

The Semiotics Analysis on Crossroad and Grid System of Cakranegara City Indonesia

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Received March 17, 2023; Revised August 17, 2023; Accepted September 14, 2023

Cite This Paper in the Following Citation Styles

(a): [1] Lalu Mulyadi, Lalu Achmad Juniarta, "The Semiotics Analysis on Crossroad and Grid System of Cakranegara City Indonesia," *Civil Engineering and Architecture*, Vol. 11, No. 6, pp. 3739 - 3753, 2023. DOI: 10.13189/cea.2023.110636.

(b): Lalu Mulyadi, Lalu Achmad Juniarta (2023). *The Semiotics Analysis on Crossroad and Grid System of Cakranegara City Indonesia*. *Civil Engineering and Architecture*, 11(6), 3739 - 3753. DOI: 10.13189/cea.2023.110636.

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Abstract A crossroad only functions as a traffic road in most Indonesian cities and possibly in other countries too. Yet this assumption will be functioning differently for crossroads found in the city of Cakranegara Lombok, West Nusa Tenggara Indonesia. These crossroads not only function as a crossing but also function as a medium for cultural activities and religious rituals. Many crossroads in the city of Cakranegara have specific meanings and concepts. A considerable amount of crossroads are connected to become a road system in a form of the grid system. The method applied in determining the meaning and concept of the crossroad and grid system in the city of Cakranegara was semiotic analysis by Peirce. In the semiotic analysis, the crossroad and the grid system are treated as a sign. The result found that crossroads in Cakranegara city is a form of natural energy knots which at certain times are used as a medium for cultural activities and religious rituals to request spiritual protection from God. The finding from these crossroads serves as an invincible fortress to protect the city of Cakranegara, by providing supernatural powers known as *niskala* for making the city safeguarded and be comfortable to live in.

Keywords Semiotics Analysis, Crossroads, Grid System, Cakranegara, Socio-Cultural and Religious

1. Introduction

Cakranegara City is located on the western part of Lombok Island and included in a part of the West Nusa

Tenggara province of Indonesia. Built by the Balinese Hindu Kingdom, Karangasem in the early 18th century, the name of Cakranegara City was derived from the Sanskrit word *Cakra* meant as wheel and *Negara* as a city. Then, it can be hypothesized the construction of Cakranegara city followed the ideal form of an ancient Hindu city where one of its prime characteristics was found in the existence of many crossroads in Cakranegara city. Although term is commonly known in all cities in Indonesia (also in Cakranegara city), the crossroads of Cakranegara city has a very specific meaning for local people of the city. From research conducted in 2006, it found that Cakranegara Crossroads are categorized into two types: the crossroads located in the center of Cakranegara city and the crossroads surround its residential blocks. The crossroads in center of Cakranegara city are known with local term of '*Pempatan Agung*' or roughly translated as the great intersection [1, 2, 3, 4, 5], meanwhile for crossroads that surrounds the residential blocks are known as '*Pempatan Madya*' or the medium/average intersection [2]. Moreover, Funo [6] in his research work entitled "*Cakranegara, A Unique Hindu City in Lombok (Indonesia). The Grid in the Tradition of Asian City Planning*" stated the grid in Cakranegara city composed by (1) community areas placement called as *Karang*, (2) Differentiation of road width as explained by (1) *Marga Sanga*: road of 36 meters in width, (2) *Marga Dasa*: road of 27 meters in width, and (3) *Marga*: as road of 9 meters in width. The research gap of this study is taken from Funo explanation above. Therefore, it is essential to conduct further research on the functions of crossroads in Cakranegara city. The study problem highlighted in this article is to seek the meaning and concept of crossroads and

grid system in Cakranegara city. The novelty learned from this study is the crossroad replacement in the city of Cakranegara. Besides, it serves a more noble purpose for facilitating any religious activities and cultural ceremonies held in the city as well as serving as a division of traffic flow.

2. Contribution

This article is expected to be beneficial for science as a source of new theories in urban architecture and urban planning fields, in particular for those concerning to urban design theory which is driven and inspired by activities and religious rituals. As for the local government of Mataram city, Lombok is expected to be adapted as a reference in formulating conservation policies for the city of Cakranegara, while for city watchers or observers in Indonesia, it is likely to be put as contemplation thought to develop and maintain urban architectural elements (crossroads and grid system). Meanwhile, for advanced researchers, the semiotic analysis framework applied in this article is anticipated to be an alternative for similar article written about exploring cities in Indonesia or cities in other countries.

3. Theoretical Background

3.1. A Grid System

In the book *Asterisk Shaped Pattern*, Palma in Manaf [7] states that the grid system is a road pattern that has a right angle. The grid system itself has been adapted a long time ago by several early civilizations, as seen in the cities of Mohenjodaro-Harappa, Egypt, Babylon, China, Teotihuacan, and Rome. According to the traditional Chinese belief, Kaongongji, it is said that "a capital city should be square on plan. Three gates on each side of the perimeter lead into the nine main streets that crisscross the city and define its grid-pattern. And for its layout the city should have the Royal Court situated in the south, the Marketplace in the north, the Imperial Ancestral Temple in the east and the Altar to the Gods of Land and Grain in the west".

Concurrently, in the book *Stadtstruktur and Stadtgestaltung*, Curder in Manaf states that the positive impact of the grid system lies in aspect of development that can be achieved easily without much disruption to the regional environment when there is a change in an area. The grid system also allows the city to develop rapidly but still follow a predetermined system arrangement [7].

Kostof in Kusumastuti also gave arguments by stating that the cities formed with a grid system are intended to form regular settlements, as a means of maintaining military control, and also able to accommodate the needs of military, capitalist trade and industrial cities [8, 9].

Furthermore, Manaf states that the grid system is very technical in nature and becomes the most neutral system where many various needs of the community are well accommodated. Grid system offers an advantage in its ability to create a route system that is easily understood by the general public. Public transportation services also become more evenly distributed because the track systems are in parallel. In addition, land distribution and urban development are also well ordered. The grid system regulates orderliness so that the flow of transportation becomes more effective and efficient and as a result, the grid system provides the opportunity for each side of the city to develop evenly in all aspects.

In addition, Stanislawski states that theoretically, the use of the grid system is based on two interests; first interest is the efficient use of space related to the assumption that buildings are generally rectangular in shape and the second interest is related to the preparation of the road for the processional activities (as straight processional street) [10].

3.2. Semiotics

Human activities in daily life are always covered with various direct or indirect events, consciously or unconsciously, which have potential meanings that value when viewed from various angles and can indicate certain messages or sign. Then, when this sign is interpreted through an explanation, those who agree will accept it. Semiotics, commonly defined as the study of signs, is basically a study of codes, that is, any system that allows us to view certain entities as signs or as something meaningful [11]. Teeuw [12] further defined semiotics as a sign of an act of communication, generated from Greek *Semeion* meant as sign and *same* meant as sign interpreter, which then elaborated into a model literature that accounts for all the essential factors and aspects for understanding literary phenomena as a means of communication that is unique in any society. Meanwhile, according to Zoest in Adilia and Said, semiotics is a branch of science that deals with the study of signs and everything related to a sign. When humans can understand a new sign, it can be operated [13, 14]. So, the important factor in the meaning of signs depends on human involvement. Signs are a very important element in knowing the meaning formed by socio-cultural activities and religious rituals.

In the development of semiotic theory, Berger in Adilia and Said mentions two semiotic figures, whose theoretical concepts are very well known, namely Charles Sander Peirce and Ferdinand De Saussure [13, 15]. The two figures developed semiotics separately. Peirce in the United States with his scientific background in philosophy, while Saussure in Europe with his scientific background in linguistics. According to Peirce, the sign "is something that stands to somebody for something in some respect or capacity". Peirce also stated that the sign is formed through "triadic relations" which refers to the representamen associated with the object. This relationship will produce

interpretants [16, 17]. Therefore, this relationship is called Peirce's Triadic Model [18].

The triadic model is described as follows: First, the representamen. Representment is a thing that can be perceived from something that functions as a sign [16, 17]. Representment is defined as "the physical part of a sign" [19]. In Peirce's view, something is transformed into a representation through various grounds [17, 20] (figure 1).

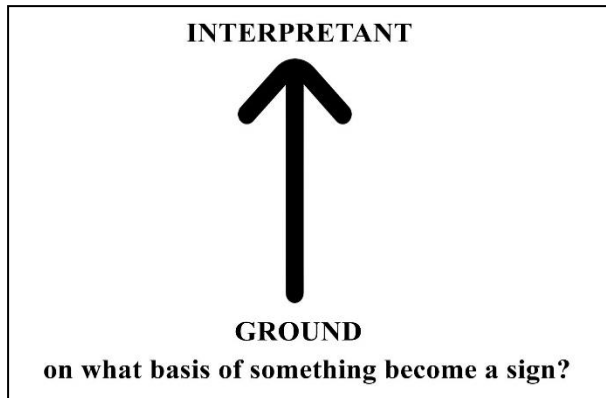


Figure 1. Peirce's view "something is transformed into a representation through various ground" [17, 20]

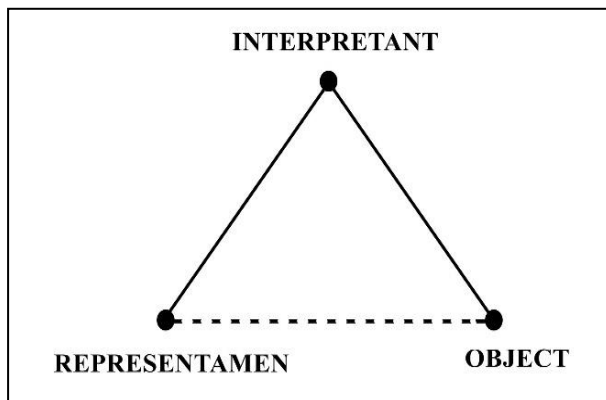


Figure 2. Sign is formed through triadic relationship, that is called "Peirce's Triadic Model" [18]

Based on this triadic model relationship, Peirce then classified the sign as "trichotomy". Pierce's first trichotomy is signs based on the nature of his ground which is classified in to qualisigns, sinsigns, and legisigns [21]. Zoest interpreted Peirce's thinking by explaining that *qualisigns* are qualities that are present in signs. For example, the red color on the Indonesian flag means

courage, the red color on the traffic light indicates a sign to stop or potential danger. *Sinsigns* are events that happen on the sign. For example, a scream can mean pain, amazement, or joy. *Legisigns* are the norm that is on the sign. For example, a traffic sign indicates things that drivers can do or cannot do.

Pierce's second trichotomy is a sign based on the nature of the relationship between the sign and its object, which consists of icon, index, and symbol [21]. *Icon* is a relationship between signs and objects that are similar or have a function to describe. For example, the tiger mask represents the face of a tiger. *Index* is a relationship between a sign and an object that has a causal relationship or a cause relationship. For example, smoke is a sign of fire or a cloudy sky that means it will rain. *Symbol* is a relationship between a sign and an object which has arbitrary meaning or has a relationship based on convention, treaty, or agreement.

Pierce's third trichotomy is a sign based on the nature of the sign's relationship with its interpretant, which consists of rheme, dicent sign or dicisign and argument [21]. *Rheme* is a sign that allows people to interpret based on choices. For example, a person who has red eyes can indicate that the person has eye pain, or has just cried, or has just woken up. *Dicent sign* or *dicisign* is a sign according to reality. For example, if there are frequent accidents on a road, then a traffic sign is installed on the side of the road stating frequent accidents happen there. *Arguments* are signs that immediately give reasons for something.

Unlike Peirce who has a triadic concept of sign, Saussure's semiotic theory created into a diadic sign concept. Saussure's semiotic concept does not recognize any "sign object". He only recognized a kind of "representamen" and "interpretant" which he calls as a "signifiant" and a sign (*signifie*). According to Saussure, the sign consists of: (1) Sounds and pictures which called as signifiers; (2). The concept of sounds and images called as signified, comes from the agreement. Signifier is a sign or symbol that can represent or mean something else. A word can represent a person's feelings or thoughts. Signifiers are used by people who want to engage in communication. Signifier is the recipient's interpretation of the signs and symbols that he or she receives. Thus, for communication to occur and be understood between the giver and receiver of communication, it must use the same signs and symbols as explained by Sarosa [22, 23] (figure 3).

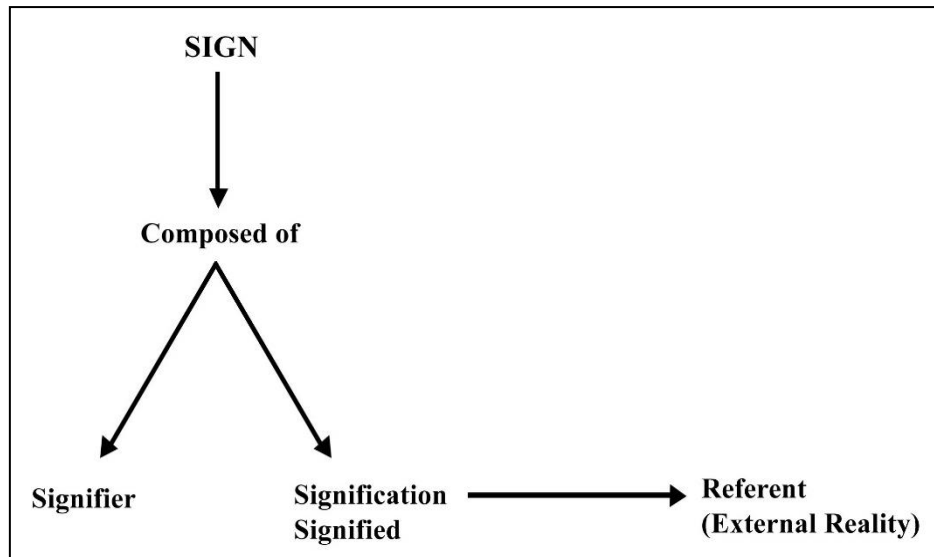


Figure 3. Unlike Pierce, Ferdinand De Saussure recognized sign as a signifier and signified

A sign is something physical (any sound - image) that can be seen and heard which usually refers to an object or aspect of the reality that wanted to be communicated. These objects are known as "referents". During communication, someone uses a sign to send meaning about the object and people will interpret the sign. With a condition applied, whether the communicator or the communicant must have the same language or knowledge of the sign system to ensure they can communicate smoothly. Examples are listed in table 1.

Table 1. Two examples by Ferdinand De Saussure's semiotics model

THE SIGNIFIER	THE SIGNIFIED
The tree	The big Plant
The rose	The symbol of love

4. Methodology

For discussion section, this article employs the semiotic method as a mean to read the "signs". Since it uses semiotics as a reading tool (analysis) then it becomes an interactive article [17, 24]. Semiotic analysis is an attempt to find or to disclose the meaning of signs hidden behind a sign. For reading the sign, this article uses Peirce's semiotic method because Peirce for his analysis, accepted all signs received by the human senses, which is not only looking at semiotics only from communication framework but also at the processes that allow the emergence of signs and meaning. Peirce's process of interpreting signs follows the relationship between three points, namely representamen (R), object (O) interpretant (I) (Figure 2). Peirce calls this three-point relationship as a Triadic Model. Furthermore, Peirce's triadic relationship is interpreted by Zoest as: (1) Trichotomy of a sign based on its ground properties, namely: *Qualisigns* as the quality present in the sign;

Sinsigns as the existing events on the sign; and *Legisigns* as the existing norm on the sign. (2) Trichotomy of a sign based on the nature of the relationship between the sign and its object, namely: *Icon* as the relationship between the sign and the object which is similar in nature; *Index* as the relationship between the sign and the object which has a cause-and-effect relationship; and *Symbol* as the relationship between sign and object which is arbitrary. (3) Trichotomy of a sign based on the nature of the relationship between the sign and its interpretant, namely: *Rheme* as a sign that allows people to interpret based on choices; *Dicisign* as a sign according to reality; and *Argument* as a sign that immediately gives a reason for something. Meanwhile the chosen sign that will be put in to semiotics analysis is the crossroads and grid system of the city of Cakranegara.

5. Results and Discussion

5.1. The Crossroads of Cakranegara City

First Description. Almost all crossroads in the Cakranegara City serve as a medium for socio-cultural and religious ritual activities or are referred as the Yadnya or religious ritual ceremonies local community. This is a term in the teachings of Hinduism which means the ceremony of sincere sacrifice or before God. Yadnya which is derived from the Sanskrit language: (*yaj ña*), as the root of the word Yaj meaning as worshipping or offering, consists of five related ritual ceremonies referred as Panca Yadnya: 1) Dewa yadnya is a sincere holy offering ceremony before the gods, 2) Butha yadnya is a sincere holy offering ceremony before the elements of nature, 3) Manusa yadnya is a sincere holy offering ceremony to man, 4) Pitra yadnya is a sincere holy offering ceremony for the deceased human beings, and 5) Rsi yadnya is a sincere ceremonial offering

before the holy of Hindus [25, 26]. The yadnya ceremony requires a medium of crossroads in the process of perfecting the ritual ceremony. One of the most prominent activities held crossroad areas is a procession involving rotating activities. The rotating activity to the right (turn right) is called *purwadaksina* as a symbol of creation, life, honor, or "enhancement of status" to gods, humans, or ancestors (*pitara*) in various ceremonies. Meanwhile, the rotating activity to the left (turn right) is called *prasavya* as a symbol of fusion or "decrease in status". This activity (turning left) is usually done during the funeral procession or burial [27] (figure 4).

The result from observation and interviews to local people of Cakranegara City held in 2006 has identified that turning left (*prasaviya*) and turning right (*pradaksina*) are often carried out in crossroad in the City of Cakranegara,

especially during the *Pitra yadnya* ritual ceremony. *Pitra yadnya* is a ceremony related to the death of a person which was carried out before the cremation (*pengabenan*) process. As the procession march is returning from the cremation (*pengabenan*) process, every crossroad it passes through always makes a turn to the right (*pradaksina*), and every crossroad it passes along the procession march always makes a turn to the left (*prasaviya*). The *Pradaksina* or turning to the right is also carried out when *Dewa Yadnya* ritual ceremony takes place (figure 4 and 5).

From the first description above, it may be interpreted that the crossroads in the City of Cakranegara has a very important meaning for the Hindu community due to its function as a forum for religious ritual ceremonies commonly called as *Yadnya* ceremonies.

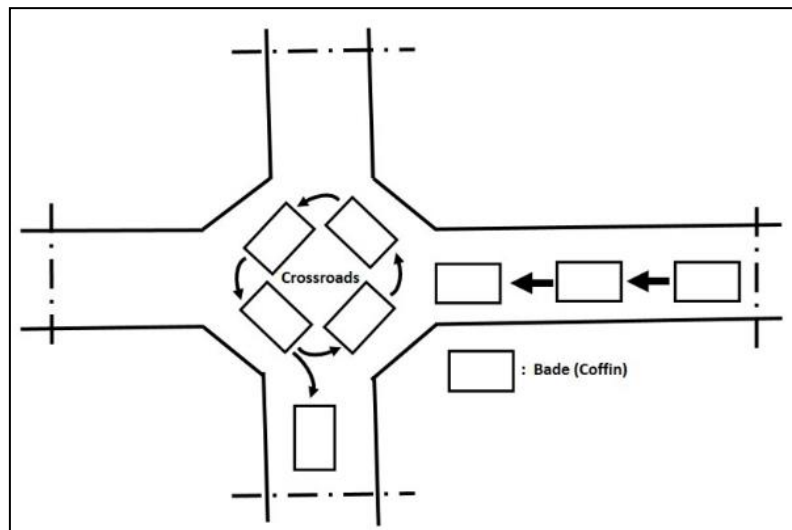


Figure 4. Ritual activities *prasavya* in *Mengarak Bade* procession that held on the crossroads of Cakranegara city



Figure 5. Photo of residents carrying out corpse during the funeral burial in activities *prasavya*

A. Semiotics Analysis by Pierce's Triadic Model:

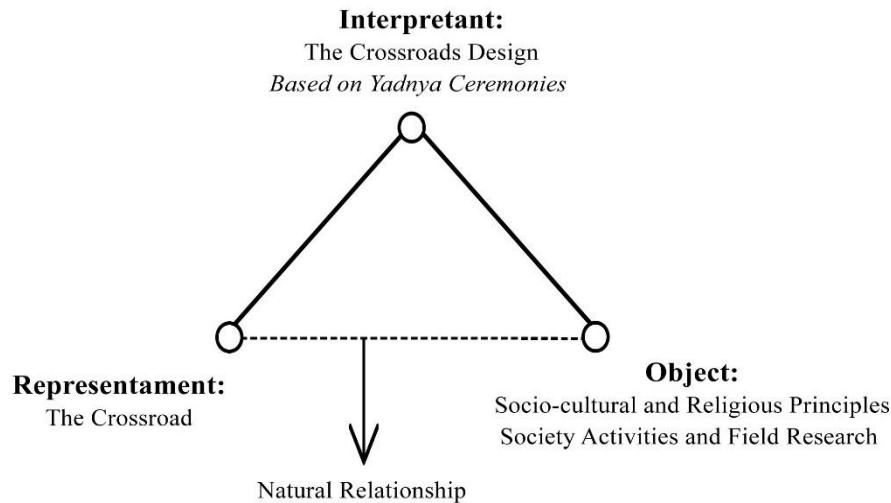


Figure 6. First finding: the design of Cakranegara Crossroad

Second description. Before the religious ritual ceremony is carried out at the crossroad, it begins with the placement of *sesajen* which is firstly performed. (Offering of several kinds of various flowers, leaves, and food that is made by the Hindu community with the highest unseen power) (figure 7). According to Eiseman [28] and the local religious leaders, the meaning of the composition and types of communication media (*sesajen*) arrangement that placed at the crossroad area are as follows: 1) the northern part is called *Kaja, yeh nyom, Apah, Hitam* (black color), *Anggapati*; 2) the southern part is called *Kelod, rah, Teja, Merah* (red color), *Mrajapati*; 3) the eastern part is called *Kangin, ari-ari, Bayu, Putih* (white color), *Banaspati Raja*; 4) the western part is called *Kauh, lamas, Pertiwi, kuning* (yellow color), *Banaspati*; and 5) offering (*sesajen*) that placed in the middle is called *Puseh, Bayi, Akasa, Brumbun* (color mixture).

According to Yudiantini and Jones a crossroad is referred to *Catuspatha*. *Catuspatha* is a traditional Balinese concept of a crossroad that is served as the center of urban growth with elements of *Puri* (Palace), *Wantilan* (Public Open Space), *Alun-alun* (Green Open Space) and *Peken* (Market) [29] (figure 8). The existence of the *Catuspatha* as the center of an area dated back from an early time and was determined based on the order of the King at the direction from *Bhagawanta* (King's spiritual advisor), because apart from its strategic location it must possesses spiritual/invincible (*niskala*) power, and for that account the *Catuspatha* is considered a sacred point. *Catuspatha* has a close relationship with the implementation of the *Yadnya* ceremony because the crossroad functions as a 'cosmic energy catcher' which then bound to be knots of cosmos/universe energy. The cosmic energy will be collected in such a way through a ritual procession that is performed continuously by the local community. Thus,

through crossroads that natural energy will be easily accessed for a specific purpose. Meanwhile, Djaja Bharuna and Acwin Dwijendra said that apart from the magical value contained in the *Catuspatha*, it is also strengthened by the functions of the building and the space around it [30]. Djaja Bharuana and Acwin Dwijendra in their article explain that the functions of the buildings and spaces around the Ubud Gianyar crossroad area are as follows: Northeast direction (palace/*puri*); southeast (market); southwest (open space); and northwest of the community hall (*Bale Banjar* or *Wantilan*) (figure 9).

According to Mulyadi [31], the function of buildings and space areas around the crossroad of the downtown Cakranegara are as follows: Northeast direction (palace/*puri*); southeast direction (market); southwest direction (community hall); and northwest direction (open space). This is in line with the explanation of Budiharjo and Munandar [2, 4] regarding the function of the area around the intersection of Balinese Hindu cities as follows: Northeast direction (palace); southeast direction (open space); southwest direction (market); and northwest direction (community hall). In line with the above theory, Stutterheim and Bondan [32, 33] state that the function of the buildings and space area around the crossroad of the Majapahit City are as follows: Northeast direction (open space); southeast direction (community hall); southwest direction (king's palace); and northwest direction (market).

Meanwhile, based on the results of observations, interviews, as well as Eiseman's [28] explanation regarding layout composition from communication media (*sesajen* / offerings) in the crossroad area, the layout of the offerings may lead to the throne of the gods with following orders; north position as the throne of Lord Vishnu, east position as the throne of Lord Iswara, south position as the throne of Lord Brahma, west position as the throne of Lord

Mahadeva and middle position as the throne of Lord Shiva. Concurrently, referring to the opinion of Djaja Bharuna and Acwin Dwijendra, Mulyadi, Budiharjo, Munandar, Stutterheim, and Bondan regarding the layout of building and space composition, it is very possible [2, 4, 30, 32, 33, 34]. that the layout of the building and space leads to the

throne of the gods, with following order; northeast position as the throne of Lord Sambu, southeast position as the throne of Lord Maheswara, southwest position as the throne of Lord Rudra and northwest position as the throne of Lord Sangkara.

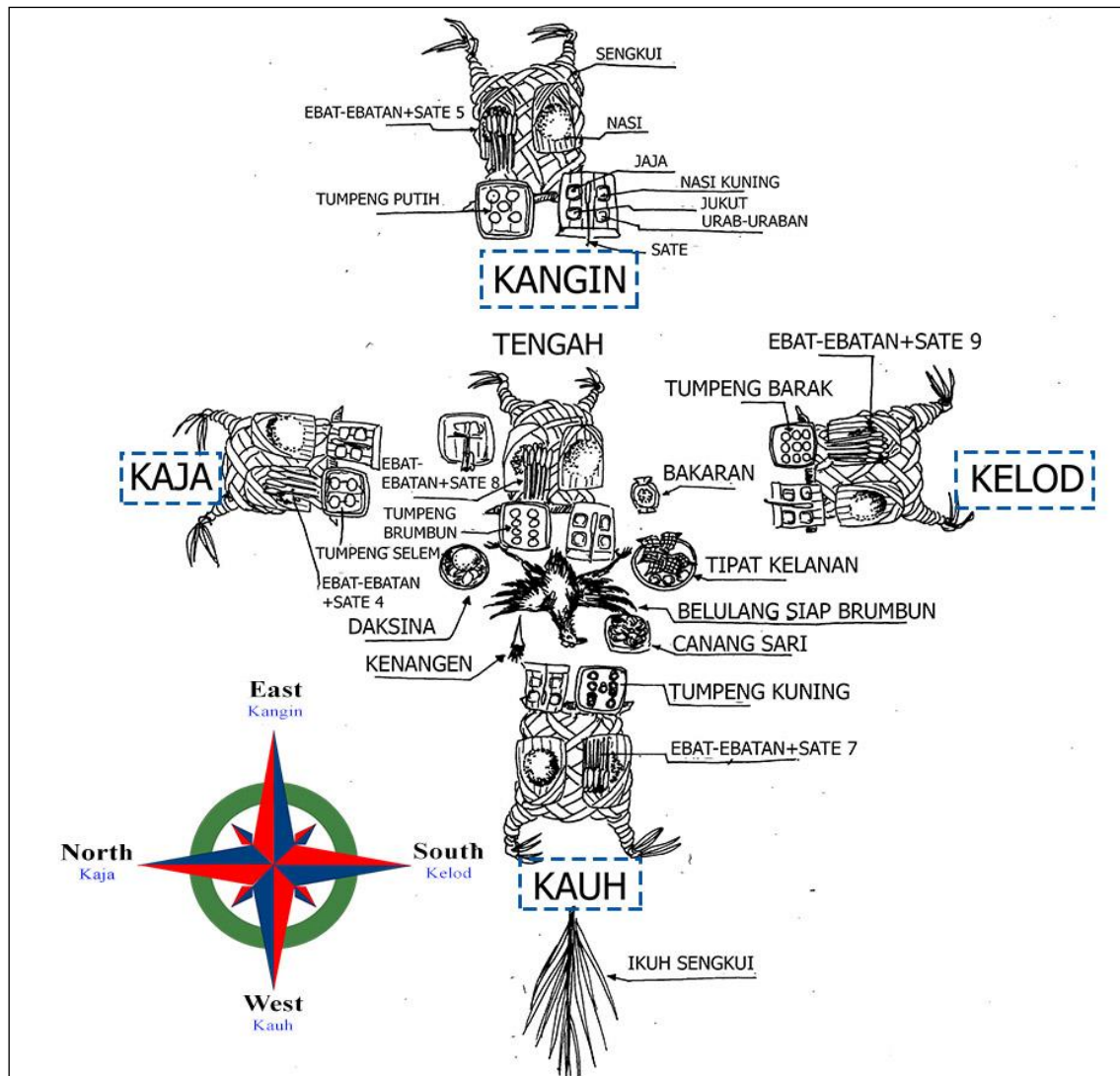


Figure 7. Composition of communication media (*sesajen*) found in crossroad area before the ritual ceremony begins



Figure 8. A) The Palace (*Puri*) in the *catuspatha* pattern; B) Meaning of axis and *puri* layout alternative in the *catuspatha* pattern

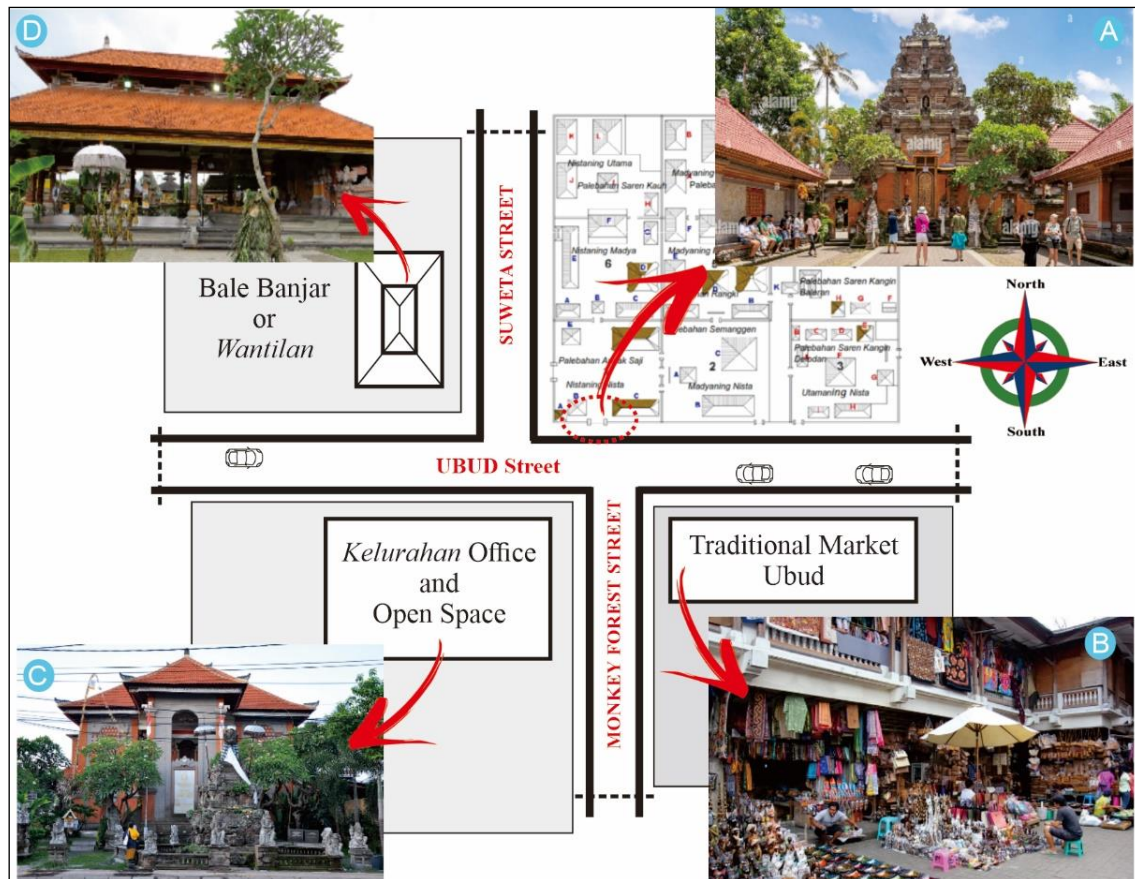


Figure 9. A) The royal palace (*Puri*); B) Traditional market; C) A field/square (*kantor kelurahan*); D) Community halls (*Bale banjar* or *Wantilan*) are the examples from *cathuspatha* pattern

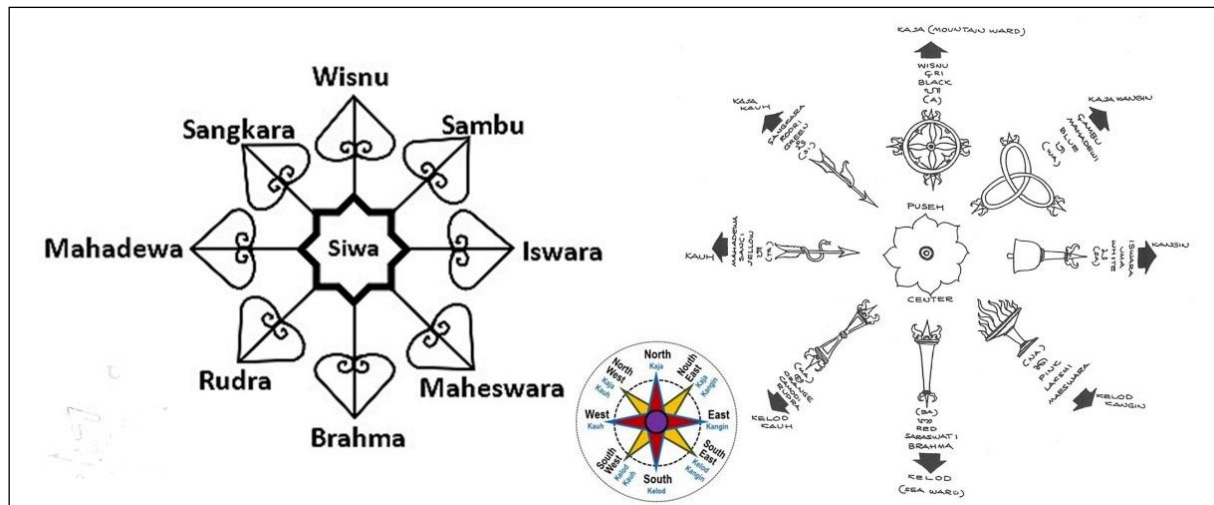


Figure 10. Philosophy of the thrones of *Dewa-Dewa Naga Sanga* (The Nine Guardian of The Compass), interpreting the design of the crossroad system in Cakranegara City

The second description is interpreting that the crossroad in the Cakranegara City area is designed based on the philosophy of the throne of the gods which crystallized into the concept of *Dewa-dewa Nawa Sanga* (The Nine

Guardians of The Compass: Lord Wisnu, Lord Sambu, Lord Iswara, Lord Maheswara, Lord Brahma, Lord Rudra, Lord Mahadewa, Lord Sangkara, and Lord Siwa) (figure 10).

B. Semiotics Analysis by Pierce's Triadic Model:

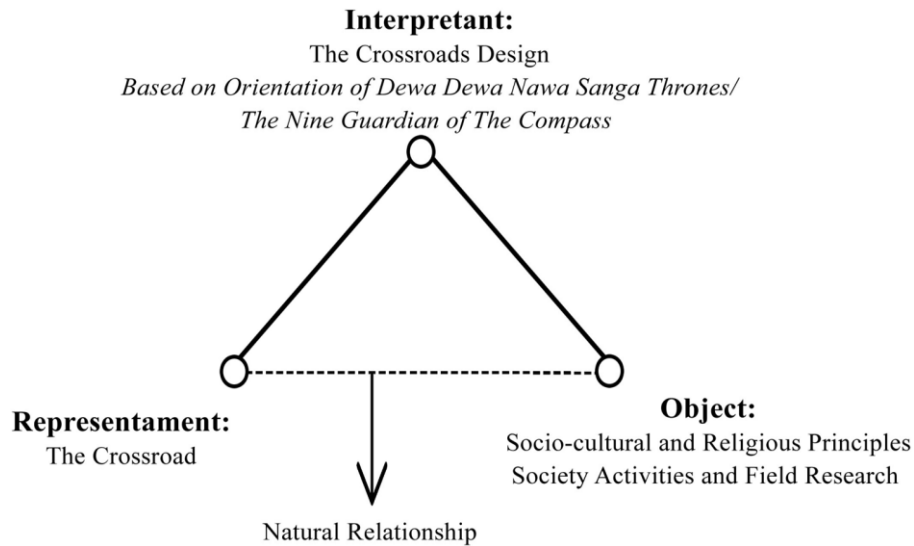


Figure 11. Second finding: the design of Cakranegara Crossroad

Based on Peirce's semiotic theory on the previous page about the trichotomy according to figure 6 and 11 above, it can be analyzed that the crossroad element is needed as a place for religious ritual activities called *Tawur Agung* and *Penampan*. See Tables 2, 3, and 4 analysis of Pierce's theoretical approach below:

C. Trichotomy Analysis by Pierce:

Table 2. First trichotomy analysis of signs based on its ground properties

NO	SIGNS	MEANING	INTERPRETATIONS
1	Qualisigns	The sign quality	There is a procession or ritual ceremony called <i>Tawur Agung</i> which is performed at the crossroad in downtown Cakranegara. There are also processions or ritual ceremonies called <i>Penampan</i> held in crossroads of the residential blocks. Both of these demonstrate the presence of an invisible force in these crossroads, which Eisenman refers to as <i>niskala power</i> [28].
2	Sinsigns	Events on the sign (crossroads)	There is a unique and distinctive event found on the crossroads of Kartanegara City, where at certain times are often functioned as a forum for socio-cultural activities and the process of religious ritual ceremonies (with the time of implementation determined by the Hindu calendar). For example, the ritual ceremony of <i>Dewa Yadnya</i> or Saka New Year, and <i>Pitra Yadnya</i> during the <i>Pengabenan</i> process, along with other examples.
3	Legisigns	Norms on the sign (crossroads)	There are two concepts established in the crossroads of the Cakranegara City area. The first concept is related to four cardinal directions; north, south, east, and west. The direction of this orientation leads to the Four Positions of Gods Thrones. As the second concept is seen from eight cardinal directions: north, northeast, east, southeast, south, southwest, west, northwest, and the center of the axis where it leads to The Nine Positions of Gods Thrones which are commonly known as <i>Nawa Sanga</i> . These rules are stated in <i>awig-awig</i> or written law of Hindu society. It can be interpreted that in those crossroads, the local wisdom norms are well guarded and routinely applied by the local community.

Table 3. Second trichotomy analysis of signs based on the relationship between signs and objects

NO	SIGNS	MEANING	INTERPRETATIONS
1	Icon	The relationship between sign and object which is similar	There is a similarity between the crossroad in the City of Cakranegara and the <i>Catuspatha</i> on the island of Bali that Cakranegara Crossroads not only function as crossroads but also possess sacred values and distinctive meaning which corresponds to <i>Pempatan Agung</i> .
2	Index	The relationship between sign and object is a cause-and-effect relationship	Whenever <i>Yadnya</i> ceremony is about to begin on the crossroad, <i>sesajen</i> (an offering) is always put on there. This offering indicates that there will be religious ritual activity that will take place soon at that place.
3	Symbol	The relationship between sign and object	Crossroad is a functional forum which is very beneficial for the Hindu religious community and acts as a community agreement that must be carried out together.

Table 4. Third trichotomy analysis of signs based on the nature of sign relationship with the interpretants

NO	SIGNS	MEANING	INTERPRETATIONS
1	Rheme	Sign that allows people to interpret based on choices	Crossroads as a cosmic energy node has an invisible power (<i>niskala</i>) and very sacred values that can be used as a supernatural fortress to guard Cakranegara City area to make its local community feel safe and comfortable to live in this city.
2	Dicisign	Sign according to its reality	There is a routine conduct of <i>Yadnya</i> activities that take place continuously as an implementation of socio-cultural principles and religious rituals.
3	Argument	Signs that immediately give reasons about something	The collected information of the respondents where most from them are traditional, religious and community leaders are accountable and reliable data.

5.2. The Grid System of Cakranegara City

First description. The city road system of Cakranegara has a very distinctive and unique system. The road system is built on a hierarchy basis with different names and sizes according to its function with a neat and regular arrangement. Funo and Handinoto state that the road system in the City of Cakranegara consists of three levels: 1) first level road is a large road (45.00 meters) that stretches from north-south direction (Sultan Hasanuddin Street and Anak Agung Gede Ngurah Street) and a road runs east-west direction (Selaparang Street and Pejanggik Street) which forms a crossroad called *Marga Sanga* [6, 35]. The local name from the local community for this crossroad termed as *Pempatan Agung*. *Pempatan Agung* functions as a forum for religious ritual ceremony called *Tawur Agung*. 2) Second level road is a medium-sized road (27.00 meters) that surrounds the precisely square residential area and divides the area into residential blocks where each of the blocks forms a crossroad called *Marga Dasa* [36, 37, 38]. The local name emerges as the local community for this crossroad which is termed as *Pempatan Madya*. *Pempatan Madya* functions as a forum for a religious ritual ceremony called *Penampan*, 3) Third level road: A small road (09.00 meters) that runs north-south direction and divides the sub-area of the residential block into a square shape which is termed as *Marga* [36, 37, 38]

(figure 12).

Differences in street names and sizes resulted in hierarchical values. The hierarchical value not only serves to distinguish the types of vehicles that will pass the road but also serves as a medium for processional activities both in religious ritual ceremonies and processions that are related to socio-cultural activities. *Marga* as a 9 meters road size function for the behalf of socio-cultural activities and religious ritual ceremonies within the scope of the *dadia* (micro scope). *Marga Dasa* as 27 meters road size is functioned for the behalf of socio-cultural activities and religious ritual ceremonies within the scope of the *banjar* (meso scope). As *Marga Sanga*, the 45 meters road size is functioned for the behalf of socio-cultural activities and religious ritual ceremonies within the scope of Cakranegara City area.

Along the north-south longitudinal road on its left and right sideways there is an open space area called *tagtagan* (figure 13) by the locals. The function of *tagtagan* is a medium for planting trees such as coconut trees, bananas, and various types of flowers that will be used in any socio-cultural activities and religious ceremonies. This *tagtagan* area also presents Sanggah Cucuk as a symbol of God's Holy place, served as a container to put *banten/sesaji*.

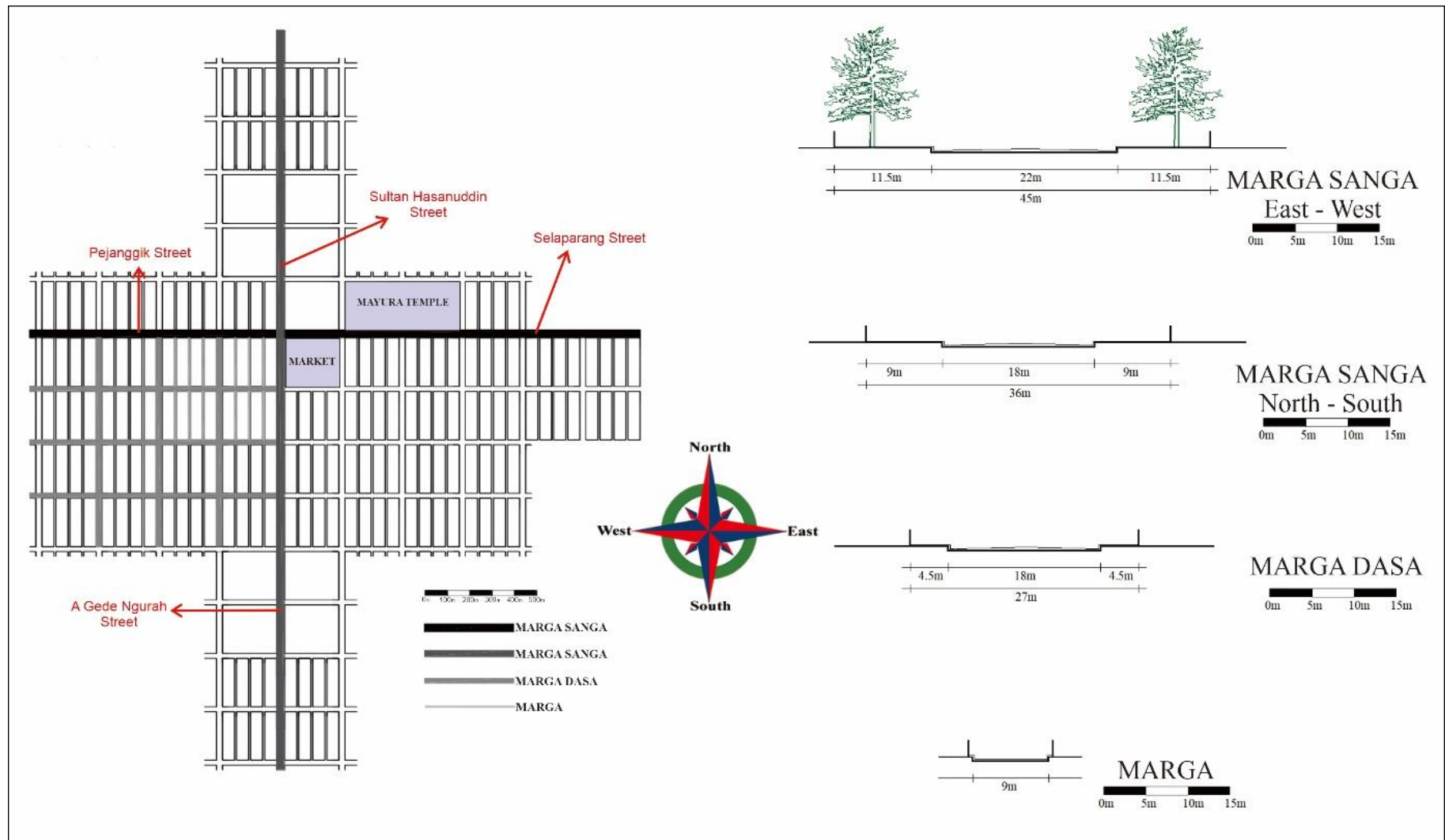


Figure 12. The design road system of Cakranegara City



Figure 13. Tagtagan in Cakranegara City

From the first description above, it may be interpreted that the grid system in the Cakranegara City area plays a very important role for the Hindu community as a medium for processions in religious ritual ceremonies i.e *Yadnya* ceremonies.

A. Semiotics Analysis by Pierce's Triadic Model:

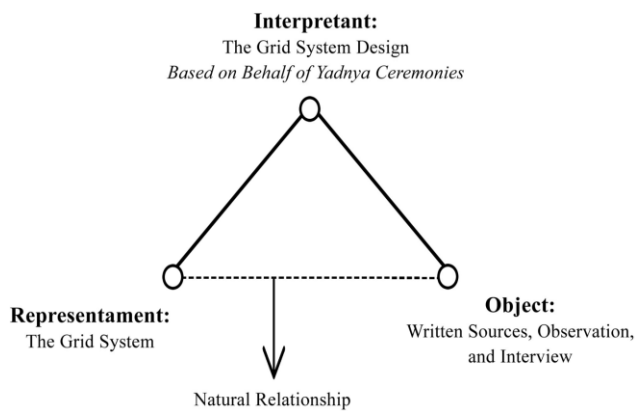


Figure 14. First finding: the grid system design

Second description. The Cakranegara City grid system is formed by the presence of many crossroads. These considerable amounts of crossroads are symbolizing *niskala* power (invisible/supernatural power). There are physical objects that may be categorized as objects that possess *niskala* power which can be seen from how these physical objects are employed [28].

From the second description above, it may be interpreted that every crossroad acts as a node of cosmic energy for

gathering the invisible/supernatural (*niskala*) power, and when all the crossroads are connected into a grid system then these abundant energies can be used as a supernatural fortress to protect the Cakranegara area.

B. Semiotics Analysis by Pierce's Triadic Model:

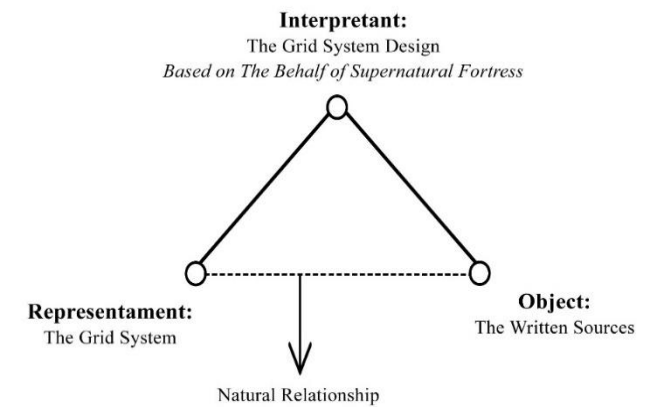


Figure 15. Second finding: the grid system design

Based on Peirce's semiotic theory on the previous page about the trichotomy according to Figure 14 and 15 above, it can be analyzed that the grid system in the city of Cakranegara is needed as a place for religious ritual activities called *Yadnya*, namely *Dewa Yadnya*, and *Pitra Yadnya*. See tables 5, 6, and 7 analysis of Pierce's theoretical approach below:

C. Trichotomy Analysis by Pierce:

Table 5. Third trichotomy analysis of signs based on the nature of sign relationship with the interpretants

NO	SIGNS	MEANING	INTERPRETATIONS
1	Rheme	Sign that allows people to interpret based on choices	Crossroads as a cosmic energy node has an invisible power (<i>niskala</i>) and very sacred values that may be used as a supernatural fortress to guard Cakranegara City area to make its local community feel safe and comfortable to live in this city.
2	Dicisign	Sign according to its reality	There is a routine conduct of <i>Yadnya</i> activities that take place continuously as an implementation of socio-cultural principles and religious rituals.
3	Argument	Signs that immediately give reasons about something	The collected information of the respondents where most of them are traditional, religious and community leaders are accountable and reliable data.

Table 6. First trichotomy analysis of signs based on its ground properties

NO	SIGNS	MEANING	INTERPRETATIONS
1	Qualisigns	Quality that is on the sign	The grid system of the Cakranegara City area has a distinctive meaning with a hierarchical basis. The road in the city center is called as <i>Marga Sanga</i> while the road that divides residential blocks is called as <i>Marga Dasa</i> , and finally, the road that divides the blocks into sub-blocks is called as <i>Marga</i> .
2	Sinsigns	The events that are on the sign	The grid system (of streets in the City of Cakranegara) often serves as a forum for socio-cultural activities and the procession of religious ritual ceremonies (with the predetermined timing by the Hindu calendar). For example, the ritual ceremony of <i>Dewa Yadnya</i> or Saka New Year, <i>Pitra Yadnya</i> at the event procession of <i>Pengabenan</i> , along with other examples. It is evident that roads and the crossroads become a medium for a unique and distinctive event.
3	Legisigns	The norms that are on the sign	The grid system in the Cakranegara City area is formed by the concepts of four cardinal directions, namely north, south, east, and west. The direction of this orientation leads to the "Four Thrones of The Gods" positions. This rule is embodied in <i>awig-awig</i> or written law which becomes evident to say that Cakranegara Crossroads function as a forum for socio-cultural and religious activities that are carried out regularly.

Table 7. Second trichotomy analysis of signs based on relationship between sign and object

NO	SIGNS	MEANING	INTERPRETATIONS
1	Icon	The relationship between sign and object which is similar	The grid system in the City of Cakranegara is similar to several grid systems in Japan where the roads are functioned as a medium for communal processions.
2	Index	The relationship between sign and object which is a casual relationship	Along the road that stretches from north to south, some open areas/parks served as a place to plant trees and flowers for the religious ritual necessities such as coconut trees, banana trees, and flower gardens. These areas located on the sideways road are called <i>tagtanan</i> by local people. Furthermore, in every entrance to the house's courtyard are evident various offerings placed inside a woven bamboo which the local people called as <i>Sangghah Cucuk</i> .
3	Symbol	The relationship between sign and object	The Grid system is constructed from collections of crossroads. The roads that connect to other crossroads are the ones that became a functional medium for the Hindu community, and these roads are established based on the community agreement.

Table 8. Third trichotomy analysis of signs based on the nature of sign relationship with the interpretants

NO	SIGNS	MEANING	INTERPRETATIONS
1	Rheme	A sign that allows people to interpret based on choices	Grid system not only serves as a traffic lane for motor vehicles but also serves for <i>Yadnya</i> ritual processions which mean when there are socio-cultural activities and religious rituals occur, this grid system will be activated as a medium for procession both within the city community, <i>banjar</i> community, and <i>dadia</i> community.
2	Dicisign	Sign according to reality	<i>Yadnya</i> routine activities act as an implementation of socio-cultural principles and religious rituals in the City of Cakranegara.
3	Argument	A sign that immediately gives reasoning about something	The opinions from respondents which included traditional, religious and community leaders were concrete and accountable information data.

6. Conclusions

According to the above discussion concludes meaning and concept of crossroads and the grid system of Cakranegara City as stated below:

The meaning of many crossroads of Cakranegara City for Hindu religious community is the city icon of Cakranegara because crossroads have sacred or invincible supernatural value content called *niskala*. Meanwhile, the concept of crossroads is based on The Thrones of The Gods namely *Dewa-dewa Nawa Sanga* or The Nine Guardians of The Compass.

The meaning of the grid system in the City of Cakranegara for the Hindu religious community is the city icon of Cakranegara due to its vital function value that is substantially required completely needed by the local community both in the micro scope (*dadia*), the meso scope (*banjar*), and the macro scope (city area). Meanwhile, the concept of a grid system in the City of Cakranegara was established according to the interests of local communities in supporting the implementation of socio-cultural activities and religious ritual ceremonies (processions).

There is a typical street design called *tagtagan*, a street design that has open space on its sideways for plantation medium which is only be found in the City of Cakranegara.

The sacred value in Cakranegara Crossroads is the supernatural or invincible or cosmic energy known as *niskala*. This force can be used as a supernatural fortress to make Cakranegara City area safeguarded and becomes a comfortable environment to live in.

Acknowledgements

The authors declare that the present work has not been previously submitted or considered for publication.

REFERENCES

- [1] Atmaja J. Perempatan Agung: Menguak Konsep Palemahan, Ruang dan Waktu Masyarakat Bali, Bali Media Adhikarsa, Denpasar, 2003.
- [2] Budiharjo E. Architectural Conservation in Bali, Gadjah Mada University Press, Yogyakarta, 1991.
- [3] Gelebet I. N. Arsitektur Tradisional Daerah Bali, Department of Education and Culture, Denpasar, 1986.
- [4] Munandar A. H. Istana Dewa Pulau Dewata: Makna Puri Bali Abad ke 14-19, Komunitas Bambu, Jakarta, 2005.
- [5] Rachmat B. Perubahan Fungsi dan Tata Ruang Puri-Puri di Bali: Suatu Kajian Sejarah Sosial, Unpublished Master's Thesis, Bandung Institute of Technology, Bandung, 1995.
- [6] Funo S. Cakranegara: A Unique Hindu City in Lombok (Indonesia) The Grid in the Tradition of Asian City Planning, Symposium Arsitektur Nusantara, Keajegan, dan Perubahan, Surabaya, 1995.
- [7] Manaf T. There's something about geometry + architecture, Geometry Architecture. online available at: <https://geometryarchitecture.wordpress.com/2012/06/14/> (accessed Dec. 5, 2017)
- [8] Kostof S. The City Shaped: Urban Patterns and Meanings Through History, second edition, Bullfinch Press, Thames & Hudson, New York, 1991.
- [9] berdasarkan Teori City Shaped Spiro Kostof, Jurnal Region, Vol. 7, No. 1, pp. 1-5, 2016. <https://doi.org/10.20961/regio.n.v17i2.35009>
- [10] Stanislawski D. The Origin and Spread of The Grid-Pattern Town. The Geographical Review, Vol. 36, No. 1, pp. 105-120, 1946. <https://doi.org/10.2307/211076>
- [11] Budiman K. Semiotika Visual: Konsep, Isu dan Problem Ikonisitas, Jalasutra, Yogyakarta, 2011.
- [12] Teeuw A. Sastra dan Ilmu Sastra: Pengantar Teori Sastra, Dunia Pustaka Jaya, Jakarta, 1984.
- [13] Adilia W. F., Said I. M. Ritual of Posuo "Pingitan" for the Butoness Society: Semiotics Approach, Journal of Cultural Science, Vol. 7, No. 2, pp. 273-281, 2019. p-ISSN: 2354-7294 e-ISSN: 2621-5101
- [14] Zoest A. V. Semiotika: Tentang Tanda, Cara Kerjanya dan Apa yang Kita Lakukan Dengannya, Yayasan Sumber Agung, Jakarta, 1993.
- [15] Berger A. A. Tanda-tanda dalam kebudayaan kontemporer: suatu pengantar semiotika, Tiara Wacana, Yogyakarta, 2010.
- [16] Noth W. Handbook of Semiotics, Indiana University Press,

- Bloomington, 1990.
- [17] Nugrahenny T. T. Menyingkap Mekanisme Tanda Di Balik Hiperrealitas Tren Hijab: Analisis Semiotika pada Fenomena Tren Hijab. *Jurnal Komunikasi Indonesia*, Vol. 5, No. 1, pp. 16-28, 2016. <https://doi.org/10.7454/JKI.V5I1.8317>
 - [18] Chandler D. *Semiotic: The Basics*, Taylor & Francis Group Routledge, New York, 2007.
 - [19] Danesi M., Perron P. *Analyzing Cultures: An Introduction and Handbook*, Indiana University Press, Bloomington, 1999.
 - [20] Cristomy T., Yuwono U. *Cultural Semiotics*, Center for Societal and Cultural Research, Depok, 2010.
 - [21] Peirce C. S. *Logic as Semiotic: The Theory of Signs in Philosophical Writings of Peirce*, Dover Publications Inc., New York, 1940.
 - [22] Mudjiyanto B., Nur E. Semiotics in Research Method of Communication, *Journal Pekommas*, Vol. 16, No. 1, pp. 73-82, 2013. <https://doi.org/10.30818/jpkm.2013.1160108>
 - [23] Sarosa S. *Penelitian Kualitatif Dasar-Dasar*, Indeks, Jakarta, 2012.
 - [24] Stokes J. *How to do Media and Cultural Studies: Panduan untuk Melaksanakan Penelitian dalam Kajian Media dan Budaya*, Bentang Pustaka, Yogyakarta, 2006.
 - [25] Putra I. G. A. P., Darmawiguna I. G. M. Sunarya I. M. G. Pengembangan Aplikasi Game Jegeg Bagus Bali untuk Memperkenalkan Tahapan Upacara Manusa Yadnya Berbasis Android. *Kumpulan Artikel Mahasiswa Pendidikan Teknik Informatika (Karmapati)*, Vol. 4, No. 2, pp. 111-119, 2015. <https://doi.org/10.23887/karmapati.v4i2.19784>
 - [26] Suravin I. A. P. *Seri IV: Upakara Yajna Manusa Yajna*, Paramita, Surabaya, 2002.
 - [27] Paramadhyaksa I. N. W. Landasan Konseptual dan Penerapan, Pradaksina dan Prasavya dalam Perwujudan Arsitektur Hindu-Bali. *Proceeding National Symposium on Arsitektur dan Tata Ruang (SAMARTA) Bali*, 17, 59-68, 2017. <https://erepo.unud.ac.id/id/eprint/19162>
 - [28] Eisenman F. B. *Bali Sekala and Niskala, Volume I: Essay on Religion, Ritual and Art*, Periplus Editions (HK) Ltd., Singapore, 2005.
 - [29] Yudiantini N. M., Jones D. The Catuspatha Pattern in Balinese Palace: Architectural Conservation and Challenges. *Procedia Environmental Sciences*, Vol. 28, pp. 538-548, 2015. ISSN: 1878-0296
 - [30] Djaja Bharuna A. A. G., Acwin Dwijendra N. K. The Symbolic Meaning of Puri (King's Palace) Architecture in Bali, Indonesia: Through a Study on Palebahan Area Arrangement, *Pal Arch's Journal of Archeology of Egypt/Egyptology*, Vol. 17, No. 7, pp. 13592-13604, 2020. ISSN: 1567-214X
 - [31] Mulyadi L. *Konsep Susun Atur Ruang Bandar Pendekatan Sosiobudaya: Kajian Kes Bandar Bersejarah Cakranegara Lombok Indonesia*, Unpublished Doctoral Dissertation, Malaysia Technology University, Malaysia, 2007.
 - [32] Bondan H. *Tata Ruang Kota Majapahit: Analisis Keruangan Bekas Pusat Kerajaan Hindu-Jawa abad XIV di Trowulan Jawa Timur*, Unpublished Master's Thesis, Gadjah Mada University, Yogyakarta, 1999.
 - [33] Stutterheim W. F. *De Kraton Van Majapahit*, Martinus Nijhoff Publisher, s-Gravenhage, 1949.
 - [34] Mulyadi L. *Pola Grid Kota Cakranegara Lombok*, Paper Presented at the Internasional Jelajah Arsitektur Nusantara Symposium, Institut Teknologi Medan, Brastagi, 2003.
 - [35] Handinoto. Pola Spasial dan Sistem Jalan dari Kota Cakranegara dan Probolinggo: Sebuah Perbandingan, *Journal of Architecture and Built Environment (Dimensi)*, Vol. 27, No. 2, pp. 21-30, 2000. <https://doi.org/10.9744/dimensi.27.2>
 - [36] Bangli, I. B. *Mutiara dalam Budaya Hindu-Bali (pedoman guide)*, Paramita, Surabaya, 2005.
 - [37] Soeka I. G. *Tri Murthi Tattwa*, CV. Kayumas Agung, Denpasar, 2004.
 - [38] Widana I. G. K. *Mengenal Budaya Hindu di Bali*, PT. Pustaka Bali Post, Denpasar, 2002.