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**The Fragmentation of Monumental Buildings.
From a Single Building to an Urban Fabric**

The Fragmentation of Monumental Buildings. From a Single Building to an Urban Fabric.

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ABSTRACT: The city is a living entity, dynamic, and in permanent construction. In the constantly changing human landscape dominated by the common fabric, prone to quick transformations, monumental buildings, given their high cultural value as well as robust construction, tend to show a greater resistance, remaining relatively stable through hundreds or even thousands of years. Yet, in periods of crisis or quick cultural change, even the resilient monumental buildings can suddenly lose their function or collective cultural value, undergoing a complete transformation of their unique nature as they are appropriated and transformed by the common urban fabric, in a process identified as fragmentation.

From the ancient monumental Roman structures occupied in the Middle Ages to the transformation of the Kowloon Fort in Hong Kong in the second half of the 20th century, the communication proposes, through an analysis of several case studies, a reflection of how the subversive, ad-hoc and informal nature of fragmentation makes it one of the richest processes of urban fabric formation. In this sense, the knowledge of this process can be an important architectural design tool, contributing to the enrichment of the erudite architectural discourse, as well as, helping to understand the shape of the contemporary city as a result of a sequence of events that can be identified, interpreted, classified and explained.

KEYWORDS: Fragmentation, Monumental Buildings, Urban Fabric, Plot Structure, Transformation.

INTRODUCTION

The urban fabric is composed by a great diversity of spaces, as well as built structures. These, in turn, are characterized by a great diversity of forms and functions. This heterogeneous built landscape is mostly populated by two fundamental groups of buildings: the common buildings and the singular or monumental buildings. The common buildings, usually of residential nature, constitute the great majority of the urban fabric. Generally anonymous, built on more fragile materials and following vernacular designs, these buildings in the "long time" of urban evolution are constantly altered, augmented, destroyed and rebuilt, sometimes in short time and most often without leaving memory or traces. Monumental or singular buildings, on the other hand, are those whose form or function makes them stand out of the common urban fabric. These buildings tend to leave a lasting presence in the urban fabric, sometimes remaining virtually unaltered through hundreds of years. We can associate this concept with buildings of a public nature and collective value, however for the purposes of our argument, we should consider as monumental buildings architectural objects with an erudite form, critically thought and projected. Buildings whose genesis originated from the formalization of a concept or an idea, and which materialize in its form the paradigms or utopias of the cultures responsible for their construction, such as palaces, temples, convents, theaters, parliamentary halls, municipal chambers, hospitals, etc. These buildings are the result of richer and more complex construction programs, both their design and in the quality of their constructive structure, as well as in their symbolic and cultural value.

1.0 THE FRAGMENTATION OF MONUMENTAL BUILDINGS

1.1. The process of "fragmentation"

The constructive and spatial quality as well as the symbolic value given to monumental buildings usually leads to them being preserved, successively reinterpreted and reused by different cultures over time, in deep contrast to the anonymous common buildings whose continuous construction and destruction is a part of the daily urban rhythm. However monumental buildings can also undergo a rapid process of erosion and transformation, particularly when they lose their main function or cultural meaning resulting in an abandonment and ruin of the building, that is subsequently appropriated and transformed by the common urban fabric through the overlapping of new structures and the adaptation to different forms and new uses. This type of transformations, and their relevance in the production of urban fabric were particularly explored by Italian authors such as Caniggia (Pozo 1997, 49) or Gian Luigi Maffei and Mattia Maffei (Maffei Maffei Luigi Maffei 2011, 51) as they sought to understand the formation of medieval fabric over pre-existing Roman structures. One of the fundamental consequences of this transformation is the fragmentation of the monumental building, dividing what was once a single, cohesive unit into several smaller entities that from then on will follow their own independent evolutions and transformations. The design of these new smaller entities is not only

conditioned by the spatial traces left by the monumental buildings they now occupy, but often takes advantage of these features to construct new compositions created essentially from the surviving architectural remains. One of the most important component of these initial occupations is the plot structure as, once settled, plot structures are particularly resistant to transformation, and being defined at first directly by the remains of the monumental building the plots will tend to preserve in their morphology traces from the layout of the primitive building. In contrast, architectural fragments or structural remains, that although initially preserved and reused by the first occupations, as these are successively replaced by newer buildings, these traces will be gradually erased. In this process, the old monumental building tends to gradually dissolve into the various small occupations of its space, becoming an integral part of the common fabric. Thus, the original shape of the monumental building is in part preserved by the buildings initially built over its structures, even through the successive changes that characterize the urban evolution. All types of remains persist from small disperse architectural pieces to large spaces, complete or retransmitted by the street alignments and by the plots boundaries. Often the old interior circulation corridors turn into streets, the courtyards or cloisters in squares, and the interior divisions in separate buildings with an autonomous nature.

2.0 CASE STUDIES

2.1. The fragmentation of ancient roman monumental buildings

Known as the eternal city, Rome is the paradigmatic historic city. In it we can find some of the most notable examples of monumental architecture, both past and present, forming an eclectic mixture of current and past buildings. Underneath all this diversity we can also find significative traces of the ancient city past, as the city medieval core was initially set over the remains of several ancient roman monumental buildings. The well documented evolution of the city of Rome (with cartography as old as the roman *Forma Urbis*), and the available knowledge of roman architectural typologies makes these examples of fragmentation particularly relevant for their good documentation and formal clarity. Rome was probably formed in the beginning of the iron age after several villages existing in the surrounding hills coalesced in to a single civil entity. This merger was later materialized through the construction of the Servian wall in the IV century BC, securing the ancient city core roughly centered on the Colosseum valley. The city avoided the lower plains around the Tiber that were at the time occupied by marshes and frequently subjected to flooding. The construction of drainage infrastructures in the largest of these lower plains (similar the construction of the *Cloaca Maxima* in the roman forum) significantly improved its usability, allowing it to be more consistently occupied, at first as the main staging field for the roman army, thus giving it the name of *Campus Martialis* (Field of Mars) after the god of war.

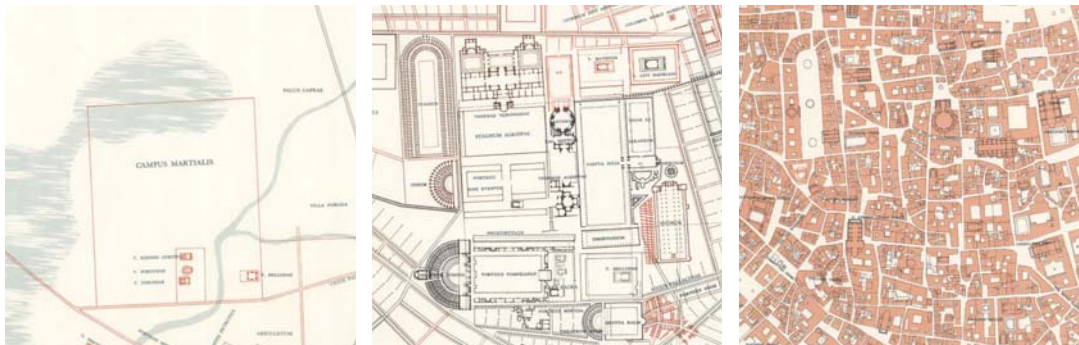


Figure 1: The Campus Martialis. From left to right: 1st century B.C., 4th century A.D., 16th century A.D. (Muratori, 1963)

In the period between the end of the roman republic and the beginning of the roman empire as the city became the economic and military center of the Mediterranean world, rulers or even wealthy private citizens sought change Rome and transform it a cultural and architectonic reference that would rival cities like Athens or Alexandria. However, the high density of occupation made any large-scale interventions particularly difficult even for the first absolute rulers such as Caesar or Augustus, making the relatively free and open space of the *Campus Martialis* an ideal place to materialize monumental architectural visions. Thus, the area was soon occupied with large public buildings, such as the Theater and Porticus of Pompey, the Pantheon and the Baths of Agrippa, the Baths of Nero, the Stadium and Odeon of Domitian, the Theater of Balbus, and the Temple of the Divine Hadrian among many others. With the collapse of the empire in the early 5th century the city contracted from more than one million inhabitants to only a few thousand. From the biggest city in the western world Rome became during the late antiquity a collection of rural buildings dispersed in the once monumental landscape. The urban decay led to the abandonment and ruin of the numerous aqueducts, with only the Aqua

Virgo subsiding, probably as its path was mostly underground. This aqueduct, built during the reign of Augustus by Agrippa to supply his baths in the *Campus Martialis*, became one of the only secure sources of potable water for the population of Rome, conditioning new growth of the city during the late middle ages and renaissance to the area around the *Campus Martialis*. Thus, the inhabitants of the city concentrated themselves on an area that was fully occupied by the remains of the abandoned monumental buildings. (Fig 1).

Given the lack of resources to adequately clear the area, the new constructions used the ruins as much as possible for support. New houses occupied the spaces between the standing columns of ancient temples, under ruined arches, over the seating areas of theaters or even inside the vaults and domes of bathhouses (Fig. 2). These initial occupations contributed to the preservation of the roman structures, and only at much later dates were many of these completely demolished, mostly from the 16th century on. Some examples of this can be found in the Arch of Portogallo, demolished in the 1662 by Pope Alexander VII, the Septizodium demolished in late 16th century, the remains of temple of Nerva demolished in early 17th century, the remains of the Temple of Serapis on the Quirinal hill also demolished in the 17th century, among many others.

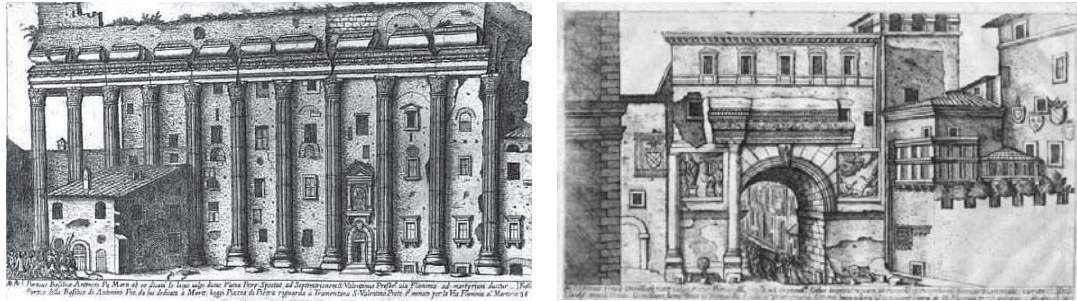


Figure 2: Remains of the Temple of the Divine Hadrian, the Arch of Portogallo (Aloisio Giovannoli, 1615).

Although most of the visible roman remains in the area of the *Campus Martialis* have been all but erased, the plot structure and the urban fabric have preserved to a significant degree traces of the original roman buildings, transmitted over the walls of countless iterations of common buildings. Rome thus stands out as perfect example of not only how this process has the potential to influence large areas of the city, but also how traces of ancient buildings can sometimes survive through hundreds or thousands of years. This is particularly clear in the cases of roman theaters and amphitheaters as these buildings, with large support structures for the seating areas, are more resilient to the destruction of time as well as the circular nature of their designs making them more evident in the urban layout, while in contrast ancient monumental buildings with an orthogonal configuration tend to be more easily hidden by the common urban fabric. In this sense the remains of the theater of Pompey and the stadium Domitiani (now the Piazza Navona) prove a some of the most compelling examples on the resilience of the monumental buildings traces after the process of fragmentation, as the design of the ancient buildings is preserved in an exceptional manner in the contemporary urban fabric (Fig. 3).

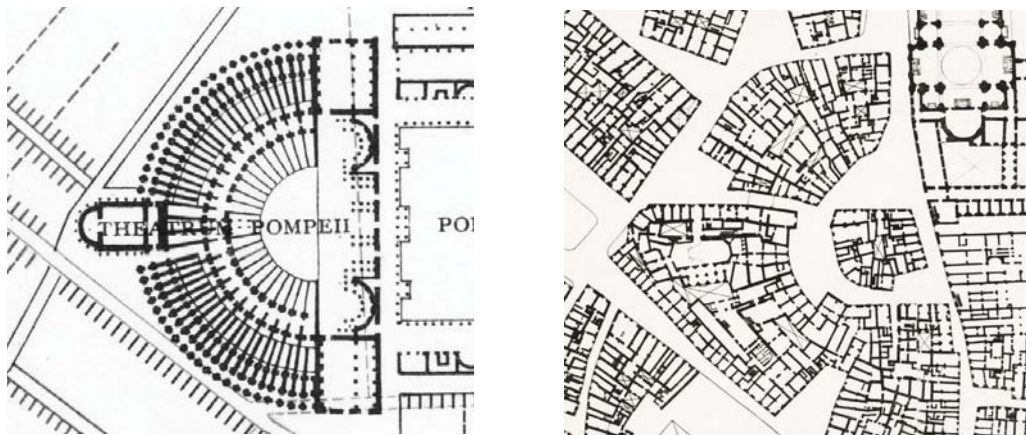


Figure 3: Comparison between the Theater of Pompey and contemporary urban fabric. (Muratori, 1963)

2.2. The fragmentation of Lisbon's palaces and convents

Often associated with roman buildings, the fragmentation of monumental buildings can occur in any city or any period in history. A good example of the frequency with which this process can happen can be found in the city of Lisbon and the transformation suffered by some of the city's palaces and monasteries. After the constant territorial expansion of the Reconquista during the middle ages, Portugal, with its mainland territory landlocked by the kingdom of Castile and Leon turned its attention to the creation of an overseas empire. Thus, the Lisbon became one of the largest world cities, head of an empire that stretched from north Africa to Brazil, Angola, Mozambique, Ormuz, India, Indonesia, and Japan. With the pretension of making a "new Rome" an ambitious construction program was initiated to reflect this new position of power. This process, focused mainly in the construction of monasteries, churches and palaces, was carried out inconsistently in the following centuries by different kings, with moments of stagnation or of fast construction, giving it an haphazard and uncoordinated nature.

The process would however abruptly stop after the long period of instability that started with the earthquake of 1755, followed by the French invasions of 1807 and 1811 and the civil war from 1828 to 1834. The colonial world that had supplied the wealth behind the construction program suddenly collapsed and the city dramatically shifted from the past colonial world to the new industrial paradigm. Instead of receiving expensive commodities like spices and gold from the overseas, exporting them to Europe, Lisbon became an industrial powerhouse that supplied the country and the colonies with manufactured goods. As the aristocracy and clergy lost their traditional revenue sources, some palaces and monasteries built and maintained in the previous centuries were either adapted to other functions by the emerging republican state, sold to the increasingly powerful bourgeoisie factory owners or simply abandoned to ruin and taken by influx of working class squatters that flooded the city in search of work. While some buildings are transformed in hospitals, military barracks or factories, others, like the Val dos Reis palace or the Bernardas convent (Fig. 4) are converted in to lower working-class residences.



Figure 4: Courtyard of the Bernardas Convent transformed into lower class residences (Almeida, 2000)

These working-class residences adapt the old buildings by dividing the built areas in to autonomous units while at the same time preserving the open areas virtually unchanged, namely courtyards in palaces and cloisters in convents or monasteries. These will function as the main circulation and socialization spaces, generating a small enclave, a semi-private collective courtyard accessible only through a single passage almost always the original main entrance of the monumental building, giving these adaptations the common toponymical designation of "patios" (courtyards). As for the built areas, the once spacious halls are separated from each other and transformed in to individual residential spaces, adding smaller rooms that subdivide the space. These will, with time, have autonomous evolutions, eventually demolishing the original walls and replacing them with fully autonomous buildings.



Figure 5: Remains of the Coculim palace in the early XX century (Unknown Author)

One of the most significant cases of fragmentation in Lisbon can be found in the various palaces built along the old Islamic Wall. Of these the ancient Counts of Coculim palace, destroyed by the 1755 earthquake and tsunami, stands out, for its size and for the fragments that still survive, such as the large stone masonry corner bearing the coat of arms of the Mascarenhas family, as well as the large 17th century portal. The lack of detailed building plans prevents us from understanding impacted the interior spaces, however a 16th century painting as well as a photography from the 20th century allow us to reconstruct the impact of the fragmentation process on the building façade. Sometimes overlooked, the façade is a fundamental part of any building, and in the case of urban palaces this element is used as a statement of power, with a rigorous geometric composition frequently more elaborate than the building plan, that is usually conditioned by irregular pre-existing plots. In these cases, the process of building fragmentation is particularly evident in the study of the façade, where the former geometric order is contrasted by the irregularity of the newer constructions.

The Coculim palace facade presents a rigorous geometric composition characteristic of the period, with 15 large identical balconies in the first two floors, this composition was only interrupted in the centre by the large and portal in rusticated stonework. In the beginning of the 20th century, as a result of the earthquake, the top floor has disappeared as well as large part of the central façade area, replaced by small buildings (Fig. 5). The palace fragmentation assumes a more expressive character in its facade; being particularly evident the contrast between the erudite geometric order that existed before the earthquake and the irregularity caused by its fragmentation (Fig. 6). This building not only clearly illustrates how the original building is divided and slowly transformed piece by piece, but also how the most iconic elements tend to survive longer (In this case the entrance portal and the stone masonry corner bearing the coat of arms). This example also demonstrates how this process in should not be considered only in the context of roman or medieval buildings, occurring in much more diverse, and sometimes unexpected settings.



Figure 6: Evolution of the Coculim palace from the 16th century to the 20th century (Pedro Vasco Martins)

2.3 The fragmentation of Kowloon fort

Although this process is often associated with ancient buildings, transforming gradually over long periods of time we can find examples where this process occurs in a short span of time, of which the Kowloon walled city in Hong Kong is one of the most emblematic. Kowloon began as a small military outpost built in the early Sung Dynasty (960 – 1297) to house imperial soldiers controlling the surrounding area. After losing the First Opium War (1839-1842), the Qing government ceded Hong Kong Island to Britain. With the British occupation of Hong Kong, the once small military outpost became a strategic military station. Therefore, the Qing Dynasty decided to fortify the outpost adding a granite stone wall (Fig. 7) that formed an irregular rectangle with 130x230m. The wall enclosed an area of approximately 14.125 m² (6 1/2 acres), with 4 gateways, 6 watchtowers and several interior support buildings, from offices to housings and warehouses. Construction was completed in 1847, serving both as an administrative hub to govern the surrounding areas, and as a centre for coastal defence. By 1898 the garrison numbered 500 soldiers and officials, as well as 200 civilians, generating a bustling market town along the road that connected the fort to the waterfront.

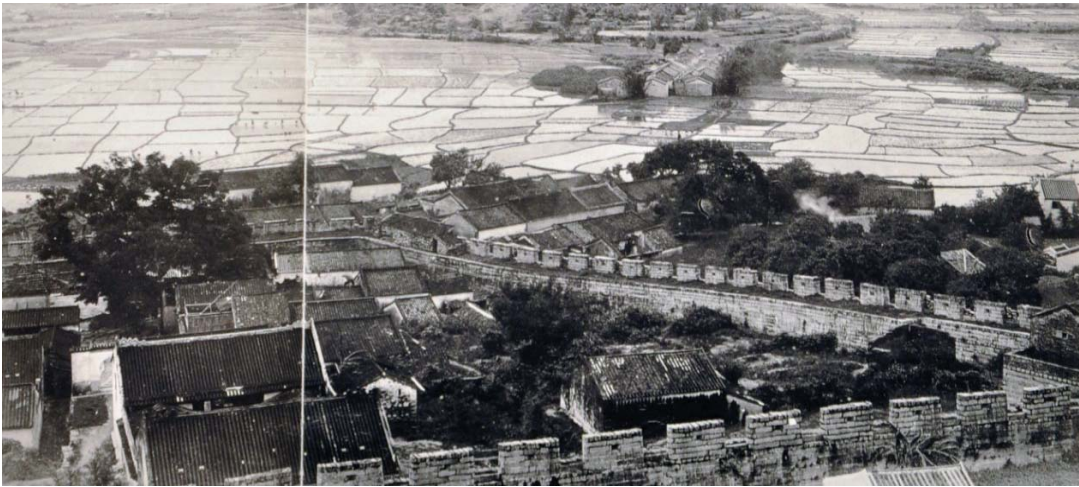


Figure 7: The norther corner of the Kowloon Fort, and surrounding landscape in 1856 (Girard, Lambot, 1993)

In 1898 the British begun negotiations to secure more territory in the mainland north of Hong Kong. Chinese Qing Dynasty authorities however were particularly reluctant in abandoning the Kowloon fort. Thus, to overcome this stalemate, British and Chinese officials agreed on the lease of all the territory in the Kowloon peninsula to British jurisdiction except for the Fort, that remained under the sovereignty of the Qing Dynasty. The unusual agreement would not last long as British troops took the fort in 1899, finding it had been hastily abandoned by the local garrison. Seeking to avoid provocations to the Chinese officials, the British refrained from enforcing their control, the Chinese on the other hand also didn't make any attempts to reinstate their control, leaving the Fort in an ambiguous apparent state of anarchy, out of British jurisdiction, and out of reach of Chinese authorities. Over time most of the buildings inside the fort fell in to a state of ruin while the surrounding fields were gradually occupied by squatters. In the 1933 plans were drawn to demolish the houses and turn the area in a tourist attraction under protests from Chinese authorities. By 1940 almost every building inside the fort had been demolished with the exception of the *yamen*. The planed tourist attraction would however never materialize as the Japanese occupation of Hong Kong interrupted the process, demolishing the remains of the granite wall and using the stone to extend the Kai Tak airport. By 1947 the area was flooded with 2000 refugees, while at the same time China flexed its authority announcing the intention to reclaim its rights and establish civil courts in the fort area. After the British tried to evict the squatters riots broke spreading as far as Canton and Shanghai, leaving the local Government with no options but to adopt a "hands-off" approach in an effort to prevent the further deterioration of Anglo-Chinese relations. The fort thus quickly fell again during the 1950's and 1950's in to a state of general lawlessness filled with brothels, gambling parlours and drug dens dominated by Triad societies. During the second half of the 20th century the initial improvised houses were gradually replaced by multi-storied buildings creating the most densely populated place ever to exist on earth. According to the 1971 census there were 10.004 inhabitants in 2185 dwellings, although the unofficial number was probably much higher, as in the late 1980's there were about 35.000 residents. Finally, in 1987 British and Chinese authorities agreed in the need to demolish the site in the interest of the local population. Demolition began in 1993 after a hard eviction process, and in 1995 the Kowloon Walled City Park opened its gates.

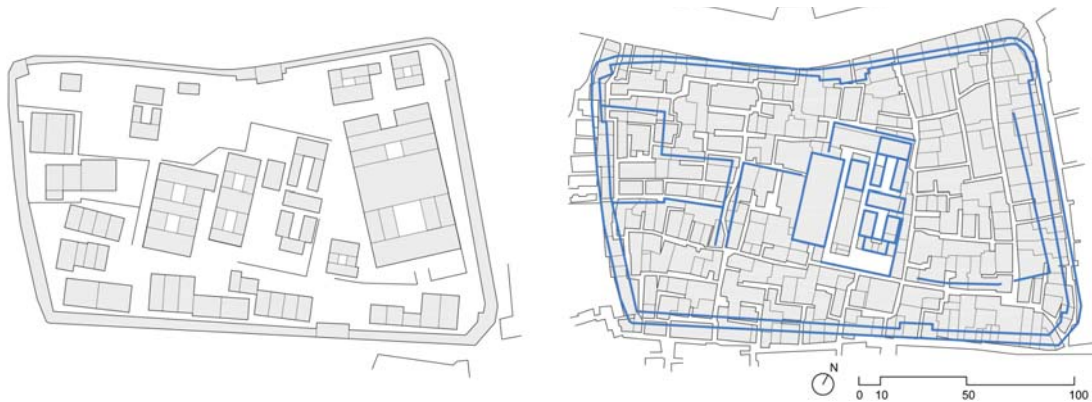


Figure 8: Comparison between the plan of the fort at the end of the 19th century and at the end of the 20th century, highlighting the common persisting traces (adapted from Lai, 2016 and Girard, Lambot, 1993)

The comparison between the plan of the fort at the end of the 18th century with the site plan in the late 1980s shows that rather than a complete destruction of the site, the urban fabric inside Kowloon not only respected the original walled precinct but also flowed the general orientations set by the ancient buildings. The inner retaining walls also continued to serve their purpose and were thus preserved helping to define the new urban fabric. These structures helped to initially condition the construction of the first improvised squatter houses, that would latter give way to multi-storied concrete buildings. Similarly, the *Yamen* building originally saved from destruction in the 1940s acquired a particular cultural or symbolic value as it was the last remain of the original construction, being continuously preserved even under the high demographic pressure to use every available space for the construction of new houses (Fig. 8). The example of Kowloon is also particularly relevant as it clearly shows the contrast between the resistance of the plot structure and the relative volatility of the individual buildings. The initial shanty town plot structure was constituted by small plots and small wooden buildings, that with the gradual densification of the area were quickly replaced by high rise concrete buildings. The plot structure however remained the same, creating an unusual group of needle like buildings, some as high as 14 floors in very small areas (Fig 9), that in virtue of their height and small base leaned heavily on each other, to such a degree that in one were to crumble the whole complex could collapse.



Figure 9: Aerial view of Kowloon highlighting the almost monolithic nature that urban fabric had. (Girard, Lambot, 1993)

CONCLUSION

The city is a living entity, dynamic, and in permanent construction. In the constantly changing human landscape dominated by the common fabric, prone to quick transformations, monumental buildings, given their high cultural value as well as robust construction, tend to show a greater resistance, remaining relatively stable through hundreds or even thousands of years. Yet, in the process of fragmentation, that tends to occur in periods of crisis or quick cultural change, even the resilient monumental buildings can suddenly lose their function or their collective and cultural value, undergoing a complete transformation of their unique nature, losing unity and breaking up into a sum of units that, from that moment will have their own independent evolutions. What was once a monumental building will transform into a part of the common urban fabric. This new urban fabric will respect some aspects of the previous monumental buildings, namely structural elements such as exterior walls or functional and symbolic elements, such as entrances or temples. These fragments of the monumental buildings, absorbed by the common fabric, will be constantly recycled and reused, and in this way preserved, retransmitted through countless iterations of buildings. Thus, rather than consisting in the apparent complete destruction of the monumental buildings, this process implies to a significant degree their preservation, the resulting new urban fabric shows a great richness, as it encapsulates both the new and the old, the past and the present, serving as a window into the memory and the identity of the city. The fragmentation of monumental buildings is thus one of the richest and most complex processes of urban fabric formation, although it appears to occur almost naturally in particular circumstances of neglect or ruin, being often associated with the transformation of Roman monumental buildings, the process of fragmentation is more widespread and common, occurring in some instances in the 20th century. In its genesis the process of fragmentation has a subversive, ad-hoc and informal nature of deconstructing the established order and reinterpreting it, however the knowledge of this type of processes can be an important architectural design tool, contributing to the enrichment of the contemporary erudite architectural discourse, as well as, assuming a role in the preservation of an urban memory and identity. Finally, the comprehension of these processes can also prove useful in helping to understand the shape of the contemporary city as a result of sequence of events that can be identified, interpreted, classified and explained.

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