

Understanding Changes in Architectural Form-Function-Meaning Relations: in the Case of Kampong Aquarium, Jakarta, Indonesia.

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ABSTRACT

The history of architectural theory can be seen as a debate between those who place more emphasis on form than function. or vice versa. It is around these themes that the differences between the architects of the late 19th century and the Modernists are best understood. Then came the architects of the postmodern period, in about the last quarter of the 20th century, who added aspects of meaning and considered them important in architecture. This paper aims to understand the form-function-meaning relation in architecture in the case of Kampong Aquarium, Jakarta, Indonesia, with an architectural qualitative descriptive method. The results of the study show that there has been a significant change in the form-function-meaning of Kampong Aquarium, especially since the evictions in 2016. Because the phenomenon of Architectural Change (form-function-meaning relationship) Kampong Aquarium is relatively new, there has not been much research on it. So that this research is expected to open up opportunities for further research with the same theme.

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1. Introduction

The form-function-meaning relation is one of the important themes in architectural studies. In the history of architectural theory, everything originates from the *Vitruvian Triad* [1]. Starting with Marcus Vitruvius Pollio (circa the first century BC), who stated in *De Architectura Libri Decem*, that all buildings must be built concerning *firmitatis*, *utilitatis*, and *venustatis*. The Book I Part 3 clearly stated this: "... *Haec autem ita fieri debent ut habeatur ratio firmitatis utilitatis venustatis ...*" [2]. Then Morgan (1914) translated: durability, convenience, beauty. In more elaborative terms, *firmitatis* refers to the structural strength of a building. *Utilitatis* refers to the functionality of a structure, inside the primary space (rooms), and secondary spaces (corridors). Lastly, *venustatis* discusses the beauty of the design.

In the Renaissance period, the *Vitruvian Triad* continued to be a source of the study of

architectural theory. Leon Battista Alberti in *De Re Aedificatoria* (On the Art of Building) (published 1485), stated that three things could not be ignored at all i.e. convenience, stability, and gracefulness and beauty [4]. In Henry Wotton's *The Elements of Architecture* (published 1624), it was also stated that a good building must have three conditions: commodities, firmness, and delight [5]. Joseph Gwilt, in his 1826 edition of Vitruvius writings, published in London, used the words "strength, utility, and beauty" [6].

Modernity has formed a new foundation that provides no direct point of reference for orientation. In other words, the building no longer represents the traditional style. Architecture creates new works and forms, not a re-creation or symbolization of something that already exists. Modernist architects were driven by utopian optimism promoted mainly by industrialization which began to dominate life in the 19th century. The slogan "form follows function" became the main umbrella for modern architectural dogmas [7]. The

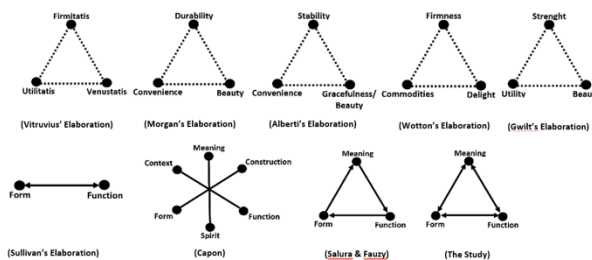
assumption is that architecture, as something created on purpose, is a purely functional embodiment. According to this understanding, the function is defined as an activity or activity carried out by humans in an architectural building container. In architectural design, we must pay attention to the activities that will be accommodated in the building [8], [9] the artistic dimension is removed. The famous slogan of Louis Sullivan, "form follows function," has often been taken as a motto for the entire modernist movement in architecture and design. However, a closer examination of "functionalism" within the development of modern architecture reveals a variety of theoretical and practical approaches to understanding the relationship between form and function [10]–[12]. Technical rationalism and determinism of functionality which "forms follow function" have appeared by students of architectural design around the world as if it were a self-evident truth [13].

Modernist architects were driven by utopian optimism promoted mainly by industrialization which began to dominate life in the 19th century. The foundation of this technology is one of the most recognizable characteristics of Modernist architecture. Modernist architects prefer the material, utilitarian, and technological aspects of architecture to their more cultural values and meanings. The architects were so intent on promoting separation from the past. (Morgenthaler, 2016). Slogans such as "Less is More" by Mies van der Rohe [14], "A house is a machine to live in" by Le Corbusier, and "ornamentation is a crime" by Adolf Loos, seem to be the compatible accompaniment to the slogan "form follows function", all of which aim to establish the principles of functionalism [15], [16].

In the 1970s, a new face of the Post-Modern movement in architecture was born as a reaction to the dogmatics of modern architecture - which is often only associated with a series of cold architectural expressions in visible processing, white walls, purely geometric, a scale that prioritizes machines, and little provides an intimate space for social and cultural activities together. Ventury (1966) and Brolin (1976) contributed to the emergence of the postmodern architectural movement. Both showed how modernism had failed. Architects and architectural theorists began to explore the possibility of social and cultural aspects included in architectural ideas. Jencks (1977) emphasized the concept of doubly coded, multiple codes, and plural coding. Meanwhile, Norberg-Schulz (1980) explored the meaning of the existence and presence of place through *Genius Loci* (local intelligence). Architecture meant visualizing

Genius Loci, and an architect's job was to create meaningful places.

The *Vitruvian Triad* was then tested by David Smith Capon. Capon (1999) concluded there were six categories in architectural principles (principles of good architecture), which were grouped into primary and secondary categories, namely: function, form, meaning as primary categories, and context, construction, spirit as secondary categories. Salura & Fauzy (2012) developed the concept of the function-form-meaning cycle. Every product of architectural design must prioritize the elements of function-form-meaning. The three elements formed a triangular shape, which was always in a changing (rotating) state. This concept shows that architecture is always changing. In this study, the form-function-meaning relation is the elaboration of architectural concepts from the Classical to Post-Modern periods (Figure 1).



Source: (Salura & Fauzy, 2012)

Figure 1: Diagram of the elaboration of architectural concepts from the Classical to Postmodern periods: towards the concept of Form-Function-Meaning Relations.

This study aims to understand the changes in the form-function-meaning relation in the case of an urban village in North Jakarta, Indonesia, which is called Kampong Aquarium. The reason for choosing the case study is that Kampong Aquarium has just undergone significant changes, both physical and non-physical, especially since the evictions in 2016. This research is expected to open up opportunities for further research with the same theme.

2. Material and Methods

2.1. Location of Kampong Aquarium

Kampong Aquarium is located on Jalan Pasar Ikan, North Jakarta, including in the area of Citizens Association (*Rukun Warga*) 04, Penjaringan Village, Penjaringan Subdistrict, North Jakarta, bordering on the West with Kampong Luar Batang, on the North by Jakarta Bay and the Java Sea, on the East with Sunda Kelapa Harbor, and in the South with the Hexagon Building (former Fish Market)

and the Maritime Museum. Far to the South is the Old City Center with its iconic Fatahillah Museum. Kampong Aquarium is included in the Sunda Kelapa Cultural Heritage area because besides there is the foundation of a former Colonial Laboratory building, it is surrounded by historical places such as the Sunda Kelapa Harbor, Maritime Museum, Syahbandar Tower, former Fish Market (Hexagon building), former VOC Shipyard, and the Luar Batang Mosque. (Figure 2).



Source: (Author, 2024)

Figure 2: Diagram Location of Kampong Aquarium (left) and historical places around it (right).

2.2. Location of Kampong Aquarium

At first, the land of Kampong Aquarium was the result of soil sedimentation carried by the Ciliwung River to the estuary. The sediment was formed in the 18th century and was shaped like an island. In 1904, there was established the Laboratory of Agricultural Zoology (Part of *Kebon Raya Bogor*) under the leadership of Dr. J.C Koningsberger. At that time, the laboratory was called the *Visscherij Laboratory te Batavia* or the Fisheries Laboratory in Batavia. In its development, in 1915, the laboratory was known as *Visscherij Station te Batavia* or Batavia Fishery Station. In 1922 the construction of a new laboratory building, which was named the *Laboratory voor het Onderzoek der Zee (LOZ)*, under the leadership of Dr. ALJ Sunier. In addition, a large seawater Aquarium was also built, with a capacity of 200 thousand liters of seawater. With this laboratory, Batavia was then considered in the world of science. In 1923, LOZ opened to the general public, with official exhibitions of various types of fish in large Aquariums and small botanical gardens (*hortus botanicus*). In it there is a lot of biodiversity from the sea. The area is known as a tourist destination [23].

In 1949 it changed its name again to the Marine Research Laboratory. In 1950, the name Aquarium replaced the name Marine Research Laboratory when the Indonesian government took over the laboratory from the

Netherlands. This laboratory was later used as an Aquarium Tour by the Jakarta City Government at that time. In the 1960s, this location, known as the Fish Market Aquarium, became a popular tourist destination in Jakarta. Fish Market Aquarium is a favorite tourist destination for residents. In 1970, the building was renamed the National Oceanology Institute, part of the Indonesian Institute of Sciences. In 1977, the DKI Jakarta Provincial Government closed the Aquarium together with the Fish Market to develop the Maritime (Bahari) Museum area. After that, the National Oceanology Institute was moved to the East Ancol area. At that time the development in the Fish Market area was unclear and adrift until the entire area of the former Aquarium was occupied by residents and developed into a village with squatters known as the Aquarium Village (Kampong Aquarium) [23].

Since 1977, after the National Oceanology Institute was moved to Ancol, the situation in Kampong Aquarium became deserted and the Laboratory building was increasingly damaged in its physical condition. Since then, people have started to come to live there. They buy land to people who feel they “own” the land there. By law, it is clear that their occupation is illegal. This is also one of the reasons the DKI Provincial Government carried out evictions in April 2016.

The condition of Kampong Aquarium in the 1980s was still dominated by swamps that were inundated with water (muddy). The people who live in Kampong Aquarium are around 20 families. The houses are only found on the west side which is close to the road leading to Kampong Luar Batang. The number of people living in Kampong Aquarium is increasing. Until the early 2000s, Kampong Aquarium was already crowded. The number of residential houses before being evicted was 234 buildings that stood on an area of 10,384 m².

The residents of Kampong Aquarium come from ethnic groups such as Bugis, Sundanese, Javanese, and Makassarese. A small number of residents were born in the Fish Market or in Kampong Luar Batang as the second generation. More than half of the residents of Kampong Aquarium are house tenants. The residents of Kampong Aquarium have various professions, including fishermen, port coolies at Sunda Kelapa Harbour, fish auction workers in Muara Baru/Muara Angke, factory workers, casual daily workers, and housewives who open basic food stalls, etc. Grocery and food stall businesses occupy some of the space on the ground floor of their houses.

Dense settlement layouts do not leave land for open and public spaces for joint activities. Al Ikhlas Mosque is the only building that is functioning for religious as well as social activities. This can be considered reasonable because the residents of Kampong Aquarium are all Muslims. The existing streets are formed from the remnants of land between the crush of residential buildings, so that the situation is also irregular and winding, with different street widths and not well connected, there are even some dead ends. Some streets are used as places for daily social activities (Figure 3).



Source: (Photo: Topaz Juanda, 2024)

Figure 3: The streets become places of social activity

On the morning of April 11, 2016, the Bulldozer started moving to tear down houses and other buildings that stood on the grounds of Kampong Aquarium; not until late afternoon, almost the entire building was razed to the ground. The evictions were carried out for the construction of sheet piles and embankments to prevent flooding in the capital city. The DKI Jakarta Provincial Government plans to organize Kampong Aquarium area. The plan for structuring the area was originally adjusted to the Master Plan for structuring the Old Town area as regulated in Governor Regulation No. 36/2014. The plan is that the area will also be integrated with the Maritime (Bahari) Museum and the Kampong Luar Batang Mosque. However, the execution of the zoning arrangement did not materialize even though some residents had been relocated to the Marunda and Rawa Bebek flats. The village which had been razed to the ground was left alone. Until finally, several residents who were still surviving on the rubble of the building again built tents and huts there. (https://megapolitan.kompas.com, accessed 11 Juni 2024) (Figure 4).



Source: (Photo: Ashadi, 2024)

Figure 4: Tents and Huts erected on the eviction rubble

In October 2016, the residents of Kampong Aquarium decided to file a class-action lawsuit at the Central Jakarta District Court for alleged acts of arbitrariness in the eviction of Kampong Aquarium. Residents demanded that the DKI Jakarta Provincial Government rebuild settlements that had been evicted. They considered the eviction a violation of human rights. However, after the replacement of the Regional Head (Governor), the lawsuit was withdrawn. (https://megapolitan.kompas.com, accessed 11 Juni 2024).

The New Governor of DKI Jakarta wants to revitalize the Kampong Aquarium area complete with residential areas. The first step is to build a shelter considering that there are still many people who survive in the eviction site even though they have to live on the rubble. Shelter buildings are intended as temporary residences for residents living on the rubble of their own homes which are considered far from humane. By building shelters, residents are expected to live in humane and comfortable conditions and achieve social justice (Figure 5). Three Shelter blocks (A, B, and C) equipped with two toilet blocks were finally established in early 2018 (https://megapolitan.kompas.com, accessed 17 September, 2021). Block A consists of 52 units, block B consists of 48 units, and block C consists of 24 units. Each unit measures 3.5 x 6 m². Shelter A is occupied by 136 people (78 men and 58 women), Shelter B by 87 people (45 men and 42 women), and Shelter C by 83 people (44 men and 39 women), totaling 306 people.



Source: (Photo: Ashadi, 2024)

Figure 5: One of the Shelter (Shelter C)

On August 17, 2020, the groundbreaking for the construction of two new Kampong Aquarium blocks, out of the planned five blocks. After pausing for a while due to the Covid-19 pandemic, the construction of the two building blocks of Kampong Aquarium was carried out and completed in mid-2021. On August 17, 2021, the two building blocks, Blocks B and D, were inaugurated by the Governor. Two blocks of Kampong Aquarium, each consisting of 5 floors. There are 107 residential units, all of which are 36 types. There is 1 bedroom, 1 living room, 1 bathroom, kitchen, family room, and an open terrace at the back which functions as a washing and drying area (Figure 6). In most homes, the living room is closed to become a

bedroom. In block B, on the ground floor, there are three business units. In block D, on the ground floor, there is a room that functions as a cultural heritage documentary gallery.



Source: (Ashadi, 2024)
 Figure 6: Residential Unit Plan (left), Interior (center) and Exterior (right)

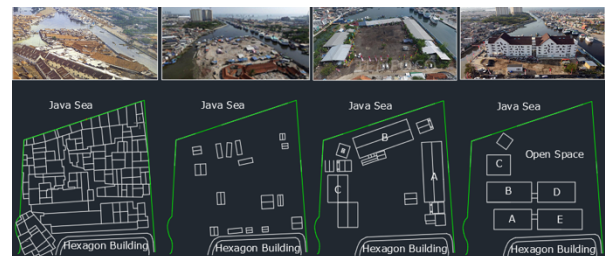
Referring to the plan of Kampong Aquarium which consists of five building blocks, the layout of the mass is enough to give good hope for the future. One building mass, block C, which is the smallest in shape, with a longitudinal position in an East-West direction, is placed right to the north of block B, 8 meters apart. Block A is placed right to the south of block B, 8 meters apart, with an east-west direction. Just east of block A is block E (south of block D), both of which are connected by “bridges” on each floor. (Figure 7).



Source: (Ashadi, 2024)
 Figure 7: Lay Out Plan of Five Building Block (A, B, C, D and E) of the New Kampong Aquarium.

Kampong Aquarium, since its existence as a residence in the late 1970s or early 1980s, has undergone significant changes in the form and

function of space in a relatively short time, especially after the evictions in 2016. The form of dense, irregular residential spaces, with narrow and winding streets, without adequate utilities for a healthy settlement, is the condition of Kampong Aquarium which was evicted on April 11, 2016. Even though the DKI Jakarta Provincial Government provided new housing in flats (in Marunda, Rawa Bebek, and Cipinang) which were in better and healthier conditions, residents, especially permanent residents (homeowners), refused and continued to stay in the eviction site. They set up tents and huts with very little utility on the rubble of their houses. The new Governor promised to rebuild the residents' houses in the area of Kampong Aquarium; Then the Governor made a Shelter, a temporary residence, for them in early 2018, pending the realization of the construction of the new Kampong Aquarium. On August 17, 2020, the foundation stone for the construction of the new Kampong Aquarium was laid. After one year, on August 17, 2021, the new Kampong Aquarium, which consists of two five-story building blocks (out of the planned five blocks) was inaugurated by the Governor. (Figure 8).

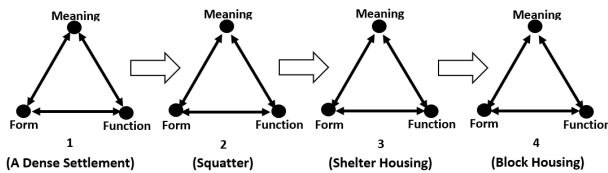


Source: (from various sources, 2024)
 Figure 8: Changes in the Spatial Forms: before 2016 (A: a dense settlement), in 2016 (B: Squatter – tents and huts), in 2018 (C, shelter housing), and 2021 (D, two blocks, B and D, of the planned five)

This research raises the problem of how to change the form-function-meaning relation in the architecture of Kampong Aquarium. To answer the problem, this study uses a descriptive qualitative architectural method with a History and Architecture approach. The architectural qualitative descriptive method is used to explain in depth the social and architectural realities that are unique in Kampong Aquarium, especially because of the evictions in 2016. The historical approach is used to discuss and analyze the time sequences of changes in the form and function of the architectural space of Kampong Aquarium. The architectural approach is used to understand the form-function-meaning relation of the architecture at the time of the change. The primary data collection process was carried out through interviews and field

observations. The secondary data were collected from research journals, books, and websites relevant to the Research Theme.

Kampong Aquarium is a research case study; it is explored from time to time through detailed and in-depth data collection sourced from field observations, interviews, documents, and case description reports [24]. This type of case study research was chosen because this study aims to understand the changes in the architectural form-function-meaning relationship of Kampong Aquarium from the period before the 2016 eviction to the present. There are three conditions, first, it is a dense settlement (before the 2016 eviction), second, squatter – tents and huts (after the 2016 eviction), third, shelter housing (in 2018-2020), and fourth, two blocks (of the planned five) of new housing (in 2021). Each of these changes, of course, affects the form-function-meaning relation of the Kampong Aquarium architecture. The analysis will be based on changes in the form-function-meaning relation for each change. (Figure 9).



Source: (Salura & Fauzy, 2012)
Figure 9: Diagram of the analysis process.

2.3. Theoretical Framework

Until the end of the 19th century, no thinker proposed social sciences-humanities as a science. Until then, the social sciences and humanities were still dominated by positivism, which was developed by Auguste Comte, using the methods of the natural sciences to identify humans and society [25]. The distinction between *Erklären* and *Verstehen* was first made by a hermeneutic thinker, Friedrich August Wolf, who was later used by Wilhelm Christian Ludwig Dilthey in the distinction between *Naturwissenschaften* and *Geisteswissenschaften*. According to Dilthey, the task of the social sciences and humanities was to capture the inner life of others. How to? Through interpretation [26]. Interpretation in German is *Auslegung* defined by Martin Heidegger, as "leaving open". So the meaning, according to Heidegger, is no longer something that is in the interpreter's consciousness but is there, in itself, which reveals itself to the interpreter. According to Heidegger, understanding is not a matter of capturing information about something, but about "existential", that is, "a person's ability to perceive his possibilities for being".

Heidegger put understanding in the ontological realm. This is different from Dilthey, who put understanding in the realm of epistemology [27], [28].

Hermeneutics is the art of understanding that has a close relationship with architecture. In Hermeneutics, the term "hermeneutic circle" appears for the first time associated with the founder or father of Modern Hermeneutics, Friedrich Daniel Ernst Schleiermacher [29]. The principle of the hermeneutical circle derives its meaning from the function of its parts and reciprocally the parts can only be understood by referring to the whole. There is a relationship between "part" and "whole."

Architecture is spatial storytelling; it mediates human knowledge of the world, humans, and architecture. Therefore, architecture cannot be reduced. Architecture has material meaning, configuration meaning, and time meaning. Architecture is built from meaningful materials, consisting of worldly material and human matter. Needless to say, architecture has a three-dimensional configuration. In as much as time is important to architecture concerning language [30].

In Semiotics, there are two popular terms, namely dyadic and triadic. Dyadic is a significant concept that involves two aspects: the signifier and the signified. The concept of this sign was promoted by Ferdinand de Saussure. De Saussure (1959) stated that interpreting the sign was related to the relationship between the signifier and the signified. Meanwhile, Triadic is a significant concept that involves three aspects: representamen, object, and interpretant. The concept of this sign was promoted by Charles Sanders Peirce. Interpreting the sign is related to the relationship between the three aspects. According to Saussure, linguistic signs consist of signifier and signified. Signifier (*Significant*) can be interpreted as a marker, which is in the form of a meaningful sound or a meaningful streak: what is said or heard and what is written or read; it is a facet of the sign language. Meanwhile, signified (*Signifier*), can be interpreted as a sign or signified, namely something meaning or meaning behind what is said or heard or written or read; it is the meaning of the sign language. Meanwhile, according to Peirce, the sign is a cognitive process that comes from what the senses can perceive. Therefore, Peirce's semiotic is also known as pragmatic semiotic. Peirce saw a sign as "something that represents something". The first "something" - the "concrete" - is a "representative" which is called the representamen (or ground), while the "something" that is in cognition is called an object. The process of relation from representamen to object is called semiosis. In

the meaning of a sign, this semiosis process is not complete because then there is one more process which is a continuation called interpretant (the process of interpretation) [32], [33].

Starting from Saussure's theory, Barthes calls the signifier an Expression (E), and the signified as a Content (C). For Barthes, the Relationship (R) between Expression (E) and Content (C) occurs in human cognition in more than one stage. The first stage is the basic stage (called the primary system) which occurs when the sign is perceived for the first time, namely the presence of R1 between E1 and C1. This is called Denotation. The secondary stage is a further process that develops both the E and C aspects, resulting in what is called Metalanguage and Connotation [34].

In Socio-Cultural Anthropology, the concept of Symbolic Interactionism is known. This concept is constantly thinking about objects symbolically. Symbolic interactionism assumes that everything is virtual. All interactions between human individuals involve an exchange of symbols [35]. The meaning of architectural works had deep foundations in many cultures when there was a coherent bond between architecture and its natural and behavioral setting. Architecture thus had both practical and symbolic meanings to the members of a culture. [36]. The first step in the meaning of symbols is related to the relations between symbols. "Symbols" and "Signs" can also be embedded in architecture. Thus, interpreting architecture can be equated with interpreting symbols and signs. Meanwhile, Schlegel as referred to by Capon (1999), stated that the architect had to take into account several relationships. Capon represented this concept by placing the building at the center of a related field. More logically, the building could be seen at the center of three overlapping fields each of different relationship types, namely formal relations, functional relations, and relations of meaning.

Architecture is part of the culture. Each aspect of architecture (form, function, meaning) is part of each cultural form. Architectural forms are part of physical culture. The function of architecture is part of the culture of the behavior system. Architectural ideas are part of the system of ideas culture. The meaning of architecture values, which within the framework of cultural form can be placed after the system of ideas. Because architecture has three aspects: form, function, and meaning, interpreting architecture is related to the relationship between these three aspects. Through understanding the relation of form and function, the meaning of architecture can

be revealed; from the relation of function and meaning, the architectural form can be described; from the relation of form and meaning, then the architectural function can be explained [37].

Architecture, which is built on the relation of three aspects, form-function-meaning in a triangular-shaped building, is always changing. Change can be started from each of the three aspects, either moving clockwise or vice versa. Changes in the form-function-meaning relation can occur in six possible conditions. It can be diagrammed as follows.

1. Meaning → Form → Function
2. Form → Function → Meaning
3. Function → Meaning → Form
4. Function → Form → Meaning
5. Form → Meaning → Function
6. Meaning → Function → Form

3. Results and Discussions

3.1. Changes in Form-Function-Meaning Relationships: A Dense Settlement → Squatter

The layout of the residential buildings of Kampong Aquarium is classified as dense, irregular, close to each other, and there is no public open space. This is caused by the shape and size of each person's land on which their houses stand, which are not the same, depending on their finances; There are small, medium, and large sizes of land. Most of the residential buildings have two floors, the ground floor is for the residence and business of homeowners, and the second floor is for rent. Renting houses in this area is a favorite business for the original residents, even some of the residents of Kampong Aquarium have more than one house, some up to four houses, of which the upper floor is for rent.

The density and irregularity of the layout of the residential buildings in Kampong Aquarium originated from the process of "ownership" of the land where they lived. The impetus for the recognition of ownership of the Kampong Aquarium land by a few early people was caused by the government's indifference to the Kampong Aquarium land after the move of the laboratory to Ancol. The government's plan to develop Kampong Aquarium into a marine tourism area has no follow-up and leaves the Kampong Aquarium land abandoned. People who have purchased land in Kampong Aquarium feel that they have ownership rights to the land because there are signatures from the chairman of the neighborhood (*Rukun Tetangga/Rukun Warga*), Village head (*Kelurahan*), even to the Subdistrict head (*Kecamatan*); it is a piece of paper commonly called a *Girik*, not a certificate. Their presence in Kampong

Aquarium is also recognized by the government by issuing the ID cards of the people (*Kartu Tanda Penduduk*) who live there.

The relation of spatial form to the functions it contains, as described above, reveals the meaning of Kampong Aquarium that it is an unplanned dense settlement. Furthermore, a change in the relationship occurs starting from a change in meaning. The DKI Jakarta Provincial Government at that time gave the meaning of Kampong Aquarium as a tourist area that needed to be revitalized. This change in meaning is then followed by a change in Spatial Form and then also its functions. The change in the form-function-meaning relation (the first change) is accompanied by the process of eviction of residents' houses. However, this change failed because there was resistance from some residents, so that the formation of a new spatial form that was following the given meaning did not materialize, as well as the expected functions. The process of changing the form-function-meaning relation of Kampong Aquarium, from the conditions before the 2016 evictions which were dense settlements to the squatter, can be diagrammed below: **Meaning → Form → Function**

3.2. Changes in Form-Function-Meaning Relationships: Squatter → Shelter Housing

The DKI Jakarta Provincial Government, with a new governor, in 2018 built a Shelter, as a temporary residence for 103 families who were surviving on the rubble of the evictions whose situation was getting sadder by the day. The shelter consists of three blocks, A, B, and C. Block A consists of 52 units, block B consists of 48 units, and block C consists of 24 units. Each unit measures 3.5 x 6 m². Shelters are equipped with two block unit's toilet. Shelters consist of 124 units in total. The total number of residents of Kampong Aquarium who live in the Shelter is 306 people; That means one person occupies about 8.5 m², smaller than the minimum standard of occupancy, 9 m²/person.

The layout of the three Shelter blocks is in the shape of a U, with the open side on the South, which is the receiving room; block A is to the east, block B is to the north, and block C is to the west. In the middle is an open space. The arrangement of the Shelter block mass pays close attention to architectural principles; the existence of open space in the middle makes the three mass shelter blocks united in the site. The Southside that was left open became a receiving room for anyone who came from the South; it seems to be the "gateway".

Although the layout of the Shelters building mass has complied with several architectural principles that pay attention to solar lighting and natural airflow, the spatial conditions of each residential unit are still far from comfortable because the space is too small and narrow. The occupants of the Shelter unit spend a lot of time outside (Figure 10).



Source: (Drawing: RUJAK, n.d.; Photo: <https://megapolitan.okezone.com>, 2024)

Figure 10: Shelter Housing: Siteplan (left) and daily functions outside the Shelter unit (right)

The description above shows that there is a change in the form-function-meaning relation, which starts with a change in meaning, from Kampong Aquarium as a Squatter to Kampong Aquarium as a temporary residence. This change in meaning was then followed by a change in form (with a composition of three shelter blocks) and then followed by its function as a temporary residence. The process of changing the form-function-meaning relation can be diagrammed below: **Meaning → Form → Function**

3.3. Changes in Form-Function-Meaning Relationships: Shelter Housing → Block Housing

On one occasion, the Governor of DKI Jakarta Province stated that Kampong Aquarium would be built with the concept of layered houses, vertically built settlements. (<https://mediaindonesia.com>, accessed 16 September 2021). The idea was finally realized with the inauguration of two-layered house blocks (five floors), from the planned five blocks, on August 17, 2021, by the Governor.

Now, the village (Kampong Aquarium) is called the "Kampung Susun Aquarium" (The storied Aquarium Village). Physically, the designation of Kampong Aquarium refers to the two building blocks of the Flats (out of the planned five blocks). The building blocks were a substitute for the Kampong Aquarium settlement that was evicted. That is, what is moved is not only the physical buildings and humans, but also all socio-religious, socio-

economic, socio-political, and socio-cultural activities of all its citizens.

The design of Kampong Aquarium can be judged as a pretty good architectural work. These two five-story building blocks consist of a row of type 36 residential units. Each block is two rows of residential units facing each other, with a hallway as a separation. Thus, the back of each residential unit faces open space, the outdoors, and the front faces the hallway. This 4-meter-wide hallway has an important social meaning because this is where people's social activities take place (Figure 11).



Source: (Photo: Ashadi, 2024)

Figure 11: Hallway of Block Housing (left): Residents are gathering in the Hallway (right)

Matters related to occupant comfort seem to be an important concern and consideration for designers or architects. Natural airflow and sunlight that is needed by every human being can be tried to enter the room of each residential unit through the terrace at the back. The fresh air will continue to flow into the rooms in the house and then out into the hallway and continue to flow along the hallway until it flows freely at the end, a perfect airflow process.

Referring to the plan for Kampong Aquarium which consists of five building blocks, the layout of the mass is enough to give good hope for the future. The position of the mass of building blocks that extends in an East-West direction clearly shows that the designers or architects were very concerned about the direct sunlight, which for almost 12 hours, from morning to evening, illuminates the building. North-South orientation for residential buildings is the main choice of humans since primitive times, especially those living in the tropics, around along the equator. By facing the building in a north-south direction, the direct sunlight that hits the side of the building's opening does not occur throughout the year, but only for a few months, depending on the movement of the Earth's rotation and the position of the sun. The distance of 8 meters between the elongated block masses has provided sufficient space (between buildings) to enter sunlight and natural air flow into each residential unit. The meaning of Kampong Aquarium as a comfortable and human vertical settlement for the fulfillment of religious and socio-cultural activities of its citizens is truly realized. There

has been a change in the meaning of Kampong Aquarium, from the meaning of temporary and less comfortable Shelter Housing to a more comfortable and humane multi-story residential block. This change in meaning was then followed by the form of a five-story building. Then followed by more comfortable residential functions. The process of changing the form-function-meaning relation can be diagrammed below: **Meaning → Form → Function**

4. Conclusion

In the case of Kampong Aquarium, there are three changes in the form-function-meaning relation, i.e., from the condition of a dense settlement to the squatter, from squatter to Shelter Housing, and from Shelter Housing to Block Housing. In the three changes, the process starts with a change in meaning, then it is followed by a change in form and then in function. It can be diagrammed: **Meaning → Form → Function**.

It shows that a change that starts with a change in meaning requires the strength of certain groups who have authority, in this case, the DKI Jakarta Provincial Government. With a little "force", the change in the form-function-meaning relation in architecture, whose process starts with a change in meaning, can be carried out even though it is not easy to happen, even if it does require very hard efforts.

There are many opportunities to examine changes in the form-function-meaning relation in other case studies, with the aim of knowing from what aspect of the three aspects the change begins.

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