

ARCHITECTURAL DESIGN CONSIDERATION FOR
MODERN BUILDINGS IN INDONESIA *)

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ABSTRACT

The paper reviews the evolution of modern buildings in Indonesia up to the present time. Fragmentation Architecture introduced for the first time in 1993 in Indonesia by its conceptors Kohn Pedersen Fox in the Niaga Tower, has a strong contextual relation with the environment, in which local culture, tradition and physical conditions are incorporated. It is therefore believed, that this will be the future trend around the world, as buildings would naturally represent the local architecture with a strong local identity. The importance of generating synergic associations of foreign architects with local partners is clearly apparent, since with the thorough knowledge of the local culture, building code, building materials and construction practice of the local professionals a cost-effective design will be ensured. Finally, effective and efficient lay outs and space utilization as well as optimum level of building automation system are important factors for striking the balance.

1. INTRODUCTION

Modern Architecture and *Modern Building* are two different but related things. Modern Architecture is referring to the appearance of a building, characterized by the latest trend in architectural style. Modern Building is referring to the fulfillment of a building to the functional needs of modern life, characterized by applications of the latest technological advances. It could also include the fulfillment of the aesthetical satisfaction of those people expressed by Modern Architecture. It should be recognized in this context, that the word *modern* itself has a relative connotation, implying that what was modern at a certain time would become out of date or obsolete at a later period. Therefore, a modern building could express a modern architecture, but could also express a classical one from the past. But in general, if we speak about a Modern Building it also implies a Modern Architecture as well for that period of time.

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Architectural styles are a product of a complex process of human development in response to cultural, socio-economic and environmental factors. The process is a manifestation of the human

desire for continuous betterment of the natural as well as built environment. Architectural styles are therefore changing from time to time, as established values undergo changes due to the introduction of new ones from outside as well as developed within the community itself.

The development of architectural styles in Indonesia started some three centuries ago when the first Dutch colonists put their feet on the Indonesian shores. In the early beginning the Dutch settlers built their houses and buildings precisely in the European style they inherited from their ancestors. They built row houses along the waterfront and built canals around their early settlements, precisely as what they did in the Netherlands. Those houses were enclosed by solid walls as in Europe, as they believed that solid walls would protect the inhabitants from the various tropical diseases, which they thought were caused by the tropical air. It was just later on that they realized that it was not the tropical air that they should avoid to get rid of the tropical diseases. They learnt from the local traditional architecture that it was much healthier to have fresh air circulating freely in their houses and buildings by adopting several local building features such as long eaves and verandahs, porticos, large windows and ventilation openings. They realized that local building styles should be considered in adapting European buildings to tropical conditions. They also realized that the concept of row houses and canal systems did not suit the local natural environments. Thus, a typical architectural style took shape, which gradually gained acceptance among the early Dutch colonial community, but later on also among the Indonesian community inhabiting the growing towns of Indonesia, which in the mean time underwent major socio-economic and cultural developments under the colonial rule. Houses and buildings built in the then appreciated architectural style underwent further adjustments to better suit the environment and the then prevailing needs of life. Those were the modern houses and buildings in those days.

Since those early developments decades went by, during which various new architectural styles were introduced into the Indonesian community, initially through the Netherlands as the seat of the colonial policy in directing the course of building developments, but after the Indonesian independence in 1945 also from other parts of the world. As architectural styles become a global trend, the present Indonesia is enjoying the presence of a variety of architectural styles from all over the world implemented in designs of Indonesian buildings.

In implementing the global trends in architectural styles, it has been a challenge for architects to accommodate the local traditional culture in its appearance. This has mostly been achieved in two ways, depending on the scale of the building. In small scale and lowrise buildings, traditional shapes of building parts like roof shapes (pitched roofs, Minangkabau and Joglo roof styles, etc.) have been incorporated into the overall architecture. In highrise buildings such efforts would certainly be ineffective, because of the scale effect. Therefore, in highrise buildings local traditional culture has effectively been expressed in parts of the building within the human or pedestrian scale, like in the podium part and lobby of the building, in the form of traditional ornaments, carvings and symbolic forms incorporated into the architectural details.

So, a modern building with its architectural expression is a manifestation of the response to the environmental condition. On the other hand, the presence of a building has a counter impact on the environment. This kind of interaction will be discussed in this paper, starting with the evolution of modern buildings in Indonesia, followed by local design considerations, the striking balance for the Indonesian case, specific examples and some conclusions.

2. EVOLUTION OF MODERN BUILDINGS IN INDONESIA

In general, the evolution of modern buildings in Indonesia may be divided into 4 periods: (1) the colonial period, (2) the early independence period, (3) the period of the emergence of the national architects and (4) the present period of the Real Estate Developers.

The colonial period

The colonial period started when the first Dutch colonists built their houses and buildings as described in the Introduction and lasted up to the Indonesian independence in 1945. In general the architectural styles introduced by the Dutch architects were following the global trend at that time, such as classical, vernacular, functionalism, Art Nouveau and Art Deco.

Old Dutch buildings in classical styles can still be found in the Old Town of Semarang, which is often called the *Little Netherlands*. Some 100 of these buildings are now being preserved as a cultural heritage by the Semarang City Administration. The oldest of these buildings is a church popularly called *Gereja Blenduk* (the Dome Church), because of its distinctive dome, built in 1742 and renovated in 1894 by the architects *W. Westmaas* and *H.P.A. de Wilde*. Another old Dutch colonial building in Semarang is the former *Railway Station* of the Netherlands Indies Railways (*Nederlandsch Indische Spoorwegen* or NIS), built by the architects *J.F. Klinkhamer* and *B.J. Ouëndag* in 1902. Because of the many entrances it has, the building is popularly called *Gedung Lawang Sewu* (the Thousand Doors Building). Yet another old Dutch colonial building is the *Semarang Post Office*, built in 1906.

In Jakarta, the *Presidential Palace* built by the architect *J.A. van Braam* in 1879, the *Jakarta Kota Railway Station* and the *Jakarta Kota Exim Bank Building* belong to the few old Dutch colonial buildings preserved by the Government of Indonesia.

H. Maclaine Pont was the first Dutch architect recognizing again the values of the culture of the local people, particularly that of the Javanese, like the first Dutch settlers did several decades before. He proposed that modern functional architecture be evolved from the local history and native architectural themes. In this spirit he planned and designed the campus and the main buildings of what is now the *Bandung Institute of Technology (ITB)* in 1920, the first technical university in the country. In these buildings the local culture is most beautifully expressed in the roof shapes following the Javanese tradition. His concept of incorporating local traditional culture

was supported by another prominent Dutch architect *H.P. Berlage*, a strong figure in Modernism and functional architecture in the Netherlands. He suggested that Western traditions be enriched with forms of local arts, a standpoint he discussed with F.L. Wright when he visited the United States at that time. In this spirit he renovated the *Lorojonggrang Complex* in Prambanan (Yogyakarta) in 1923. In this period *J. Gerber* (with his works a.o. *Gedung Sate*, Bandung, 1920) and *H. Th. Karsten* (with his works a.o. *St. Elisabeth Hospital*, Semarang, 1926) were two other Dutch architects belonging to the same genre.

Traces of *Frank Lloyd Wright* influence can be found in the architecture of the 1920s in Indonesia. Since Wright had been very influential to Dutch than to any other European architects, it was quite understandable that Wrightian architecture found its way to Indonesia. *C.P. Wolff Schoemaker* was one of the Dutch architects showing this Wrightian influence, such as in his works *Hotel Preanger* (1929), *Kodam III Siliwangi Building* (1918), *Gedung Merdeka* (1921), and the present *ITB Rectorate Building* (1925), all of which located in Bandung.

After the Dutch colonial administration launched a new policy on welfare and cultural development of the people in the colony in the early 1930s, called the *Ethical Policy*, Dutch architects were given the opportunity to implement this policy in the creation of modern buildings in the big cities of Indonesia. Architectural movements emphasizing on functionalism and cubism, which in the Netherlands was known as *de Stijl*, started to be implemented in Indonesia. The architect *A.F. Aalbers* designed three groups of buildings in Indonesia in different architectural styles in about the same period in the late 1930s, namely the Corbusian style flat roofed villas (3 villas at Jalan Ir. H. Juanda, Bandung, 1937), villas with pitched roofs to better suit the heavy tropical rain condition (12 villas at Jalan Pager Gunung, Bandung, 1939) and Art Deco style office buildings a.o. what is now *Bank Pembangunan Daerah* (the former *DENIS*, 1935) at Jalan Braga, Bandung, and the notable *Hotel Savoy Homann* (1939) also in Bandung.

The early independence period

The early independence period lasted under President Soekarno's administration from the early 1950s up to the late 1960s characterized by the first massive construction programs with financial sources coming from Japanese war reparations and government loans from East European countries. The architectural style emerging in this period was driven by the enthusiasm of the Indonesian people of building the new nation. The buildings mostly constructed were of Neoclassical Modernism style to express the progress and achievement of the new developing nation in its program of "character and nation building". This style is represented by major works of the Dutch educated Indonesian architect *F. Silaban*, the most favoured architect of President Soekarno. His works include the *Bank Indonesia Building* (1958), the *Gedung Pola* (Exposition Building, 1960), the previous *Headquarters of the Indonesian Airforce* (1964) and the *Istiqlal Grand Mosque* (1967). In these works tropical conditions were attempted to be addressed, a.o. by introducing cross ventilation of the natural air. Monumental structures were

constructed, such as the 110 m tall *National Monument* (1963) at Merdeka Square (the original concept of which came from the hands of President Soekarno himself, who happened to be a building engineer by education). Some Modernism were introduced, such as in the *Hotel Indonesia* (designed by the Danish architect *Sørensen*, 1960) and initially operated by Sheraton, the multistory *Sarinah Department Store* (designed by Japanese architects, 1963) and the *Senayan Sport Complex* (designed by Russian architects, 1962). Late in this period (1970) the first real highrise building was constructed, the 30-story *Wisma Nusantara*, designed by Japanese architects and engineers, at the same time serving as the prototype and laboratory testing model for the first generation of highrise buildings in Japan (i.e. the Kasumigaseki Building in Tokyo).

The period of the emergence of the national architects

This period started in the late 1960's, when the first new generation of young Indonesian architects came into the picture, after having completed their education in Indonesian as well as foreign architectural schools. At the same time it was the beginning of the second construction boom, resulting from the success of the first Five Year Development Plan of the New Order Government of Indonesia under President Suharto. This was a direct result of the oil boom that had given windfall revenues to Indonesia as a major oil producing country, boosting the construction of modern lowrise as well as highrise public and private buildings. The boom was also responsible for the establishment and development of the Indonesian construction industry, including state owned and private consulting firms, contractors and producers of building materials, all of which managed and directed by enthusiastic young professionals.

This period is characterized by some Corbusian Modernism concepts, initiated by the works of the German educated Indonesian architect *Sujudi*, creating his masterpiece the *Parliament Building*. Another notable design of Sujudi is the *ASEAN Secretariat Building*. Other works emerging in this period by national architects in Modernism is the *Planet Senen Shopping Complex*, in Late Modernism the *LPPM* and *SEKNEG Building* and in Islamic concept the *Said Naum Mosque*.

In the mean time, highrise buildings belonging to the State Oil Company PERTAMINA were completed, namely the *PERTAMINA Headquarters Building*, *Patra Jasa Building* and what is now the *BPPT Building*, all of which designed by foreign architects in Modernism styles.

In the second half of the 1970s the *Jakarta Municipality Building* was completed, which was the result of close cooperation between Japanese and national architects. Since then it is a requirement of the Jakarta Capital City Administration that foreign architects and engineers be associated with local partners.

At the present time the national architects are still continuing their participation in the building industry, but their role as Lead Architect began to fade away from the Indonesian scene, when

the private developers with their foreign architects began to dominate the private construction industry in the late 1980s. However a new period, characterized by the interaction of foreign with local architects, started to create a new breed of modern buildings in modern architectural styles in the period that followed.

The present period of the Real Estate Developers

This period started in the early 1990s, characterized by the variety of architectural styles introduced into the Indonesian building industry by foreign architects, assigned by a growing number of Real Estate Developers. In fact the early 1990s was the beginning of the third construction boom as a direct result of deregulatory policies of the Indonesian Government in the economic and financial sectors. The emerging of a large number of new private banks, providing generous financing to real estate businesses, substantiated by the accumulation of capitals within the economic and political elites, the bureaucrats, had further boosted the construction boom. This period is characterized by a decline of government projects and a tremendous rise in the private sector construction activities, especially in the Capital City Jakarta. Continuous influx of foreign capital generated continuous construction of more and more highrise apartment, office and hotel buildings.

In the Capital City Jakarta symbolic, psychological and sociological factors have been affecting the development of building projects and their site selection. Big holding companies want to have their own headquarters building located in the main prestigious part of the city, known as the *Golden Triangle*, for symbolic reasons as a show case of their corporate image. The concentration of highrise buildings along the main avenues within the Golden Triangle has generated traffic congestions. Yet this has not hinder developers to build more and more highrise buildings, generating more and more incoming private vehicles adding to the traffic jams in the main avenues. From this situation a new concept of urban renewal has emerged, the creation of the so called *superblocks*. These are large scale mixed use redevelopments, containing living, business, recreational and educational facilities, so that people can interact and do business with each other without having to travel long distances, thus relieving some of the pressure on the traffic in the main avenues outside the superblock. Those facilities are all positioned close to or around the key focal points of the superblock, the tall buildings.

The entry of foreign architects and engineers into the construction industry in Indonesia had provided good opportunities to the national architects and engineers to generate synergic relationships with their foreign partners in the spirit of international cooperation. In the field of architecture this cooperation had played an important role in creating successful modern buildings, where international trends in architectural styles were harmoniously blended with the local traditional culture and environment.

This period started with a series of buildings in Late Modernism in the style of *Master Builders* like in the work of the American architect *Paul Rudolph* in his *Wisma Dharmala Building*,

with the application of glass box curtain walls introduced firstly by *Walter Gropius* like in the *Lippo Building*, *Kuningan Plaza* and *BCA Building* and with an attempt of minimalism and efficiency like in the *Summitmas I*, *Metropolitan Building* and *Central Plaza*. Most dominant in this period, however, is the introduction of *Postmodernism* like in the *ATD Plaza*, *Mulia Tower* and *Sampurna Tower*. It seems that Postmodernism with its diversified character has caught the taste of the people et large. This is understandable, since extreme combinations of modern and classical, abstract and ornamental, all of which reflecting a blend of old and new as strongly expressed by Postmodernism have created new excitements in the mind of the people worldwide. It is reflecting democratic freedom of experimenting with old values and exploring new ones incorporating local values appreciated by the people. However, the latest trend in architectural style, which may be considered as an extension of Postmodernism, is the so called *Fragmentation Movement* introduced for the first time by *Kohn Pedersen Fox (KPF)* in the late 1980s in their design for the *Mainzer Landstrasse 58 Building* in Frankfurt and introduced for the first time in Indonesia in the *Niaga Tower Building*. The strong expression in this Fragmentation approach is the strong contextual relation with the environment, so that it is believed that it will be the future trend of architectural style in Indonesia and elsewhere in the world towards the 21st century, which will be the subject of discussion later.

3. LOCAL DESIGN CONSIDERATIONS

That local conditions have an influence on the development of architecture has been mentioned as a manifestation of the human desire for continuous betterment of the natural as well as built environment. This was already apparent in the early history of Indonesian architecture, when the early Dutch settlers incorporated into their European style houses local traditional building features such as long eaves and verandahs, porticos, large windows and ventilation openings, to better suit the local tropical conditions. At a later period local traditional building shapes had also been incorporated into the architectural design, initiated by the Dutch architects *Maclaine Pont*, *Berlage*, *Gerber* and *Karsten*, creating modern architecture with local traditional impressions. In more modern times, local building regulations and ordinances should certainly be incorporated into building designs, as these could also affect the architecture. It could be said, that considering the local tradition and culture, socio-economic factors, environmental conditions as well as local construction techniques in building designs, have proven to be an important strategy in enhancing the quality and consequently the business aspects of property developments in the past, not only in Indonesia but also in other parts of the world. Therefore, this issue will be discussed in more detail below.

Images of local architecture and cultural heritage

In this globalization era, people are searching for peculiarity and uniqueness in building designs, because this is one of the key issues and selling points in the property business. The Indonesian cultural heritage and traditional architecture give a wide variety of opportunities in this respect.

Images of local culture and traditions incorporated into the overall modern architecture may enhance its quality and sense of local identity. Depending on the scale, the images may be represented by general traditional forms or shapes of the roof in lowrise buildings (e.g. ITB Buildings by Maclaine Pont) or by traditional patterns, sculptures, ornaments, symbolic expressions and colour schemes within the human or pedestrian scale in the podium block or lobby of highrise buildings. A successful example from outside Indonesia is the high-tech Llyod Building in London designed by Norman Foster with a Baroque style interior design for its Board of Trustee's room.

Multiple function of buildings and urban spaces

Buildings and urban spaces with multiple functions have for the last two decades proven to be more successful than with just a single function. This is due to the fact that the Indonesian people comprise of more than 300 ethnic groups with different ways of live, who would make a building complex a place of attraction if it could serve each of their interests. An example of such a multiple functional urban space can be found at *Pecenongan* area in Central Jakarta, where at day time shops are open and people are trading in automotives and spareparts, while at night time after the shops are closed the shop yards are transformed into a popular complex of open air restaurants. A very popular mixed use urban building type in the cities all over Indonesia is the row *shop-houses* (rumah-toko or ruko), which very often become row *office-shop-houses*. Larger mixed use developments responding to the need of the Indonesian community are complexes of offices, apartments and hotels with shopping, amenities, social function and eating facilities. The *coffee shop* is an important aspect in the Indonesian business world, where business deals or transactions are oftenly made. Therefore, coffee shops in hotels should be big but cosy. Furthermore, *banquet halls* are in great demand, because holding big wedding parties for 800 to more than 1000 guests is part of the Indonesian culture.

Thus, complexity of urban visual environment is a phenomenon of most Indonesian cities, which happens to be coherent with Postmodern architecture.

Culture and socio-economic factors

Buildings are built to fulfil the needs of the people, be it the owner, the occupants or the people around. People around a building, the passer-by or just an on-looker or spectator are indirectly influenced by it; more so are the ones who have direct relations with the building or with its occupants. In other words, buildings are in principle related to people.

Indonesia as a developing nation is now in the process of cultural and social transformation from a rural agricultural to an urban and industrial society. The process is being accelerated by the globalization movement, creating more constraints if not problems. Especially in large cities, where there is a heterogeneous background of the community in terms of culture and socio-economic status, these are the most apparent.

Architecture is one of the media directly accomodating and facilitating the process of culturization and socialization of the human life circle. It contributes to enhancing this process. Therefore, buildings should provide social and public facilities, which in turn will have an impact on the community development. These will facilitate the interaction process between all levels of economic, cultural and social groups. It will also link the rich and the poor, thus diminishing the social gap.

The above facilities of a building should consist of convenient public pedestrian walkways inside and outside its perimeter, public space as a resting place, places of worship (musholla), inexpensive canteen, public toilet and other amenities for the general public. At ground level people should have the opportunity to interact easily, creating extended street life and a sense of place.

Requirements for the provision of public and social facilities for small scale residential developments are in fact stipulated in government rules. For larger scale developments involving foreign investments the government provides incentives to investors and developers for providing public and social facilities. These incentives could be in the form of increased allowable foot print, floor to area ratio or building height. The public and social facilities cover such items like public schools, public parking, infrastructures, places of worship and market places and 20% of the developed area should be dedicated to housing programs or working facilities for the lower income people. With these kind of incentives the government is trying to facilitate the process of cultural and social transformation, without placing too much of the burden on the private investors and developers. The challenge and the responsibility, however, lie with the architect, who should incorporate those cultural and socio-economic factors as a social responsibility into an appropriate and optimum design applying the latest modern concepts in architecture, acceptable to all parties concerned.

Environmental factors

In general the urban patterns of Indonesian cities is quite different than that of European. Buildings here have mostly setbacks in front of about half of the street width. It is important to have these setbacks, because these would provide space for future infrastructure development, accommodate crowds of people at grade, facilitate natural air movement for achieving proper micro climate, prevent easy spreading of fires, ensure privacy of building occupants as well as avoid inflicting factors within the heterogeneous neighborhood. In fact, for the comfort of the people in this highly humid environment, flow of natural air is an important issue that has to be dealt with.

At ground level a building should retain a human or pedestrian scale, providing a friendly environment, where people can interact conveniently. The concept of eliminating site boundary fencing, like proposed along Jalan M.H. Thamrin, Jakarta, would certainly enhance the

convenience of people, as pedestrians could walk freely through the spaces between the buildings, away from the traffic noise and pollution. In addition people can benefit the shades as a protection against the heat of the tropical sun. By providing convenient and appropriate pedestrian facilities, people will rather walk than using vehicles to reach their near destinations, thus relieving the pressure on the congested traffic lanes. Once again the dignity and the right of the pedestrian will be restored and the quality of city life improved as well.

The concept of European open plazas is therefore inappropriate for tropical conditions, as throughout the year people tend to avoid outdoor activities at day time, avoiding direct exposure to the heat of the tropical sun. In this connection, orientation of a building with respect to the direction of the sun rays is an important issue, as this could affect appreciably the lighting system and cooling load required for the air conditioning of its interior. Also in this connection, long overhangs, sunshadings and canopies are useful building features that are to be considered for implementation in tropical buildings, to enhance the energy saving objectives in the daily operation. Last but not least, the heavy torrential tropical rains should also be considered duly in designs, for which again the canopy above drop-off areas is a useful solution to protect incoming or outgoing guests of a building complex from the pouring rain.

Local construction techniques

Knowledge of local building materials and construction techniques is a prerequisite of achieving a cost-effective building design. In Indonesia at present various high-quality building materials are produced locally; also precast concrete panels and building components are manufactured in the country. The application of locally available building material and construction techniques would certainly save cost and resources in the construction, operation and maintenance of modern buildings.

4. STRIKING THE BALANCE

After discussing the evolution of modern buildings with their respective architectural styles and the local design considerations affecting the appearance and performance of a building, it is now important to discuss how each of these issues should be dealt with at present, to achieve a balanced situation. This balance should basically be achieved between the fulfilment of the building to the needs of modern life, including to the aesthetic and functional appreciation of the community and its cost effectiveness. At the end it is the construction cost that will be the decisive factor in determining whether or not a building is feasible to be constructed in terms of the expectable return of investments or other economic benefits.

Let discuss first the architectural appearance and performance of a building as an issue affecting the aesthetic and functional appreciation of the community et large, thus important selling points for investors and developers. As mentioned before the *Fragmentation Movement* as an extension of *Postmodernism* has a strong contextual relation with the environment. In the Fragmentation strategy the building is broken down into fragments in order to create responsive forms and organization in the building. It is able to collage and collapse the urban condition volumetrically within the building. The building could have multiple dialogues with remote as well as adjacent buildings. It could accommodate complex programmatic demands, since the figural whole does not require conformity. Combinations between formal and informal is possible in one building. It is a multi-facet, ambidirectional and mass fragmented design. It could work well in contextually oriented buildings, on transitional sites between different land uses, among building of varying styles, types, sizes and heights. It will fit among various building forms, from villas to highrises. It could respond to a bigger spectrum in its context within a unified building. It is contextually rich and able to transcend its richness, asserting its own presence and refining its own context.

With Fragmentation Architecture a building can achieve character and quality, generated from the understanding and conceptual adaption of the local values as well as the physical and non-physical conditions, such as local climate, urban scale and environment, traditional architecture, local sense of space, socio-economic and cultural conditions. In facilitating people to interact inside and outside the building, the base of the building may be detailed to represent local character and to create human scale and sense of space and place. To a large extent the building will represent the *local architecture* with a strong *local identity*, because it is responsive to the urban environment and the local climate. Therefore, Fragmentation is a strategy to capture the aesthetic as well as functional appreciation of the community et large. Thus, it is believed that it will be the future trend in the creation of modern buildings in Indonesia and elsewhere in the world towards the 21st century, an important marketing input for investors and developers.

For the national architects Fragmentation Architecture as a global trend is an appropriate solution to the ever-lasting debate on how to formulate Indonesian architecture as a national identity.

With more than 300 ethnic groups with different ways of live within the Indonesian community, it is in fact irrelevant to search for a single architectural feature to represent a national identity. Much better is the Fragmentation approach, with which a strong *local identity* could be achieved by incorporating local conditions as explained above.

For foreign architects Fragmentation Architecture as a global trend is an appropriate solution as well, because local values, tradition and culture as well as physical conditions are incorporated in it. However, a thorough knowledge of the local conditions on the part of the foreign architects is a prerequisite for a successful implementation of Fragmentation Architecture as clearly apparent from the above discussion. Here comes the role of the local partner of the foreign architect into the picture, whose participation in a building design is not only important for providing the necessary inputs on local tradition and culture, but also on local regulations and ordinances as well as on local materials and building techniques. The latter are very important for achieving a cost-effective building design. In fact in DKI Jakarta it is a government rule that foreign architects be associated with licensed local partners in order to obtain the building permits.

With the entry of more and more foreign architects into the construction industry in Indonesia, it should be emphasized once again, that it is important that they generate synergic relationships with their local partners, as this is the key to a successful creation of modern buildings in Indonesia, whereby a balance is reached between appreciation of the community and the respective construction cost. In the first place, the thorough knowledge of the local partner regarding the local building regulations and the process of getting approvals, will ensure that the design is always progressing in the right track throughout all of its stages. Major revisions due to incorrect interpretation of the local code can be avoided. The local partner can also handle much better than his foreign colleague the discussions and negotiations with the local building authorities regarding compensation, dispensation and penalties in relation to design items deviating from the general rules, so that the most advantageous decisions can be made. In the second place, the thorough knowledge of the local partner regarding the local culture and tradition will ensure their most appropriate incorporation into the building architecture. In the third place, the thorough knowledge of the local partner regarding the local climate and environment will ensure the appropriate consideration of tropical conditions in the design. In the fourth place, the thorough knowledge of the local partner regarding locally manufactured building materials and components as well as local building techniques, will ensure a cost-effective design and good constructibility. Working drawings may then be prepared straightforwardly in accordance with the local building practice.

In pursuing a balanced design as described above, the architect must always be aware of the fact that the Client (the Building Owner), has his corporate goals that he himself is aiming at. These are in general the corporate's commercial objectives (profit making) and the build up of the corporate's image. The implication of this fact is that while the building must be beautiful, it must be effective and efficient in its use as well. Therefore, effective and efficient lay outs and space utilization are of primary importance in building design. The need for efficient operation

and energy saving, combined with the pursue of a corporate image are factors that will determine to what extent building automation systems will be applied. Intelligent buildings are known to be generally costly, so that in finding the balance in design, it is much dependent on the Client to what extent he is prepared to spend the money, but yet fulfilling his corporate goals.

5. SOME SPECIFIC EXAMPLES

Some examples of modern buildings in Indonesia will now be given from recent works of PT. Wiratman & Associates, in which design a balanced condition had been tried out.

ATD PLAZA

Owner : PT. Aditya Toa Development; location : Jalan M.H. Thamrin, Jakarta; Architects : PT. Wiratman & Associates in association with Kajima Design Department, Tokyo; Structural Engineers : PT. Wiratman & Associates; M/E Engineers : PT. Arnan Pratama Consultant; completion 1990.

This is a multi-functional building complex with a total developed floor area of about 62,000 sqm, comprising of 3 building masses, the 27-story Office Tower (43,000 sqm) and the 10-story Parking Building (15,000 sqm) at the back, both having a common 1-level basement, and a 5-story Bank Building (4,000 sqm) at the front, separated from the Office Tower by a canal. Public amenities provided in the buildings are restaurants, health club, musholla and rest room for drivers in the basement, while pedestrian walkways crossing the canal provide easy connection within the complex. A driveway loop around the premises provides easy vehicle access to each of the buildings in the complex. The site has been designed so as to accommodate pedestrian traffic passing through the property, between the commercial area at the East side (Jalan Sabang) and the residential area at the West side (Kebon Kacang).

Principles of *Postmodernism* has been implemented in the architectural design. In the Tower this is expressed in the classical tripartite organization of *base* (foot), *middle* (body) and *crown* (head). The base covers the first 4 stories, expressed by repeating rows of high rectangular windows with dark coloured Italian granite finishing. The middle is expressed by repeating rows of almost square punch windows with light coloured Italian granite finishing, while the head is expressed by a truncated pyramid with cascading slopes. The simple square tower with similar faces on all sides offers a good contextual relationship with other highrises in the Jalan M.H. Thamrin area; is pleasing to the mind, because its distinctive light colour and simple pattern of multiple bays of square punch windows, accentuated by its truncated pitched crown at the top, immediately give the impression of a tropical building. In total the building has a dignified urban presence and a local identity as well. A sense of place is furthermore created by the open space developed in the front part along Jalan M.H. Thamrin, where the Bank Building has been kept

to a low-rise scale.

The latest precast concrete technology available in the country has been applied in the structure of this building, such as precast concrete exterior panels, stair and landing units, as well as precast prestressed concrete hollow core slabs for the floor system, all of which reducing the construction time. The use of precast concrete components is associated with a simple tube-in-tube structural system, comprising of a central core as the inner tube and a periphery frame as the outer tube. The application of precast prestressed concrete hollow core slabs here has been the first time in highrise buildings in Indonesia. The buildings are founded on a floating foundation pile system, whereby the piles are acting as pure friction piles. An effective 80% net lettable area on the typical floor shows the efficient lay out design of the building. Energy consumption in the operation is further controlled by the application of a Building Automation System.

Thus, images of local tropical environment, multiple function, socio-cultural factors, contextual relationship with the surroundings, application of locally manufactured building components, combined with a highly advanced system of building operation, are all coherent with Postmodern architecture.

NIAGA TOWER

Owner : PT. Grahaniaga Tatautama; location : Jalan Jenderal Sudirman, Jakarta; Architects : PT. Wiratman & Associates in association with Kohn Pedersen Fox (KPF), New York; Structural and M/E Engineers : PT. Wiratman & Associates; completion 1993.

This 60,000 sqm development consists of a 27-story Office Tower accommodating the Bank Niaga's Headquarters, the Bank's Branch Office Building and a Mosque, all sitting on a 3-level podium and a 3-level common basement for parking and plant room. Each of those buildings are placed on a quadrant of the rectangular site, while the fourth quadrant at the back side is designed as a garden on the ground level, creating an oasis-like atmosphere, open to the public. On the third quadrant the upper garden is located adjacent to the Mosque. On the ground level of the second quadrant the Branch Office banking hall with a 3 level height, restaurant and shopping arcade are located. The 27-story Tower is placed on the first quadrant. All of these juxta-positioned functions are connected by a circulation loop, which includes escalators, elevators and an outdoor stair. The second quadrant of the 3rd level can accommodate outdoor extension of the multi-purpose function hall designed at that level.

Fragmentation Architecture as an extension of *Postmodernism* has been implemented in the design, which is the first of its kind in Indonesia, introduced by its conceptors *Kohn Pedersen Fox (KPF)*. At the base the podium mass and open space are fragmented to be responsive to the lowrise and small scale urban built environment set up, reflecting traditional multi forms. The facilities are open and intended for public interaction. The mosque is designed conceptionally as part of the podium massing composition. Its North African Islamic traditional architecture is creating a beautiful vista from the banking hall. The Majelis Ulama Indonesia (MUI), the Indonesian Council of Ulamas, has been consulted in the design of this mosque.

The level of detail at the base is demonstrating the delicate man-made crafts. It creates a transparent, light, deep, shady and cool feelings. It is a combination of local materials, high technology and tropical solutions. On the tower design, the building height and top is set to correspond with the city skyline, creating a sense of continuity. The body is fragmented into three pieces. The tallest piece in the middle is the core on which the other two pieces are facing north and south wrapped around and tied. The facade facing north is designed more horizontally, is open and lighter to respond to the National Monument at a distance. The facade facing south is designed more vertically, is more closed and heavier, in response to the residential area in the south. The big horizontal cap on top and the continuous braises-solei are protecting the opening on all facades and are showing the extensive application of tropical architecture vocabulary.

The building has mostly adopted locally available materials and has applied local technology, such as precast concrete panels, aluminium frames and panels, hardwoods, etc., except for imported granites and marbles from Italy and PPG glass. The structural system is again a tube-in-tube one, with a central core and periphery frame providing an 80% net lettable area on the typical

floor. Composite columns are used at the lower stories for slimmer dimensions, while the floor system consists of precast prestressed concrete double-T units. The 3-level basement is sitting on a raft foundation, utilizing a concrete soldier pile with cement bentonite interlocked piles, the first of its kind applied in deep basements in Indonesia.

With Fragmentation strategy the Niaga Tower has attained a distinctive urban presence with a strong local identity, expressed by the many tropical features contained in it.

ITB CAMPUS EXTENSION, WIDYA GRAHA GANESHA WEST

Owner : Institut Teknologi Bandung (ITB); location : ITB Campus, Jalan Ganesha 10, Bandung; Architects, Structural and M/E Engineers : PT. Wiratman & Associates; completion 1995.

This is the first stage of ITB's campus extension program, covering a total developed floor area of 19,500 sqm, broken down into two 4-story Technological Laboratory Buildings (Laboratorium Teknologi or LABTEK), i.e. LABTEK V (9,700 sqm) and LABTEK VI (9,800 sqm), all of which called the Widya Graha Ganesha West. The two buildings are located in the *Transition Zone* between the *Historical Zone* at the Ganesha side, where the original buildings of *Maclaine Pont* (1920) are located, and the *Modern Zone* at the Taman Sari side, where buildings of recent designs are located.

To be able to accommodate the characteristics of both zones, again to some extent a *Fragmentation* strategy has been applied in the design. To give a lowrise impression to the buildings, the classical tripartite organization of *base* (foot), *middle* (body) and *crown* (head) is again introduced. The first 2 stories with the arcades and the perimeter verandah are expressing the foot of the building, the facade of the third story is the body, while the roof of the third and fourth story are the head. The mass of the fourth floor is fragmented by giving a set-back on all sides to give the impression that it is part of the roof, so that together they can express the head of the building. To respond to the Historical Zone, the shape of the roofs is designed to be similar to the one designed by Maclaine Pont, i.e. the traditional Javanese shape with two different slopes. Also the round pillars along the perimeter verandah are made with the same stone finishing as in the old buildings. To respond to the Modern Zone, steel pipes are used for railings, posts and overhangs, which are painted red to provide a sharp contrast. The roof cover is taken similar to that of the old building, only the material is not the traditional sirap (wood singles) but asbestos shingles (striaplex) representing a more modern material. Although both buildings are basically intended for laboratory uses, to some extent they also provide multiple facilities, such as canteen, meeting rooms, administration office, student assembly rooms, etc. It can be said, that the laboratory buildings equipped with the latest hi-tech equipment and instrumentation are indeed representing modern buildings, but yet using traditional architecture, ensuring a strong ITB identity conform with the design objective.

GRAGE MALL AND HOTEL HORISON

Owner : PT. Multipratama Indahraya; location : Jalan Dr. Cipto Mangunkusumo, Cirebon;
Architects, Structural and M/E Engineers : PT. Wiratman & Associates; status: under construction.

This is a mixed-use development with a total developed area of 54,000 sqm, broken down into 2 major functions : a shopping mall of 25,000 sqm and a hotel complex of 29,000 sqm. The 7-story 143 room hotel, to be operated by Horison Hotels, is complemented by a convention hall (accommodating 1500 peoples), coffee shop, restaurants, fitness center, swimming pool and tennis courts.

Again a *Fragmentation* strategy is applied in the design to respond to the typical Cirebon's environment and local traditions and yet accommodating the needs of modern life. In the commercial part of this complex, facing the intersection of the two main avenues (Jalan Dr. Cipto Mangunkusumo and Jalan Tentara Pelajar), the building mass is fragmented into 3 portions : a central mass as the focal point where the main entrance and an exhibition hall are located and two side masses, each sloping down from its end towards the central mass in the middle. This mass arrangement provides the configuration of a giant ship, a symbolic representation of the City of Cirebon as a sea port, where in the old days the inhabitants were mainly fishermen and seagoing people.

6. CONCLUSIONS

From the above discussions the following conclusions can be made :

1. Modern buildings should satisfy two criteria : (1) fulfilling the functional needs of modern life involving applications of the latest technological advances, (2) fulfilling the aesthetical satisfaction expressed by its architectural appearance.
2. As architecture is a product of a complex process of human development in response to cultural, socio-economic and environmental factors, architectural styles and appearances appreciated by the people would be the ones satisfying most of the desire for continuous betterment of the natural as well as built environment.
3. *Fragmentation Architecture* as an extension of *Postmodernism* with its strong contextual relations with the environment, in which local culture and traditions as well as local climatic conditions are being well-incorporated, seems to be the future global trend in architectural style appreciated by people et large towards the 21st century.
4. Since with *Fragmentation Architecture* a building would achieve character and quality, generated from the understanding and adaptation of the local culture, traditions and environmental conditions, the building would to a large extent represent a *local architecture* with a strong *local identity*, so that the ever-lasting debates on the formulation of Indonesian architecture need no longer be addressed to.
5. For implementation of *Fragmentation Architecture* by foreign architects in Indonesia, their thorough knowledge on the local values and physical conditions are therefore of prime importance, for which synergic association with local partners would be of great advantage.
6. The importance of the role of the local partner of the foreign architect would also be in providing the correct interpretation of the local building code and the locally available building materials and construction practice, because those issues would determine to a large extent the cost-effectiveness of the design, thus the feasibility of the capital investment.
7. Architects should always be aware of the fact, that Clients (Building Owners) have their corporate goals and objectives in using the building, which basically are efficient and cost-effective operation and the build up of the corporate's image. Therefore, effective and efficient lay-outs and space utilization as well as establishment of an optimum level of building intelligence would be of prime importance for striking the balance.

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