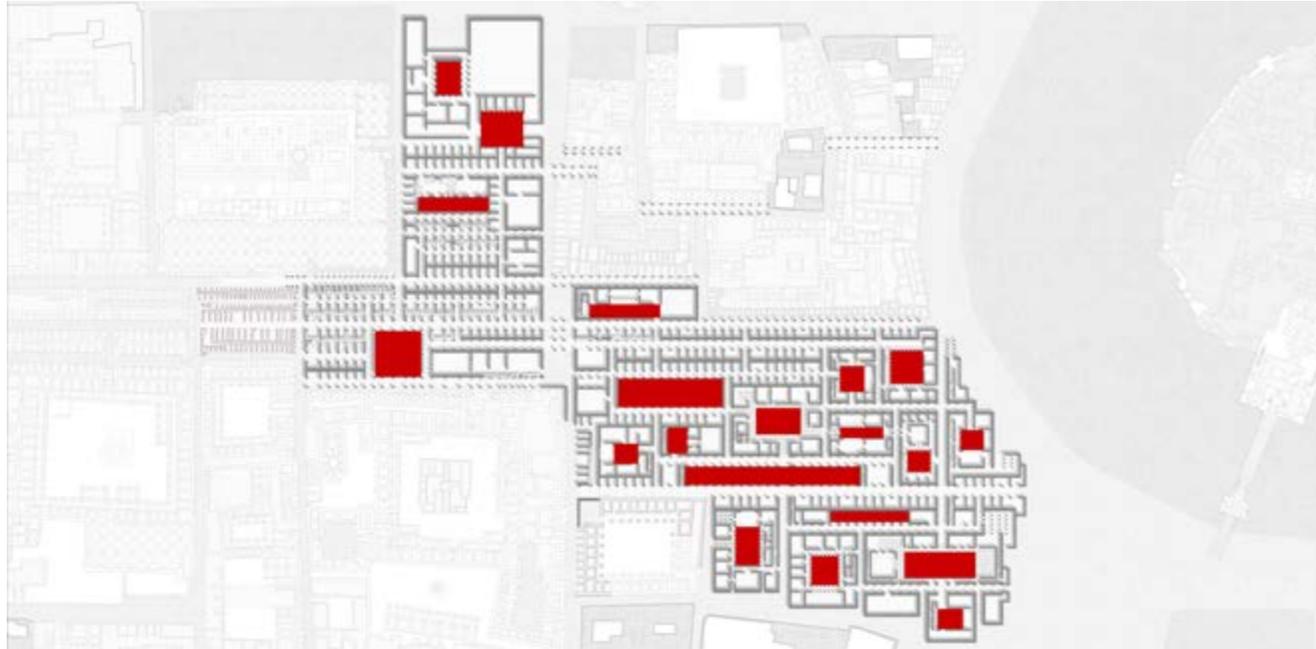
from the second level of the souk. It is a part of the vertical system and it does not serve for the services and commercial areas.

Courtyards

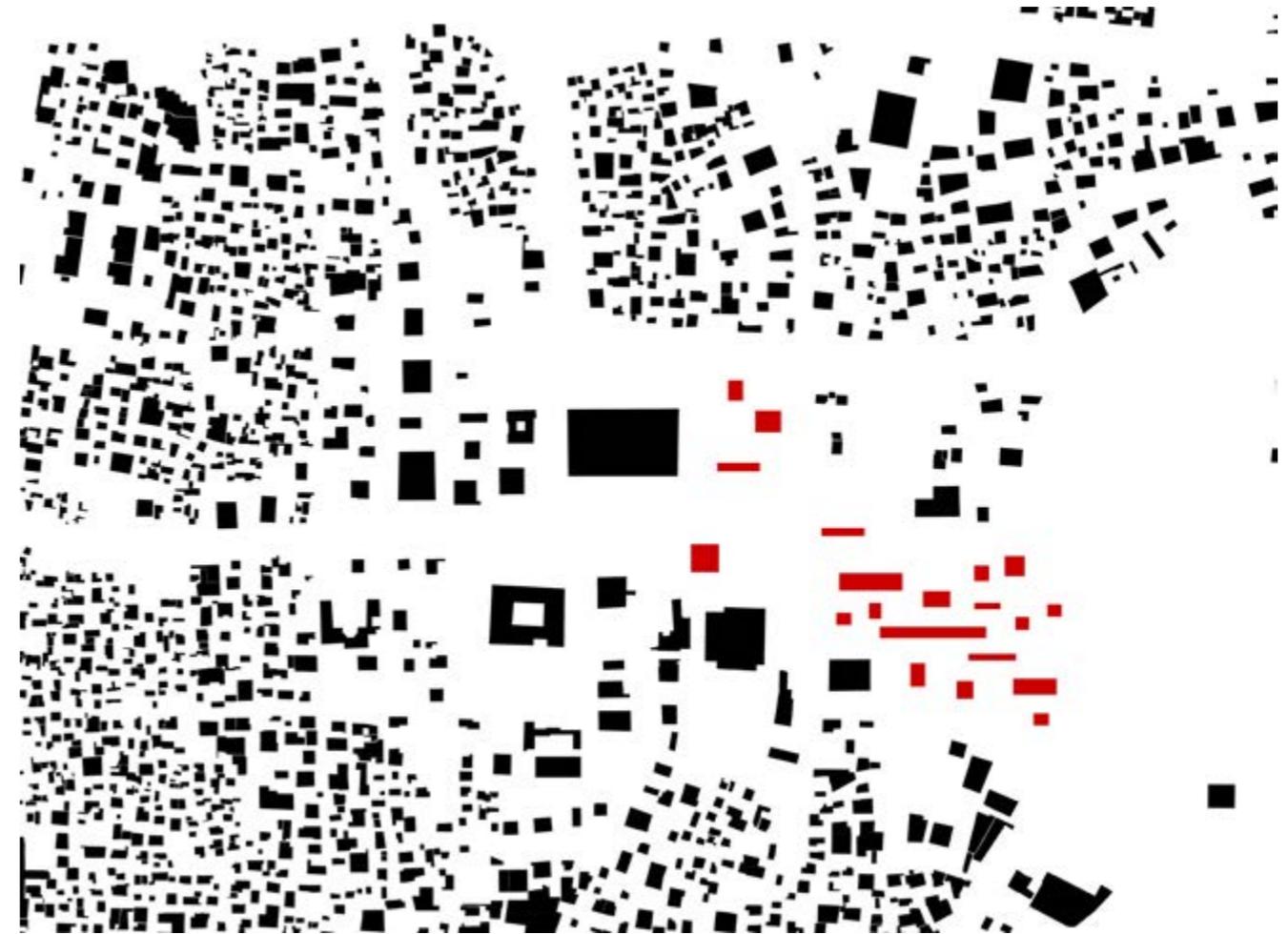
Sizes of the courtyards in the project area are designed different than the rest of the existing city to provide a transition of the existing urban courtyard texture and create a bond between residential and commercial areas. The typology of the courtyards in the project area works as a buffer between two different sizes. The need to have a large courtyard in a public area was because people had to leave their horses in a secure place while they were accommodating or trading. On the other hand, having small courtyard in residential buildings was because of the private use and having small spaces were enough for families. In the project, sizes of the courtyards decreased in more human scale in order to create useful and

functional spaces. In addition to the size of courtyards, also by including both private and public places, project site turn into a complex.

Due to the fact that the linearity of the project, also new linearly enlarged typology of the courtyards are designed with a new perspective to courtyard space. Those courtyards have different function than the rest of the open areas. One of them functions like a large square where people hang out or rest, second type is designed as a courtyard of a building works as a diaphragm.



4.9 Courtyards of project area



4.10 Relation of existings and new courtyards in the urban fabric.(black:existing,red:new)



4.11 Longitudinal courtyards in the project area

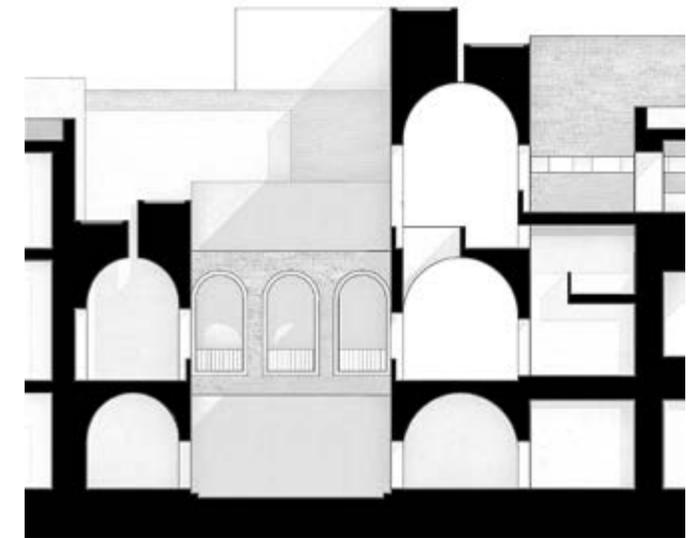
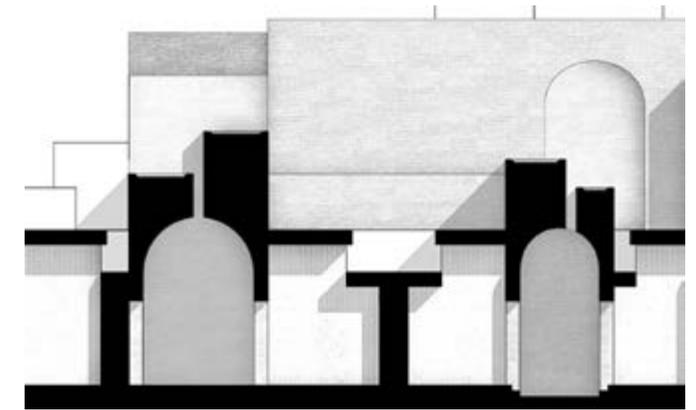
The third one locates in a basement floor level in between two souks. It is larger than the other two because the axis of the second gate passes through this open space and also it helps to have natural light and ventilation for the spaces in the basement floor. It gives the project a second dimension and helps the surrounding two floored souks to have an appearance and to let air flow through the façades to interior spaces.

Courtyard configuration in the project is rare and controlled in the souk area. However, rest of the spaces it is dense and in the places between the souks, they are designed out of alignment.

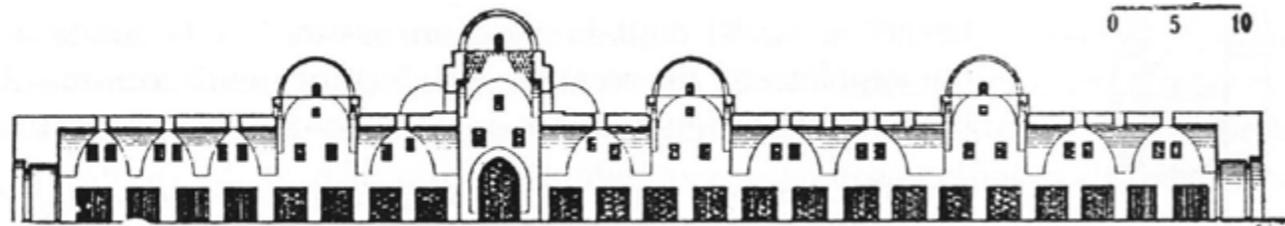
Definition of The New Souks

New interpretation of the souk design as a section is the combination of traditional archs from Islamic times and simplistic lines of the modern age. In the project, there is a new interpretation of round-headed arch which is one of the Islamic arch typologies. Over the course of designing the project, this rounded archs are used and the surrounding contour are kept simple and plain. In the existing souks, ventilation openings are like small chimneys with some gaps in between. As a contrast to this idea, in the new souk design, there is a linear opening in the middle to let the air flow through the street. This opening directs to Citadel and intensifies the idea of orientation. The height of the new souk system, elevates through the second gate in the Citadel part in an harmony with the silhouette of the city. In some of the souks there are second levels, by the help of the level difference which provides to have another commercial level. It also strengthens the circulation from the upper level and it increase the accessibility to the buildings.

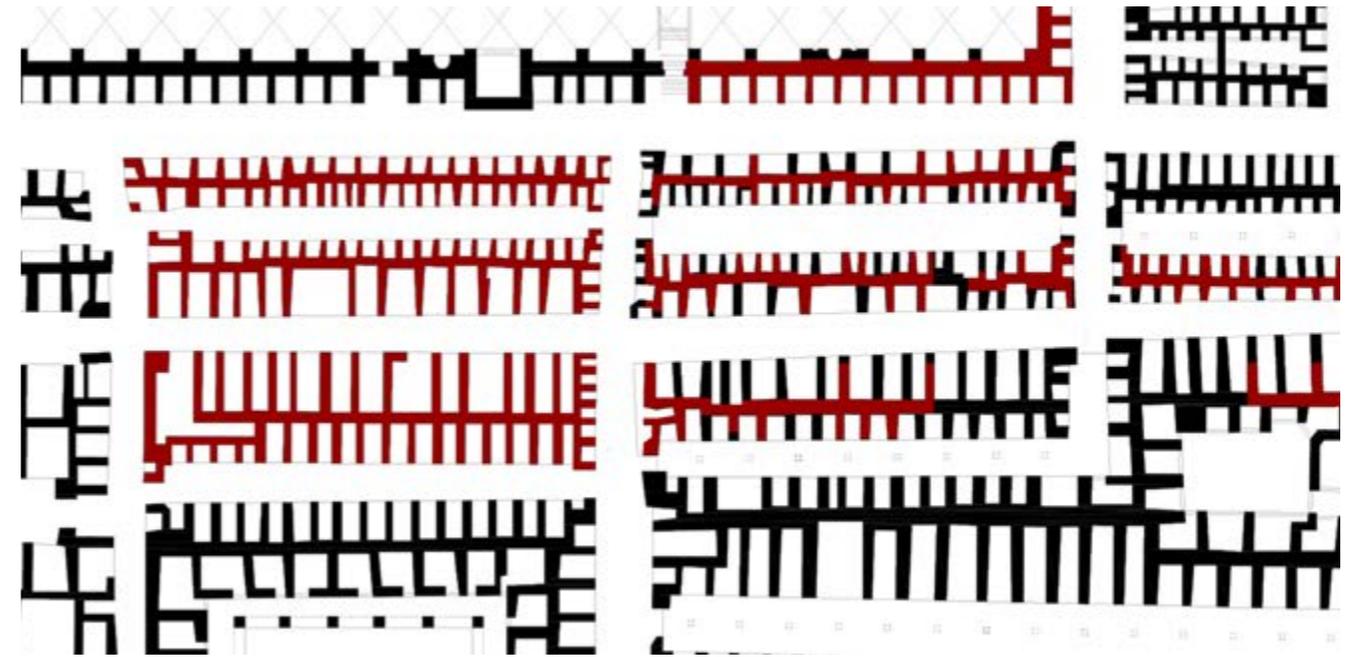
Opposing façades of the souks are designed as a continuous arch openings. In some parts they are higher than the other souks and it creates a risk for them to be a heavy element of the project. At the same time they need accesses in the crossing points with the perpendicular streets and courtyards. Because of that, continuous arches are used as façades to make them lighter and to let them have more connection with the surrounding on the ground floor



4.12 Explanation of new one floor souk and double floor souk



4.13/14 Section of existing souks and skylights, domes and path in the souk



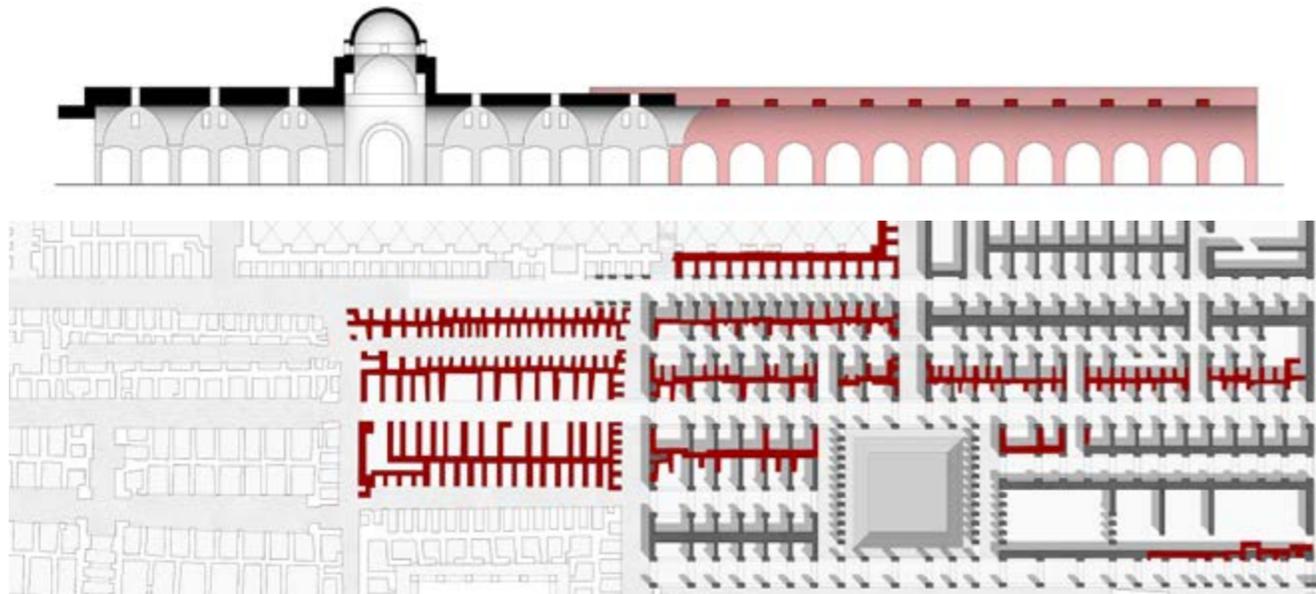
4.15 Examination walls of commercials to be protected(black:maintenance,red:restoration)

Integration of Old and New Souks

After analyzing the existing situation of the souks, some parts were renovated, and some parts were restored. Ruins of the old walls were preserved, and new interaction was created between the old and the new. Old walls became a part of the new project. In the earlier times, size of the shops was smaller, however ruins of the walls easily adapted to the new grid system of the plan. In the project area, shops were enlarged through both vertical and horizontal direction. Hereby, old souks were created a new layer inside the new souks and it helped to have different spaces inside the shops. All this approach was managed by respecting the existing axis and formation. Fitting the new plan

to a grid system was the only transformation for the existing plan. This grid system gave rise to a hierarchy of dimensions from the gate of Antioch to the project site.

Integration of the old and new, prevents to have a sharp distinction. The finishing line of the souks and shops are not same with the starting point for the new walls. They don't have a border line and they work together to create one unique design.



4.16/17 Relation of the new and old souks in the section and plan of the existing, restored and reconstructed walls



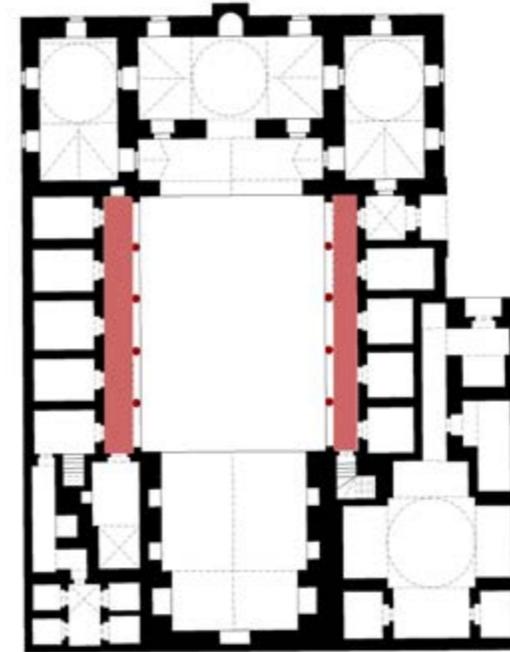
4.18 Integration of old and new souks on the plan (black:old,red:new)



4.19 Khan types of project areas

Khan and Madrasah Classification according to Architectural Elements

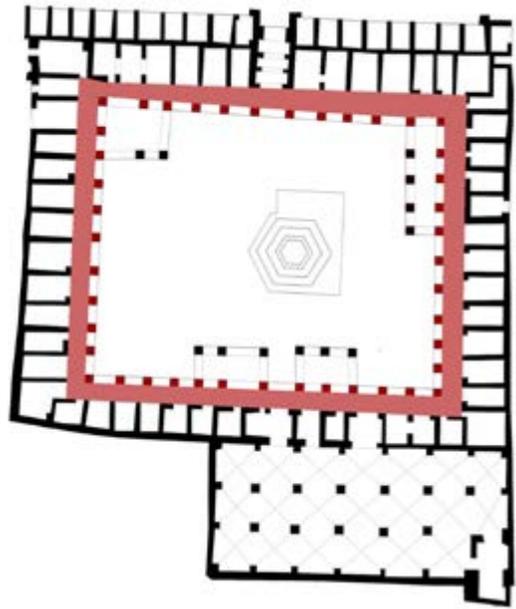
Buildings in the project site are classified according to their common use and also architectural elements that are used in those buildings. The elements of traditional Islamic architecture such as iwans and cloister have a great influence on the project design. They can be classified under two topics: public and private. Public buildings are defined with courtyards surrounded by cloister. This typology of buildings come from the architecture of khans. In addition to that common aspect of having a courtyard, typology of the khans shows differentiation according to use. Building with two cloisters and one iwan is one of those typologies.



4.20 Floorplan and view from the courtyard of the Madrasa al-Kamaliyya al-'Adimiyya, Aleppo. Syria.



In the private buildings there is direct connection to the courtyards from the buildings and instead of cloisters there are more iwans in order to let people spend more time in a shaded area. They have a specific owner, so they do not need a circulation layer and they have stronger connection between the spaces facing each other. It is also an explanation for them to not have cloisters.



4.21 Floorplan and view from the courtyard of the Khan Al Jumruk, Aleppo, Syria.

Public buildings

Diaphragms

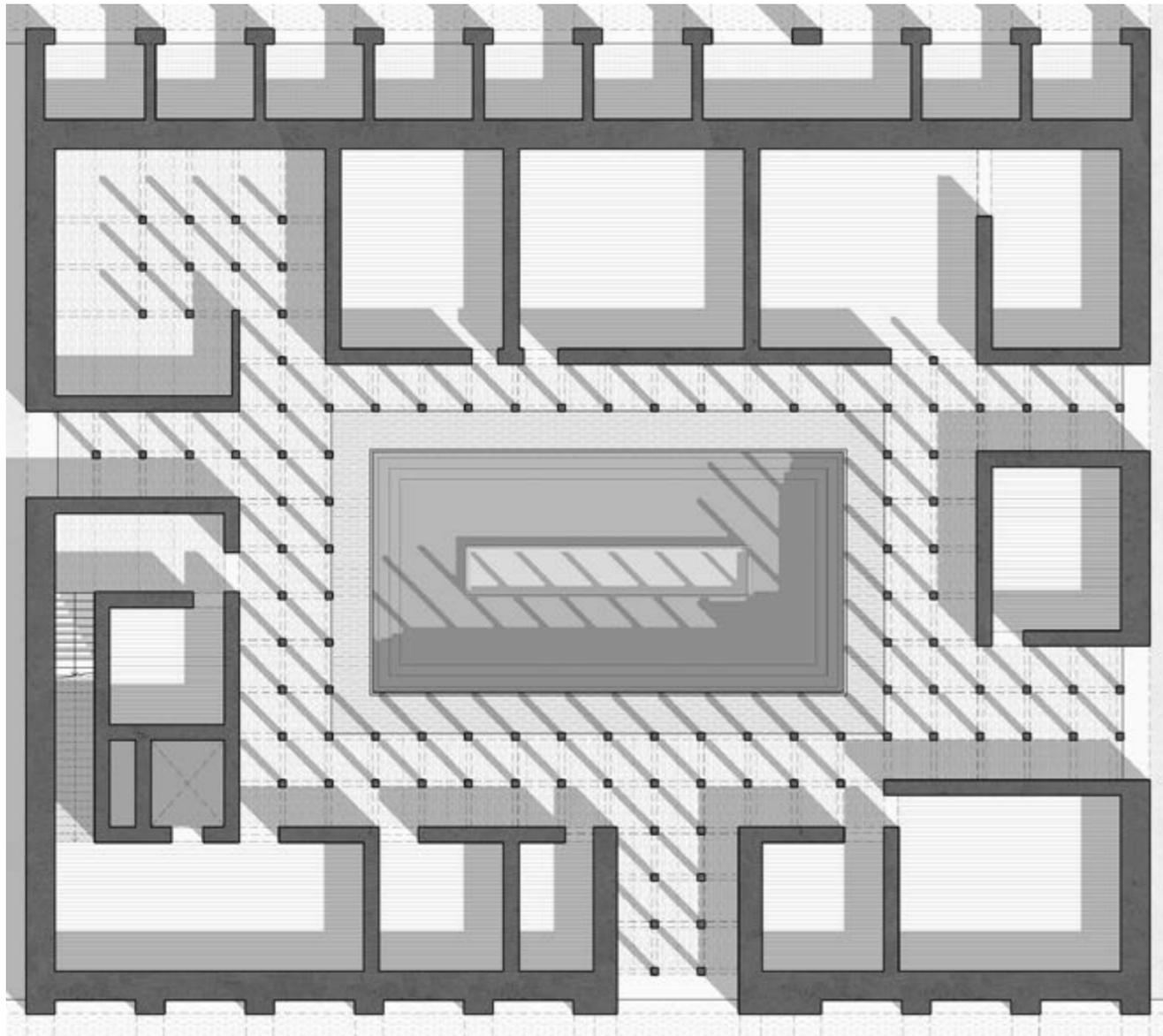
There are three different diaphragms in the project. Two of them are the buildings with central courtyards and the other one is a big square with stairs which lets the dense texture of the shop's breath with a large opening. They have a common feature as having a direct connection to the project site. In addition to the main connection, they also have several alternative axes to the area. They have a direct entrance because of their total public use. They locate at the end of a narrow street which leads people to a large free space. Those buildings are working as a node. As a contrast to other buildings with courtyards, they

are a part of the public circulation. Visitors can directly pass through those spaces and continue their travel through the souks. Diaphragms are designed according to the typology of old khans. They are the new representation of khans because of the resemblance about having cloistered corridors which surrounds the courtyards.

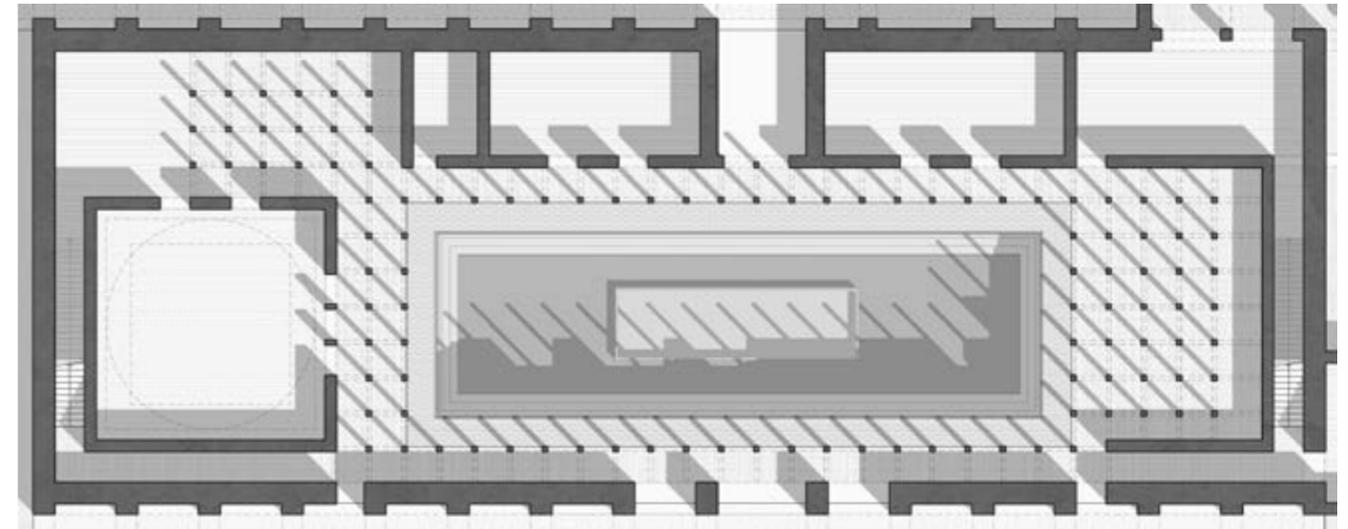
In order to underline the access route to those diaphragms, the side walls of the streets are designed higher than the surrounding buildings. Vertical circulations of the buildings which are facing to those streets are located on the sides. It helps to have a continuous circulation for also entering the surrounding buildings.



4.22 Diaphragms of Projects Area (reds are showing them)

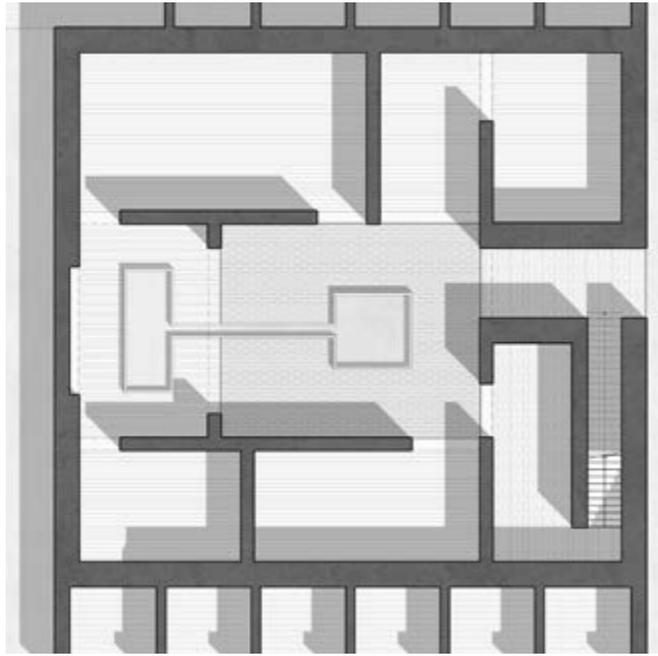


4.23 Plan of one of diaphragms



4.24 Plan of longitudinal diaphragms

There are pools in the middle of the courtyards of the diaphragm buildings like some other buildings with courtyards. Having a pool in the middle of the opening is another typology for khan architecture. However, there is a design difference in the diaphragms. Pools are also linear as the opening itself.



4.25 Plan type of the private buildings with iwan

Private buildings

This typology of building is designed with a direct connection of spaces in ground floor with the courtyard. Most of the closed spaces are directly connected to the courtyard. Some of them has direct entrance to iwan which is another important element of Islamic architecture. It is a typical type of space that can be seen in hot climate areas. Presence of this kind of semi-open areas, according to the use, some of the closed spaces have direct opening to those places.

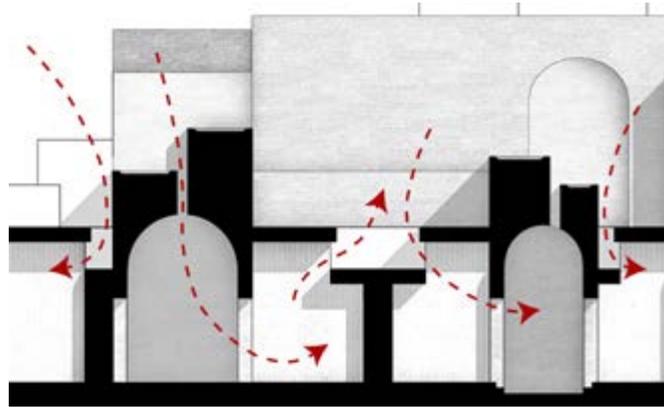
Commercial Areas

Dense texture of the souks is reconstructed as the density of the souks in existing preserved areas. Some of the totally destroyed areas are turned into squares to lighten the intensity of the constructed areas. In the project area, new souks are closely placed in order to mention the axis of the new entrance. In other places, they designed more separated from each other.

Existing ventilation system of the commercial areas are some windows on the interior façades of the souks because they do not have any opening on exterior façades or roofs.

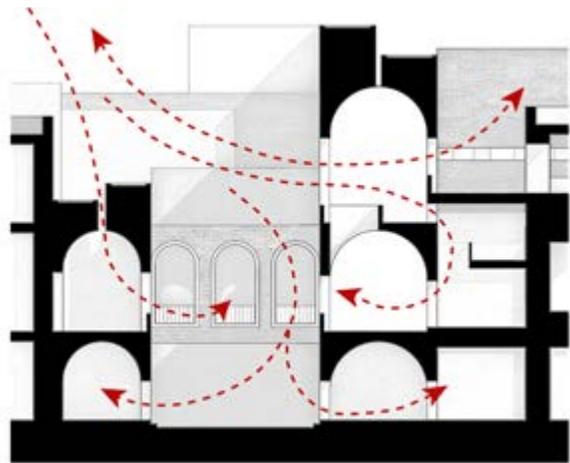


4.26 Courtyards of commercial areas to provide open areas balance

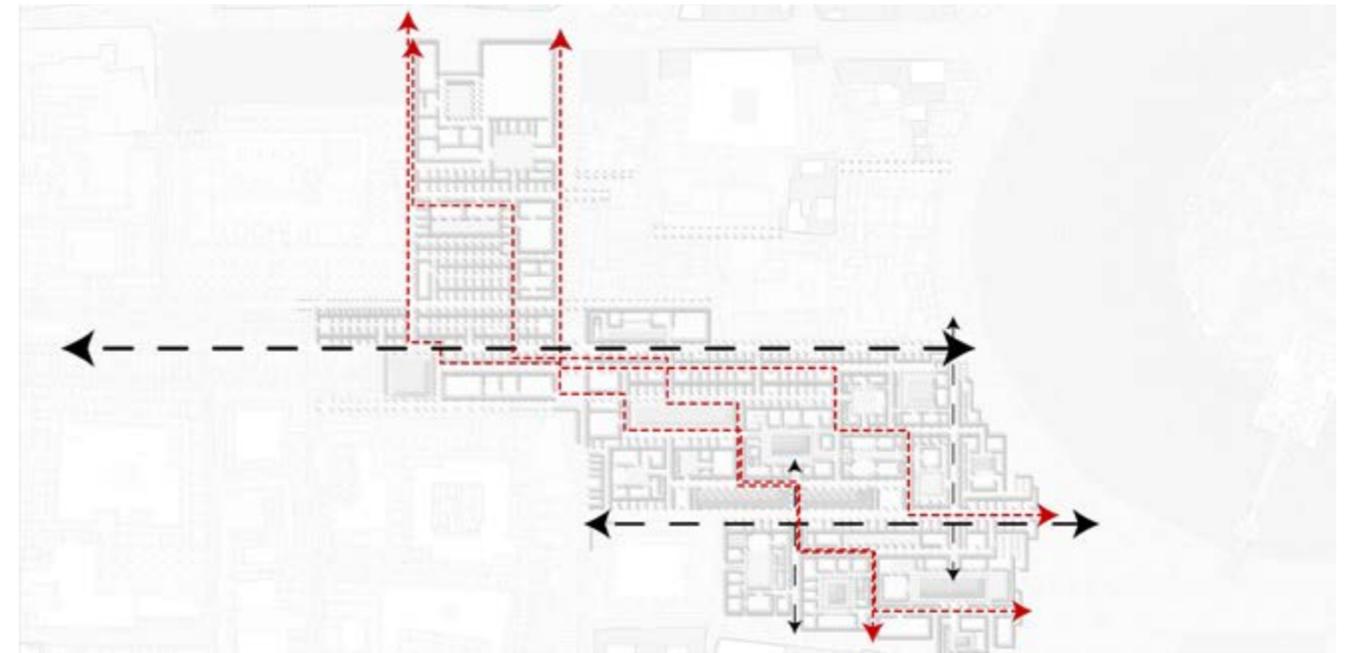


The problem of circulating the natural air through the commercial buildings of project are solved by designing single opening for each shop and keeping the roofs of some of the buildings lower to let the air flow. Two different layers of the roof creates window space for different shops in vertical direction. Typology of the windows are interpreted as arcs with same dimension of the shop's entrances and they placed in the opposing side. This ventilation solution is applied for the shops which have empty roofs. Roofs of some buildings turn into slabs and creates a second-floor level for the shops. In addition, some roofs of the shops serve as a terrace for adjacent buildings. Ventilation of those shops is solved through the openings on the façades of the souks which are serving those shops also for pedestrian axes. Especially this idea works efficiently in the two leveled souks.

To conclude, all traditional elements have a role in the project. To create a difference from the past, traditional motives represented in a purer way. Solutions without too much detail and basic use of proper local materials are the modern way of architecture style and it will lead the future.



4.27 Different types of souk's ventilations



4.28 Different type of accessibility(black:roman type,Red:ottoman type)

Accessibility of Roman and Islamic References

The references from both Roman and Islamic times are important even for the accessibility of the project. As in the old times, there are continuous main axis and not grid like horizontal and vertical connections in the project area. The axis of the second gate is designed similar to the main axis and it is kept linear like a spine for the project. It also connects with the streets between other souks and completes the circulation in the project site. This organization shows the effect of Islamic era on the broken grid system.

General Properties

Function program and distribution are made in order to cover the needs of the city. New functions are provided by reuse of the parts and functions of demolished buildings. Existing plans of those buildings is kept as size and to cover the same space, they are moved to new designed buildings. This moving process is succeeded according to the location with respect to transportation network, the need to service etc.

In the relation between buildings and souks, place to place, there are some designed breaks. Those breaks are created new terraces on the upper levels and abled to have open spaces. In

addition to have different functions, it separates buildings from souks and help them to be defined as a strong element. Also, those openings are used to have a direct connection between souks and new terraces.

For the reason to have a compact circulation system in the project, all circulation systems in the buildings are designed in vertical direction. This system separated itself from the continuous horizontal pedestrian path by working in a different axis.

When it is studied as planning of the project, domes has their important place as a product of Islamic architecture. Space composition shows that large and two floored spaces give the feeling of the mass of a building by having domes. Variety of dome sizes are traditional but with their simplicity and they are harmonious with the architecture of today. At the same time, they are used in controlled levels to match with the silhouette of Aleppo. In contradistinction to surrounding domes, underneath, they have additional levels with a square base.

Stone is used as a general material of the project. Inside the new commercial areas, preserved old souk walls are left as it is and they are not covered with a new material. To maintain the balance between old and new, plain concrete is used inside the commercial areas to create a contrast with the existing preserved walls.



1-CITADEL



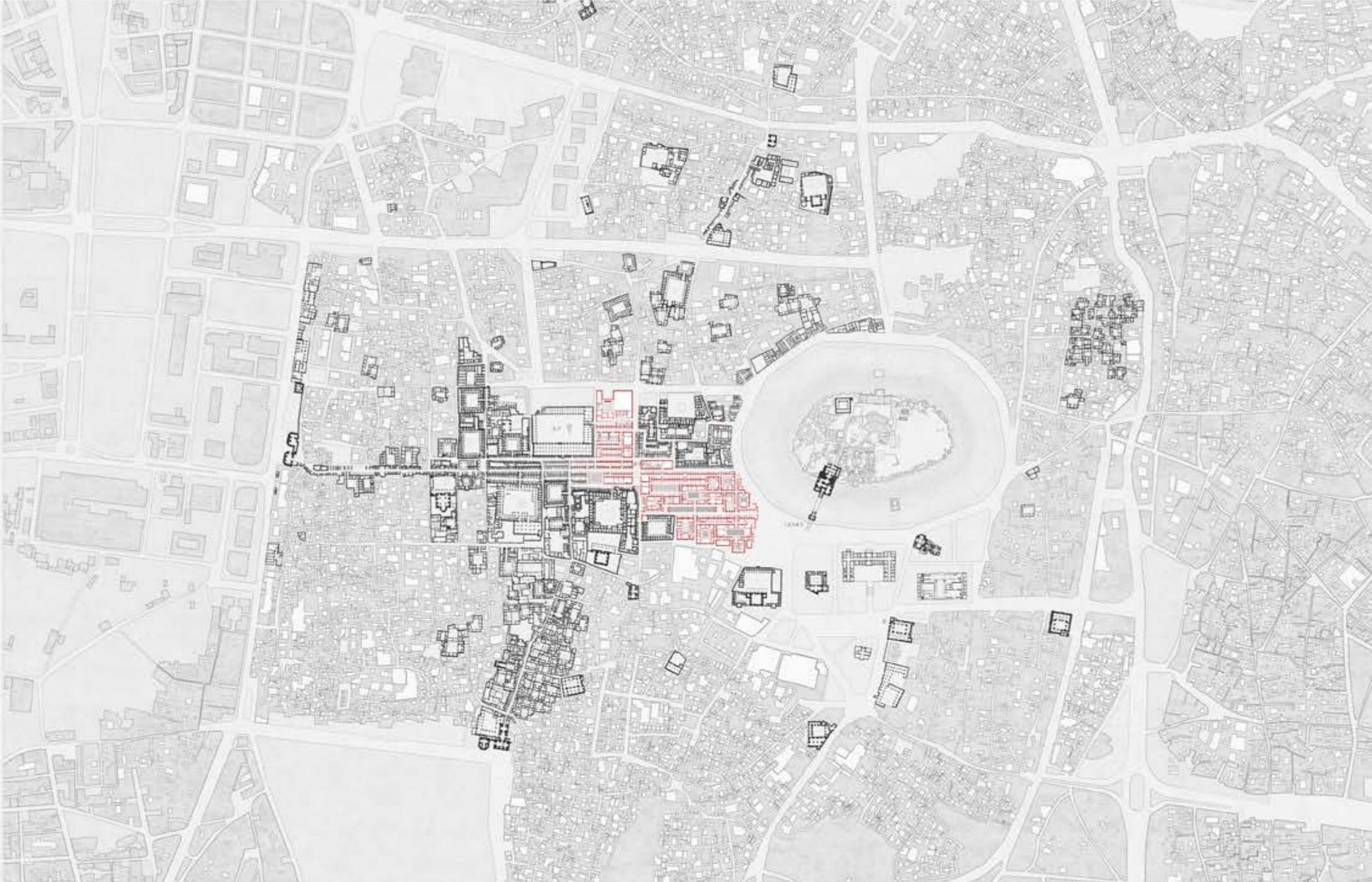
2-CITADEL



3-CITADEL



4-CITADEL



6-UMAYYAD MOSQUE



7-UMAYYAD MOSQUE

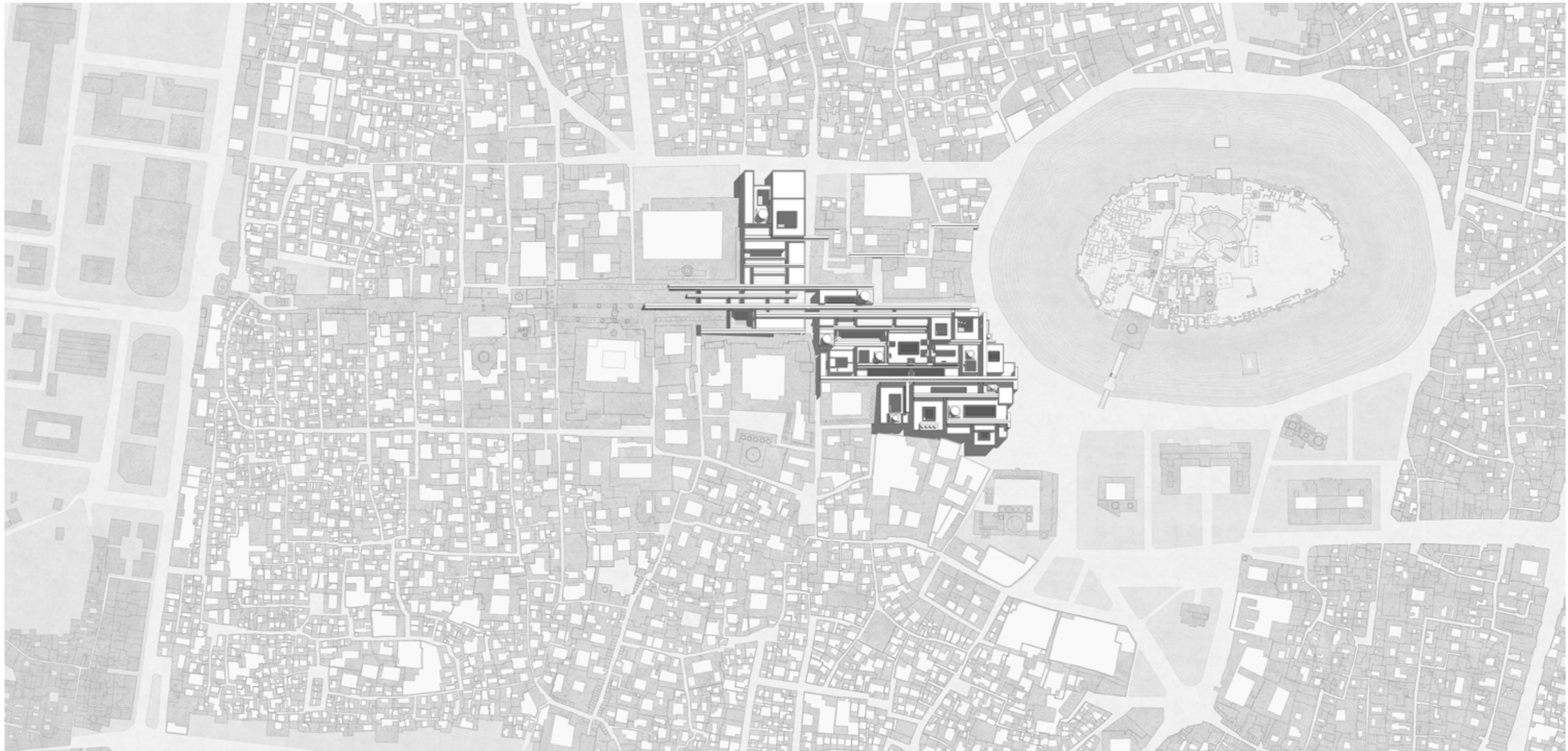


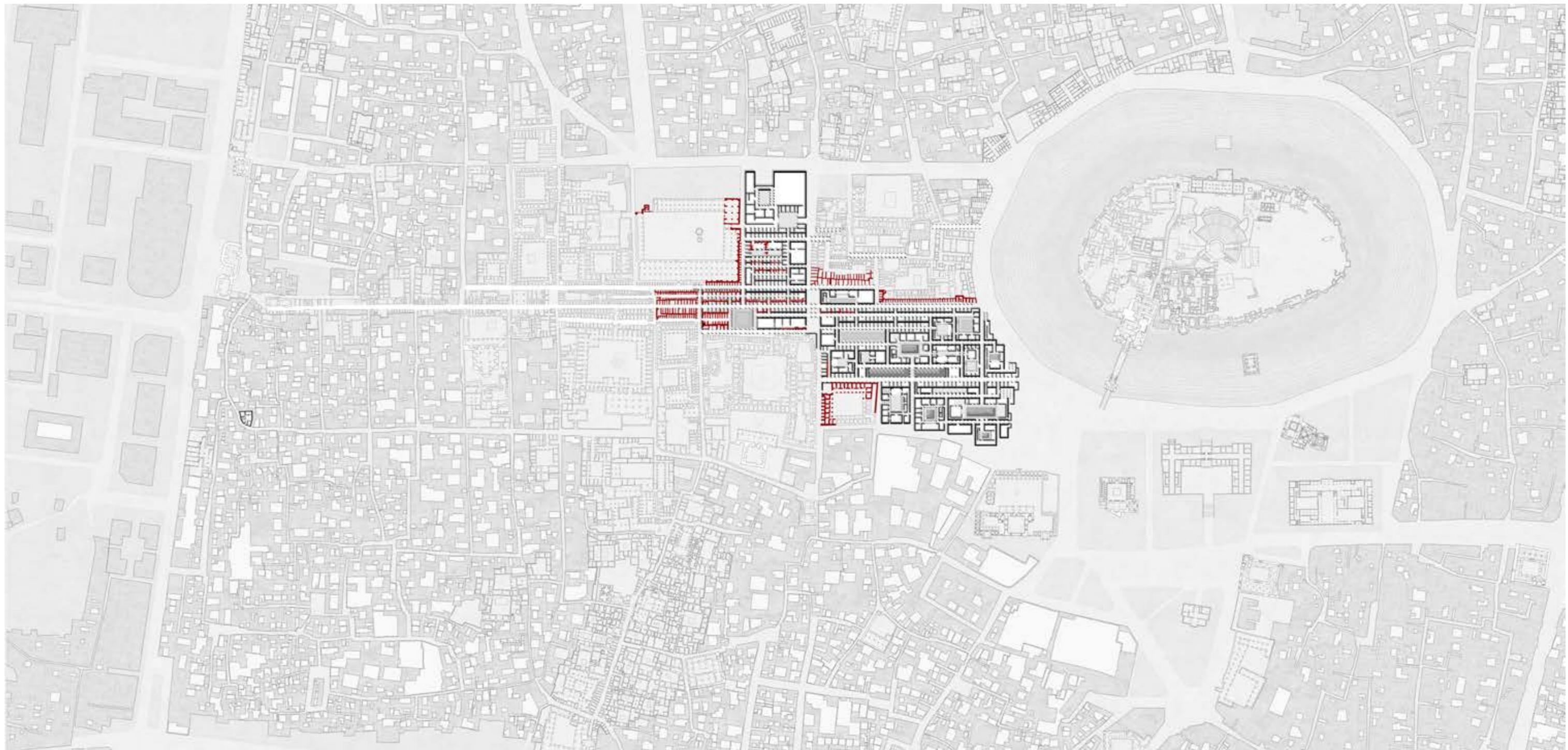
8-AL OTROSH MOSQUE

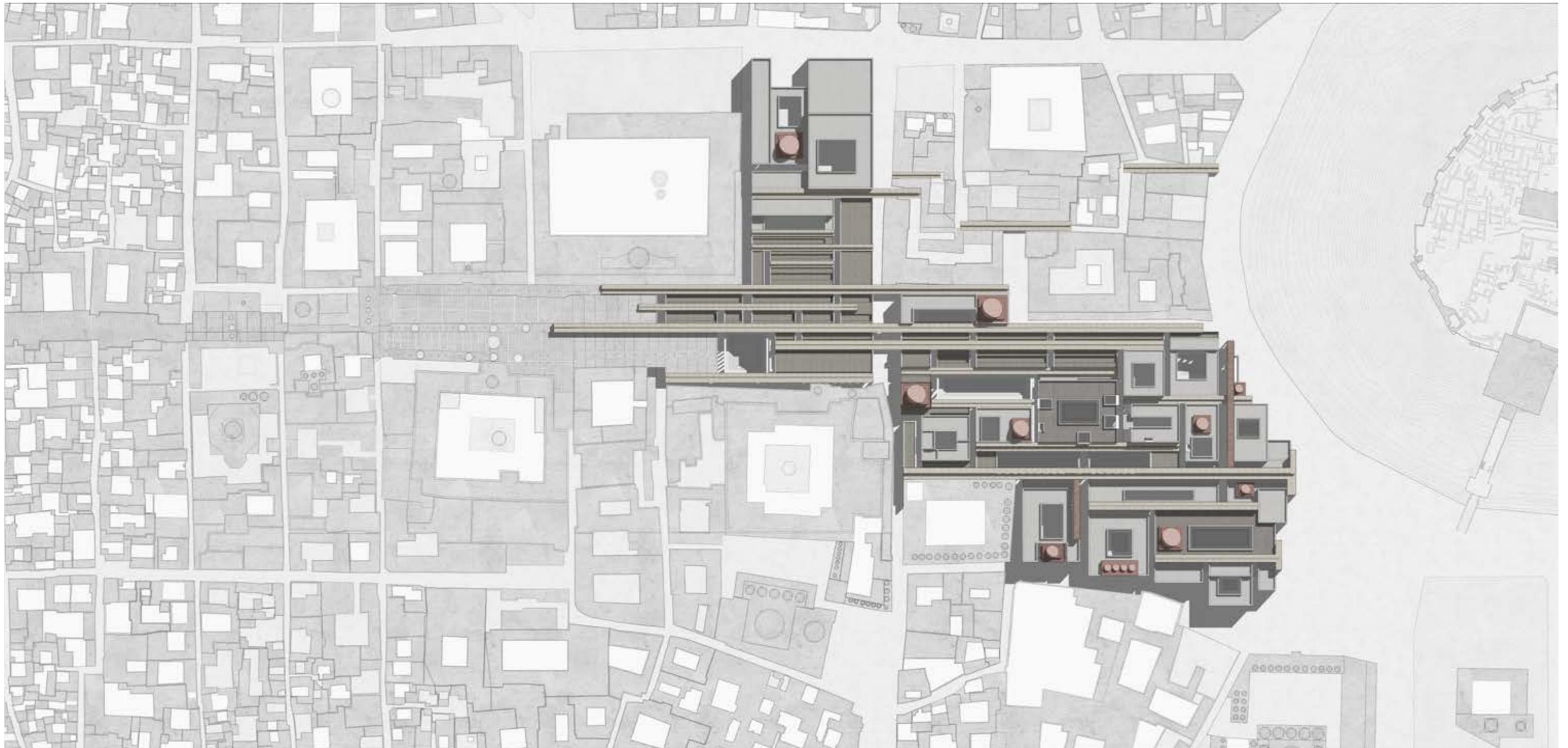


9-SOUQ

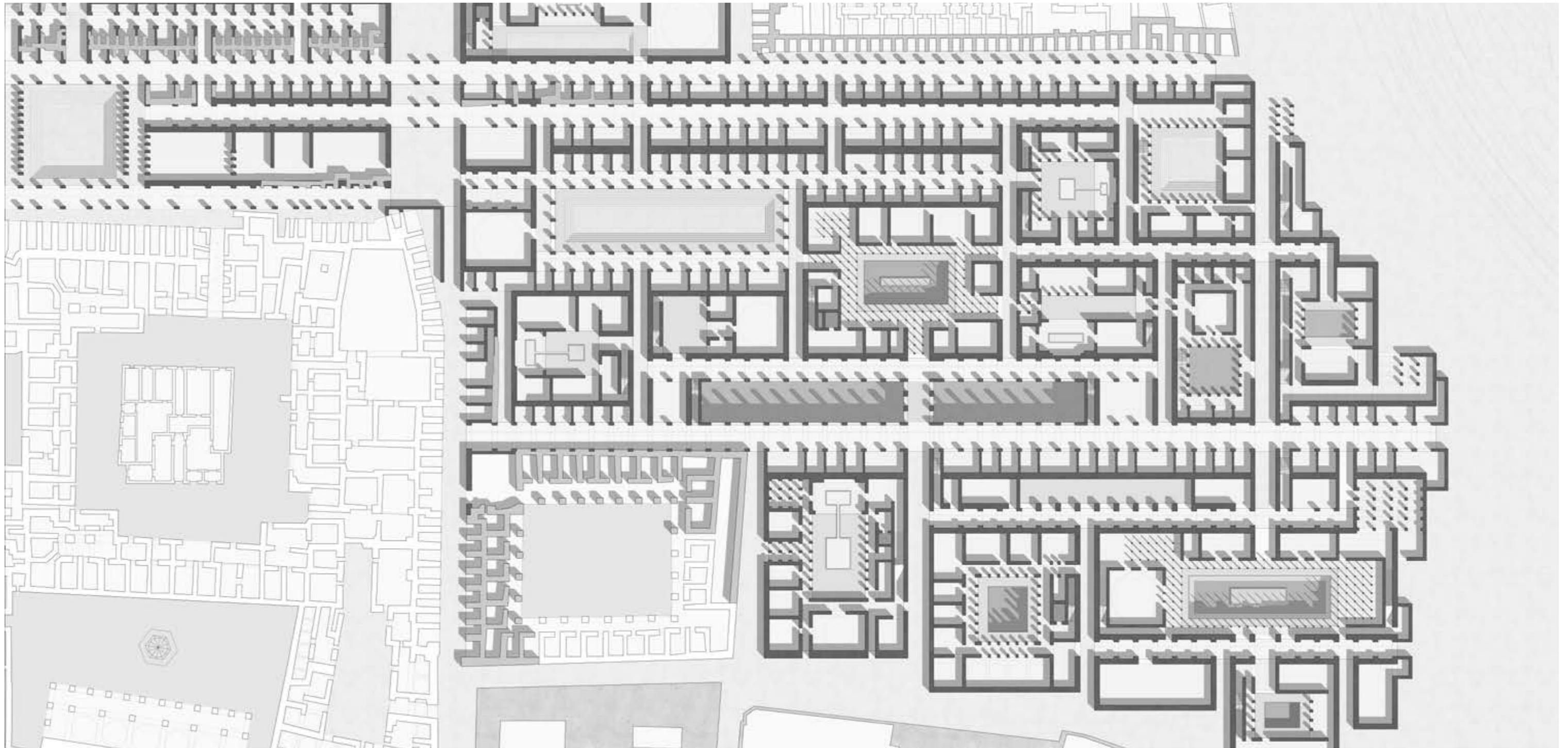


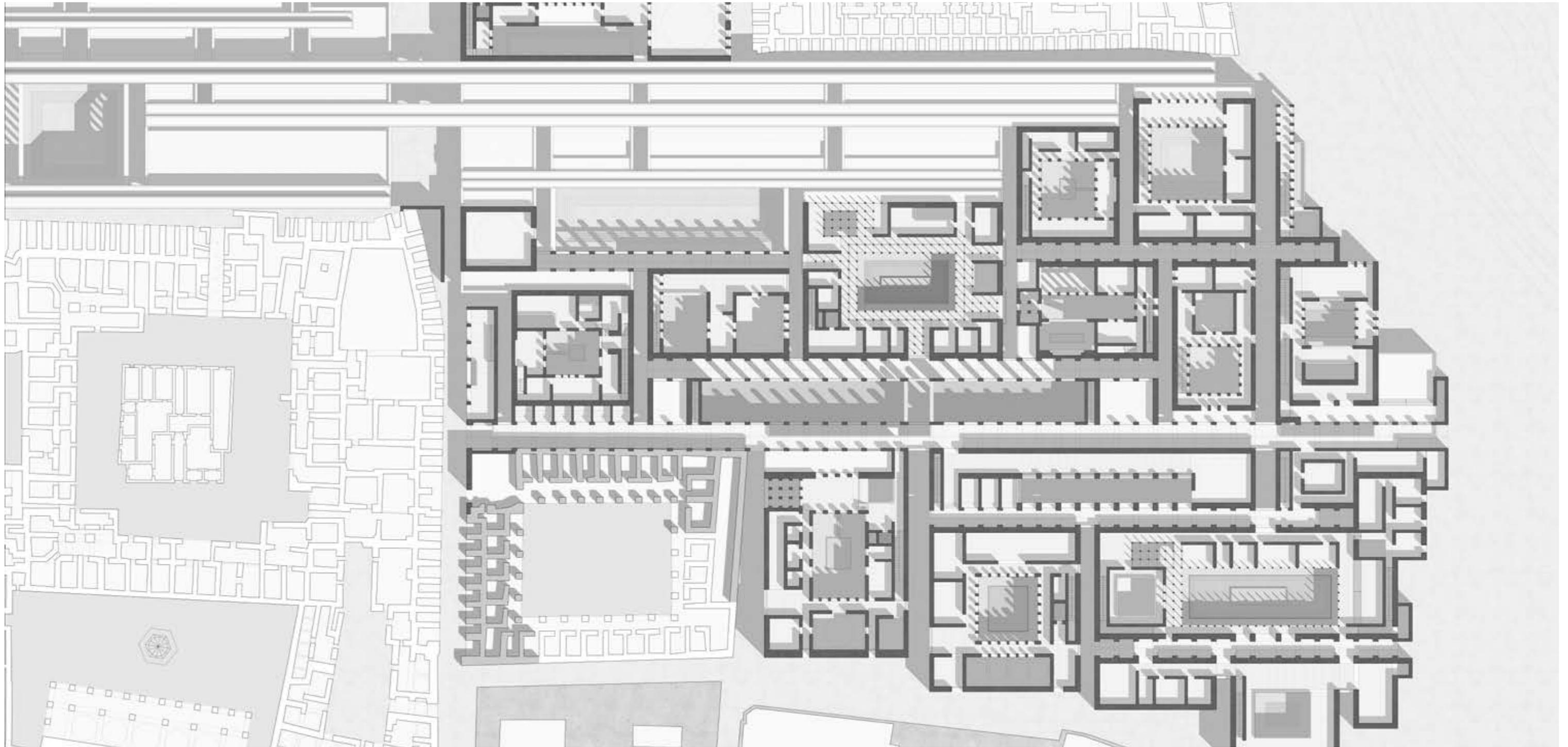


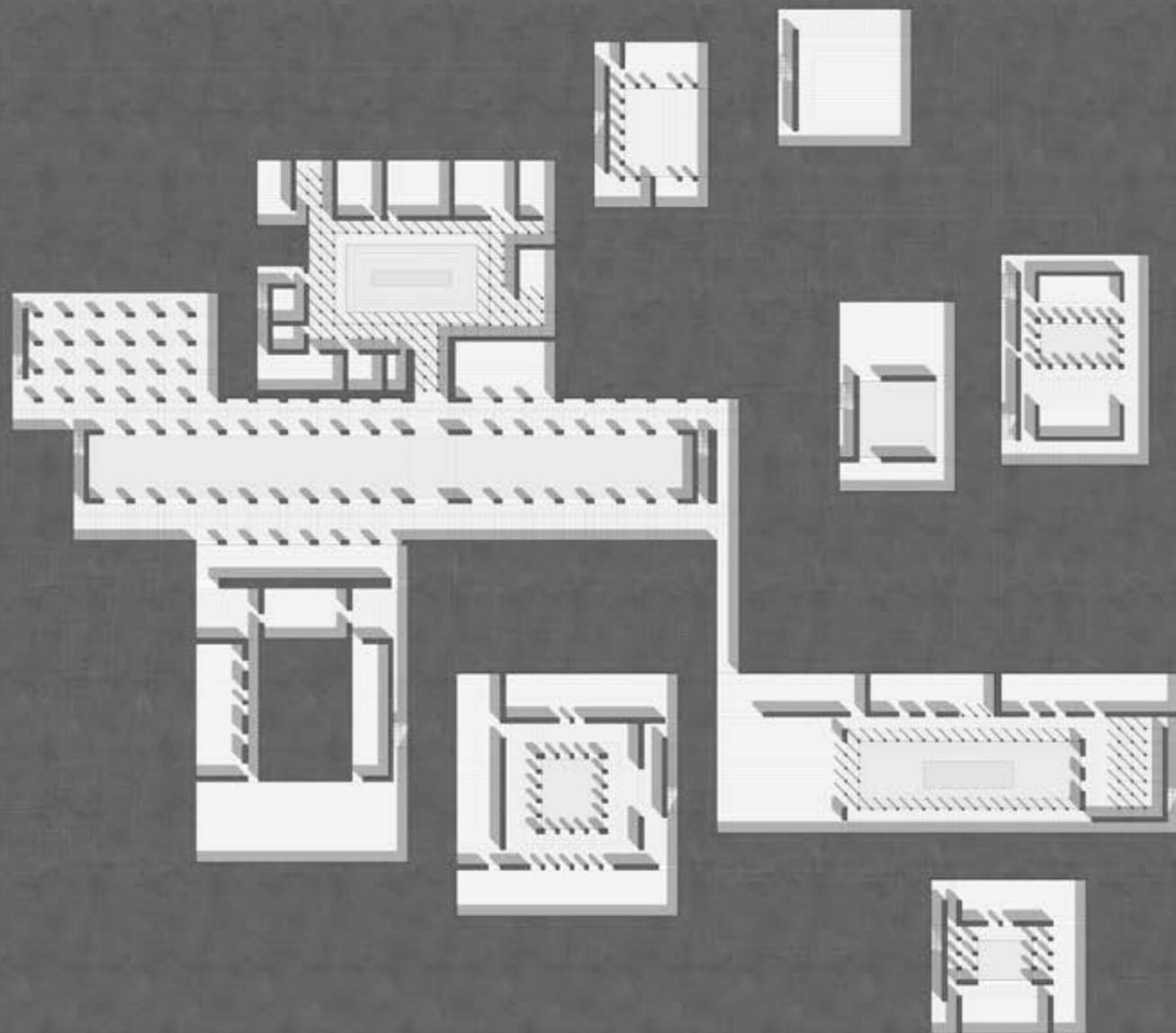


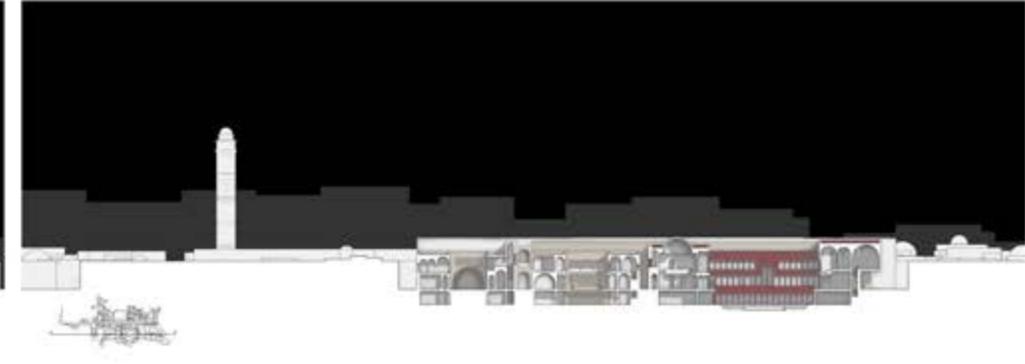


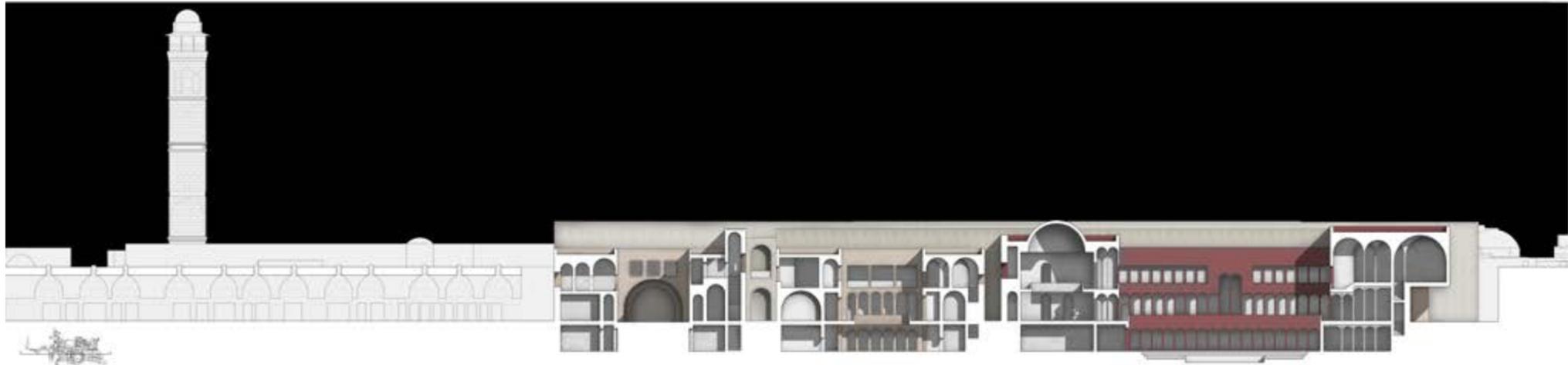
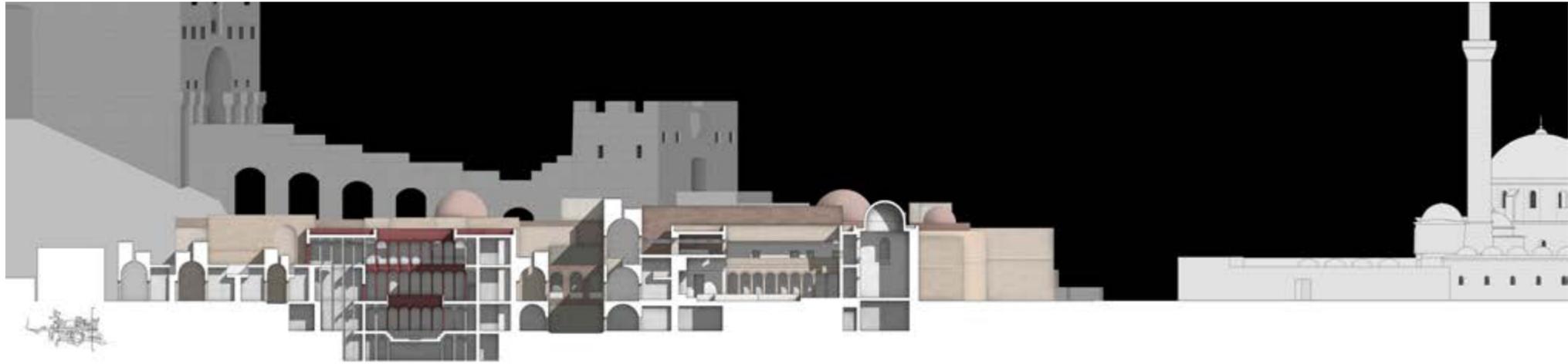


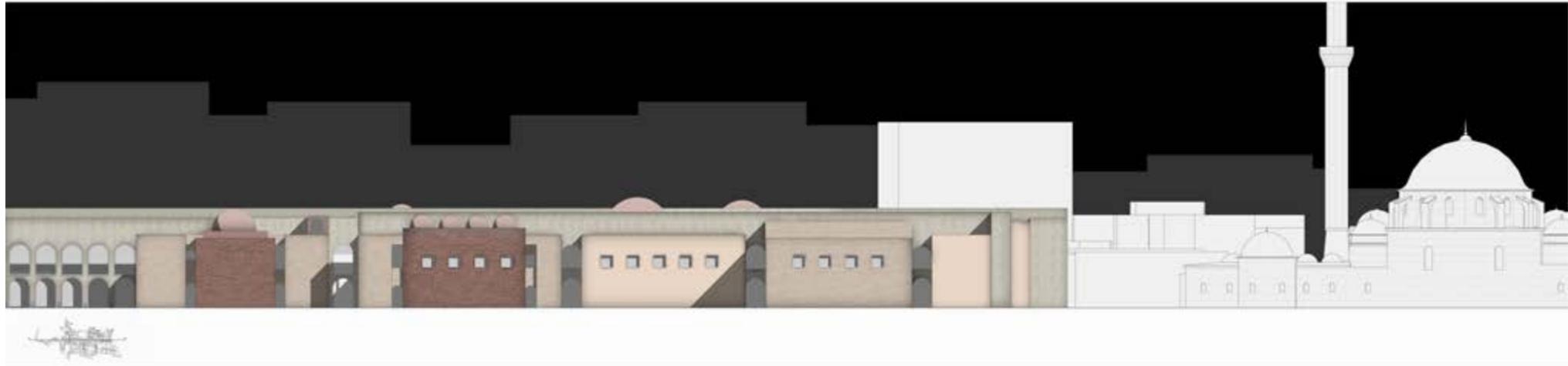


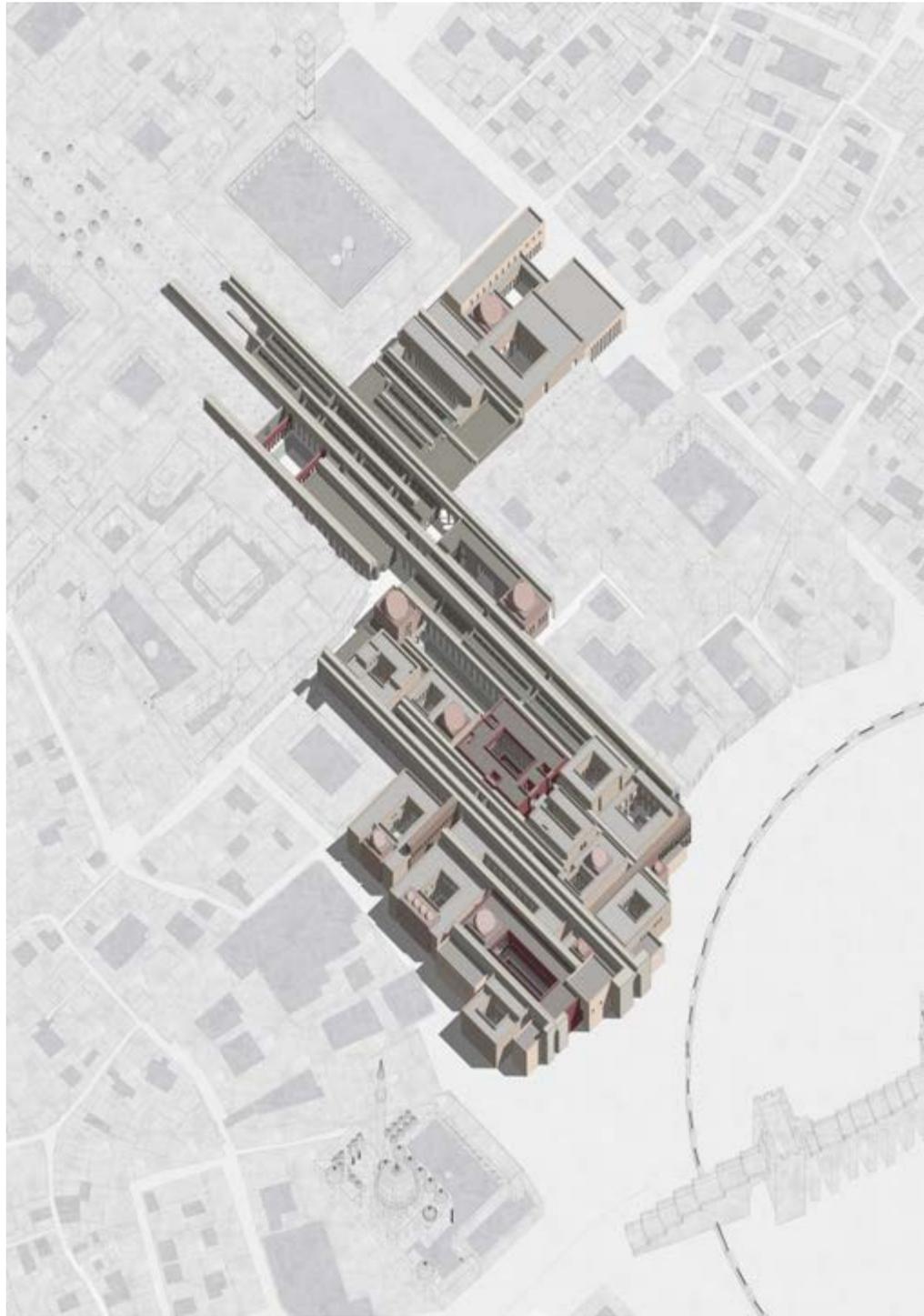


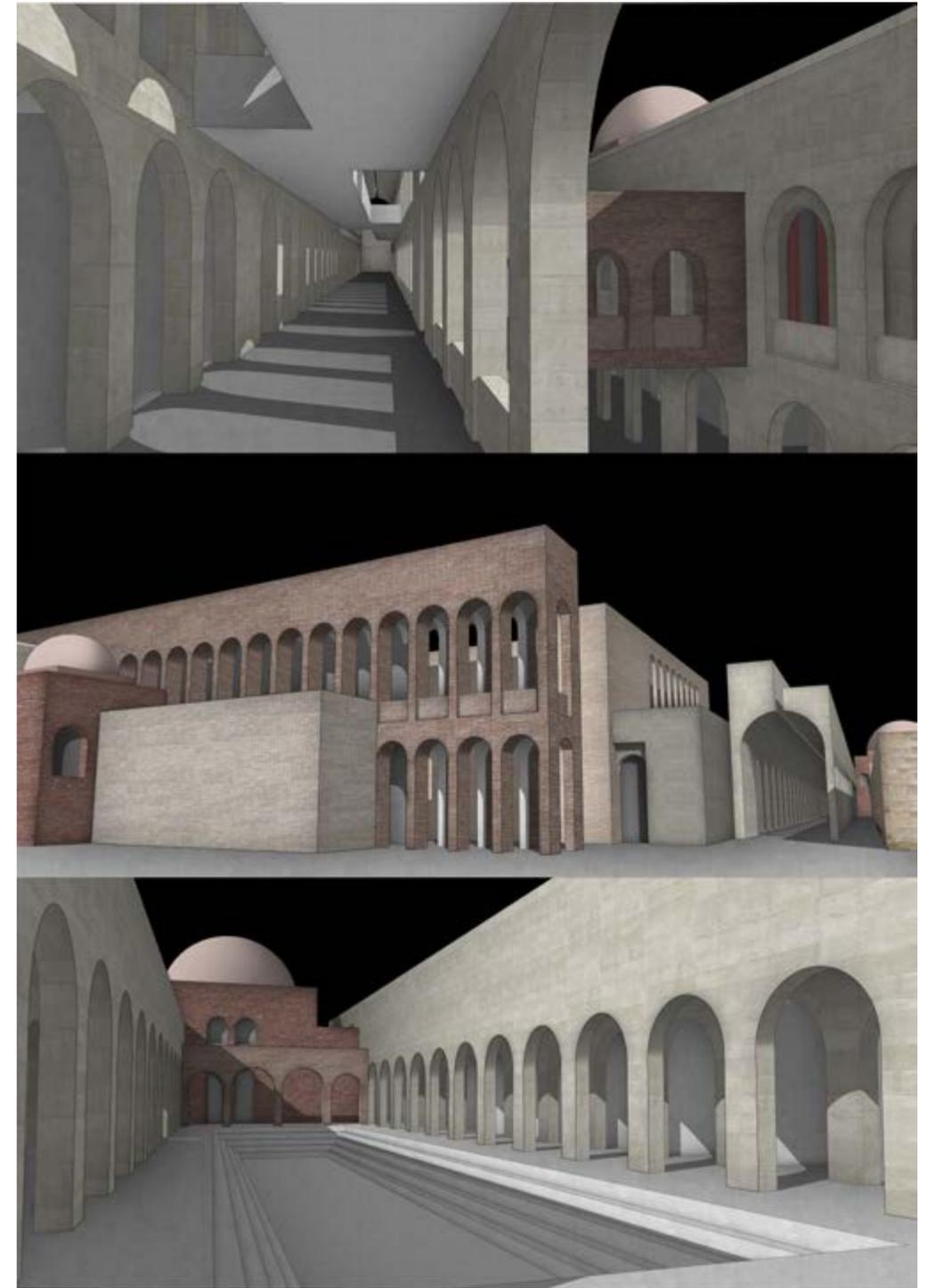
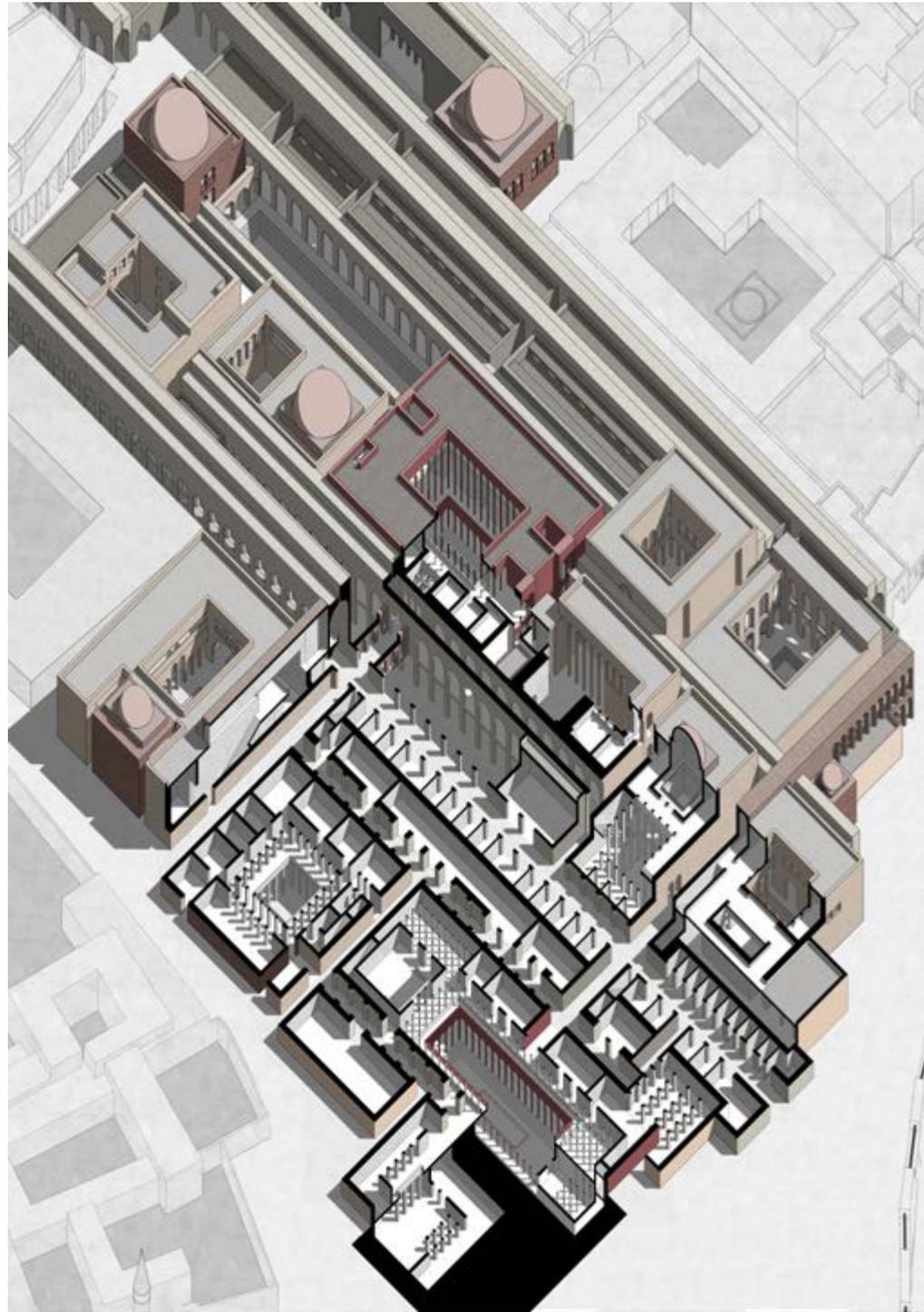


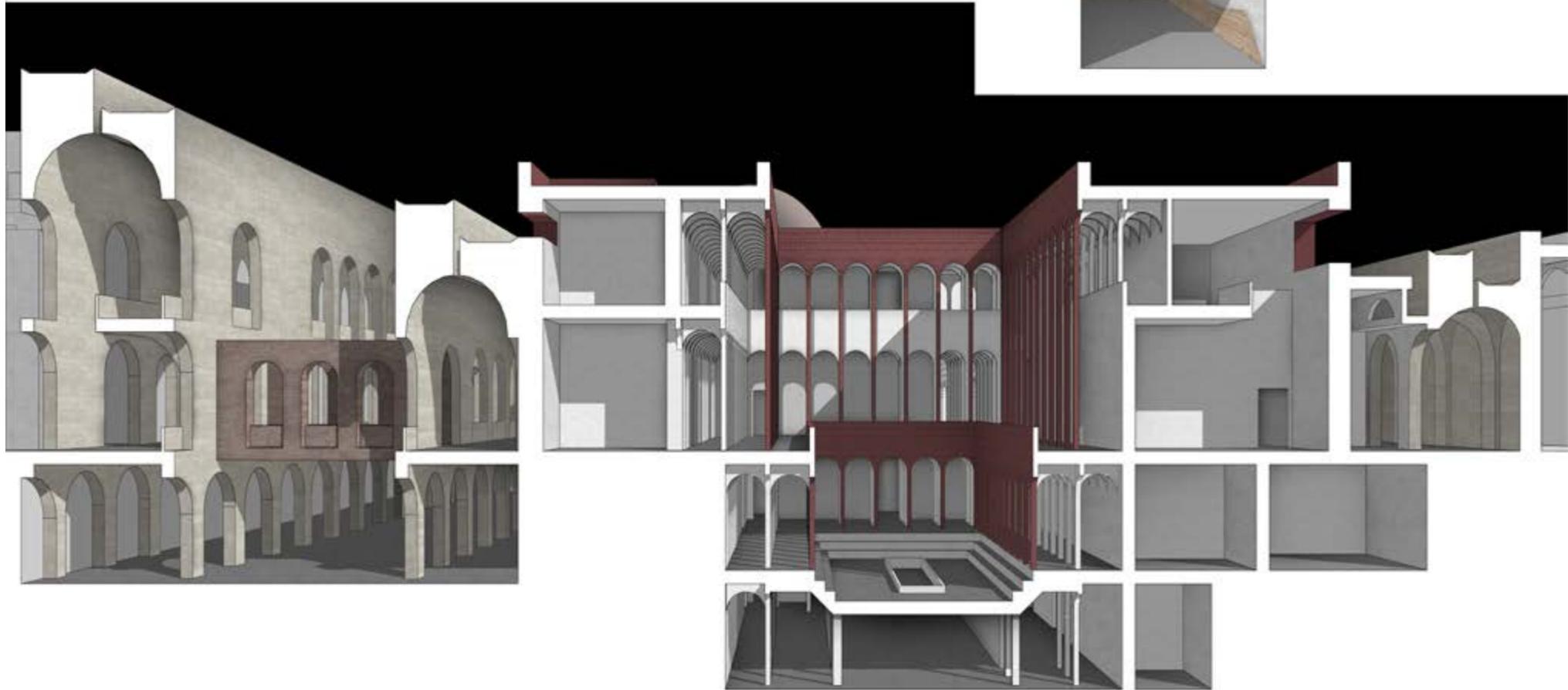
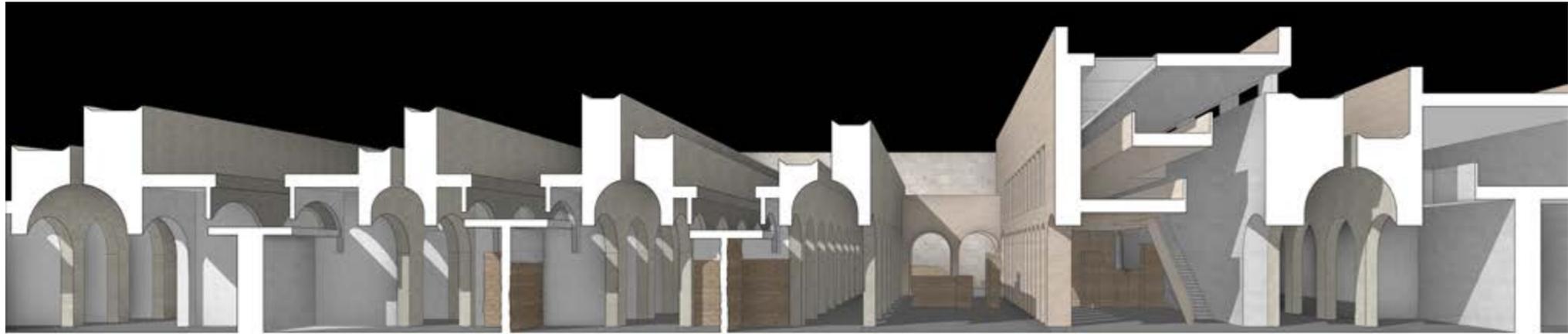


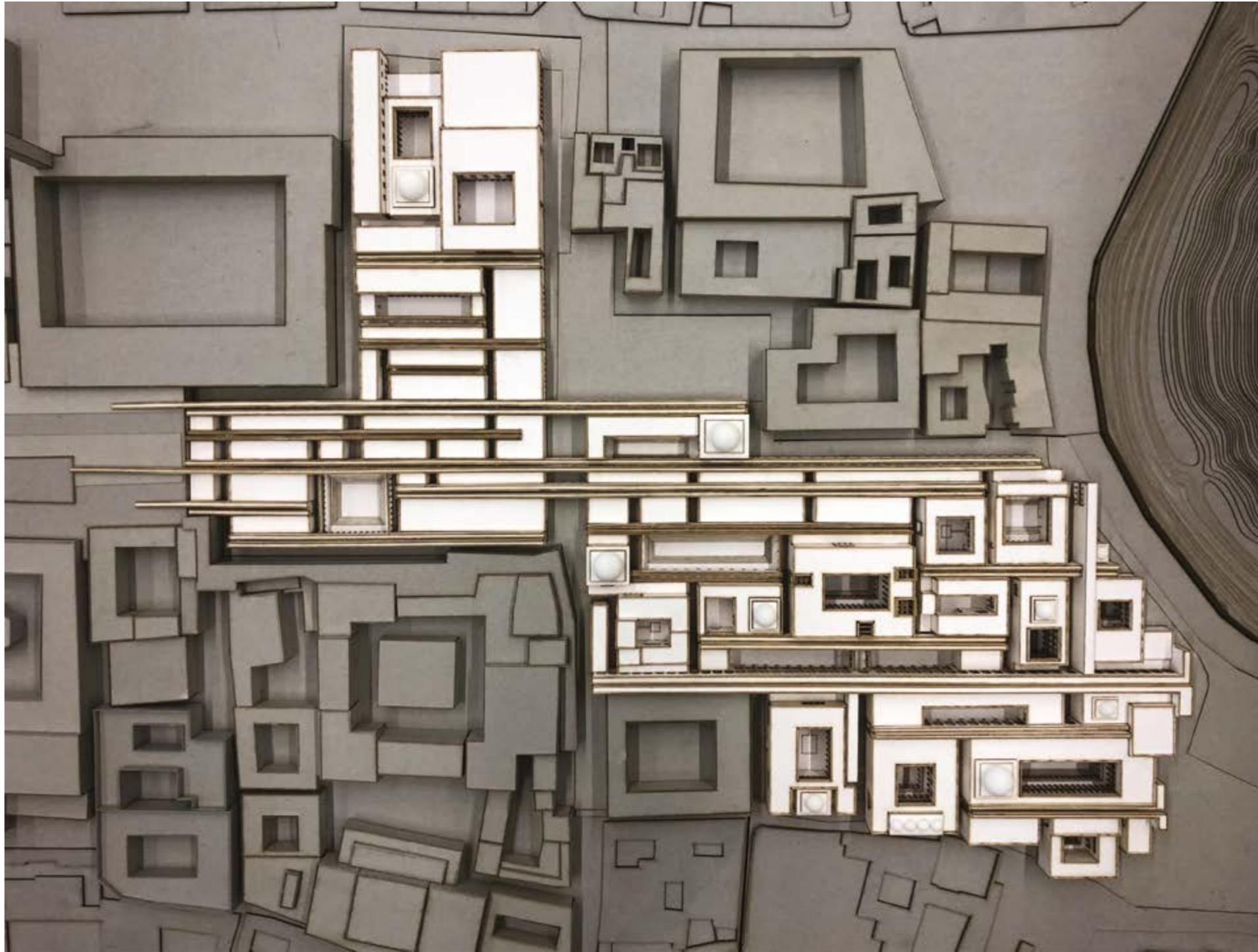


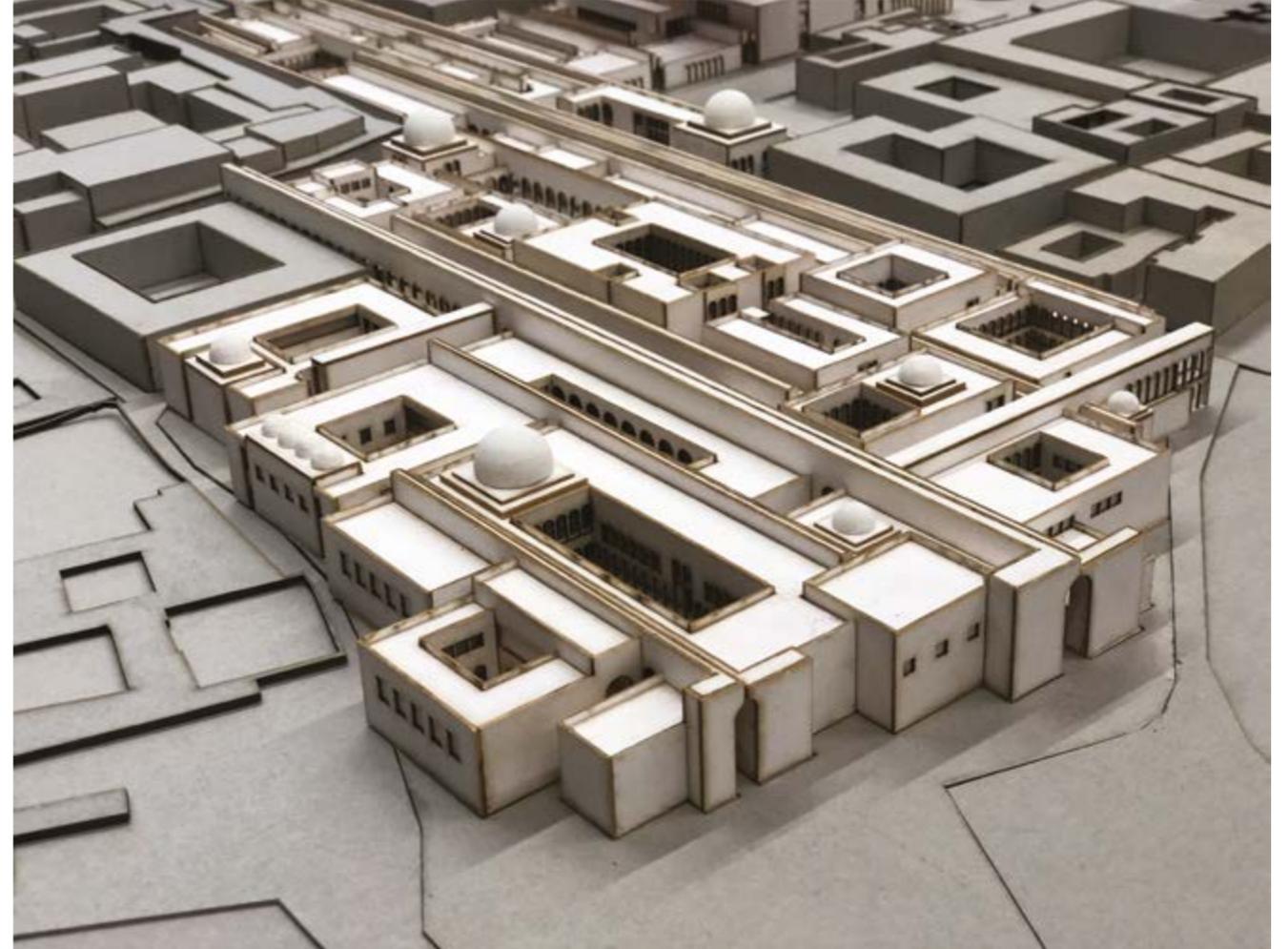
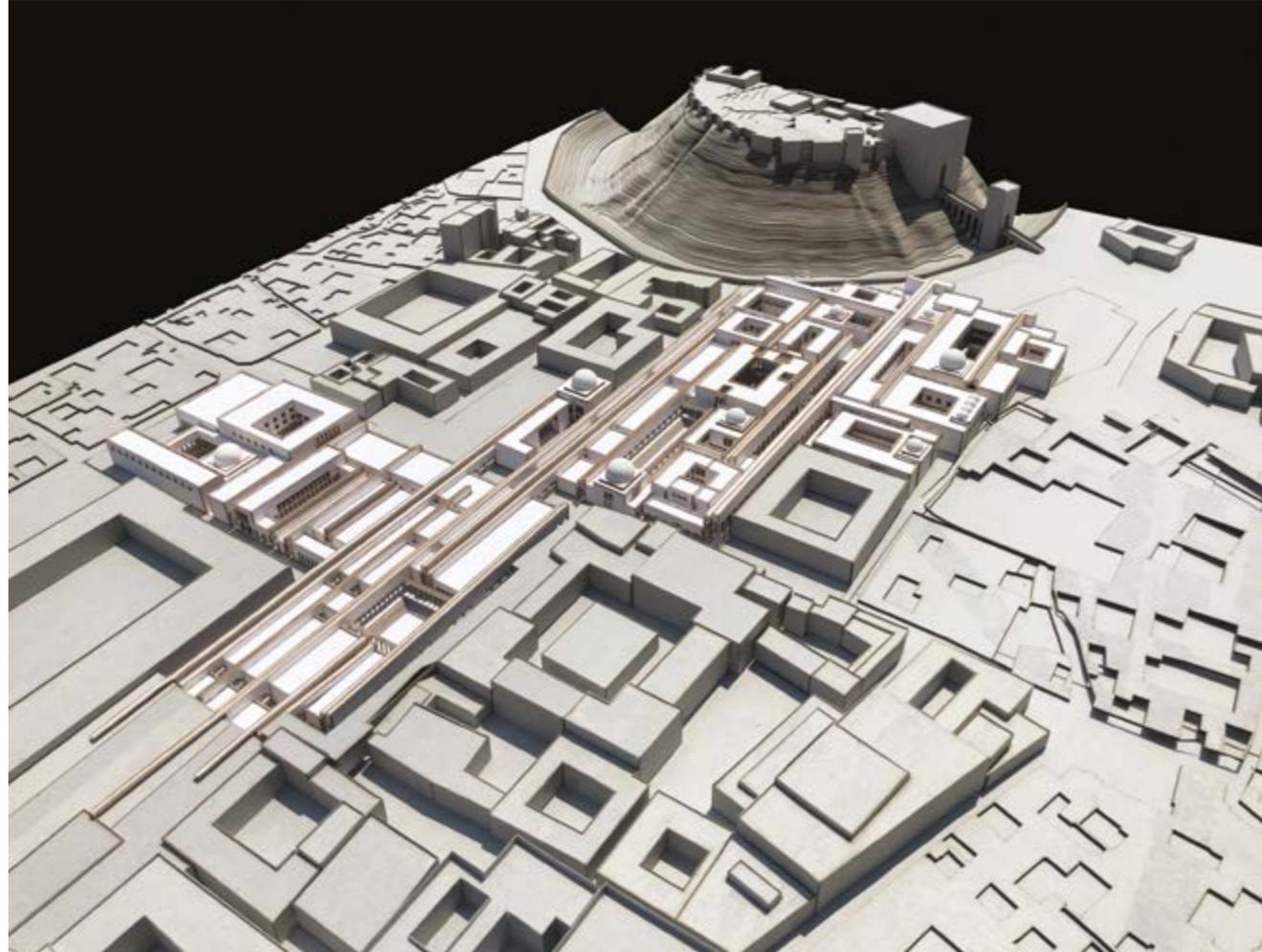












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Fig. 3.44 - Retrieved from: elpais.com/elpais/2016/12/16/media/1481895078_965666.html

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Fig. 4.13- Gaube, H. and Wirth, E., Aleppo, p.47

Fig. 4.14-J. Sauvaget, op. Cit., p.216

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