

READING OPENING THROUGH MULTIPLE ARCHITECTURAL PERSPECTIVES: CASE STUDY OF COMMERCIAL BUILDINGS IN YOGYAKARTA

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ABSTRACT

Most architectural designers conceive an opening predominantly based on its utility and aesthetic form. Additional intriguing elements may be generated through a comprehensive exploration of an opening. An opening **is** a vital design component that enhances user activities and interactions. This paper investigates methods to interpret openings from diverse architectural viewpoints. Observations were conducted on various objects represented by several commercial edifices in Yogyakarta as a methodological approach to research. The findings derived from the multi-faceted examination of the morphology of an opening illustrate the impact of transparency, dimensions, shape, system, supporting elements, opening height, and framing of the opening view in imparting meaning and added value. The exploration undertaken thus provides a comprehension that the opening transcends its fundamental function of ventilation and illumination, encompassing more broadly the effects of its morphology on the perception it engenders as a cohesive design presentation.

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Keywords: Architectural perception, door, opening, psychological experiences, window

1. Introduction

When designing an object, an architect is accustomed to approaching form based on its function. This approach is carried out to provide a positive perception of the needs of building users (Skaza, 2018). The crucial object that is the eye of a building is the opening. The openings are windows, doors, skylights, and other holes integrated into the building. Architects designed the openings to function as lighting and ventilation. Architects also need to consider various forms of opening that can adapt to the building concept. However, many cases of opening designs need to carry out their functions optimally (Tikhomirov A. et al., 2019).

Apart from the primary function of an opening as a source of natural lighting and air ventilation, there are many other connotations of an opening (Rewatkar, K. P., & Rewatkar, P. K., 2016). The architect's interpretation of the significance of an opening becomes an additional consideration after the empirical comprehension of the opening's function and form. By examining openings from diverse perspectives, the investigation of openings transcends mere considerations of function and form. The architectural creations will possess greater significance as a medium for interaction and engagement. This

methodology culminates in a conceptual dimension and permits the architect to investigate the opening rigorously.

Yogyakarta City has been selected as the focal point for the investigation to document the phenomena surrounding the opening. Numerous commercial edifices have been constructed within this municipality to furnish public spaces for the community. The commercial district consistently attracts visitors as a prominent student hub and a notable tourist destination. Undertakings such as networking with friends, initiating conversations, studying literature, and carrying out job-related activities are regularly observed in Yogyakarta, particularly cafes and restaurants.

Furthermore, Yogyakarta's unique cultural identity, which harmoniously blends traditional Javanese values with modern urban development, presents an ideal setting for exploring how openings in architectural design contribute to social interactions and spatial experiences. This interplay between tradition and modernity creates a distinctive architectural landscape, making Yogyakarta a compelling and relevant locus for this research.

Figure 1 delineates the commercial establishments curated by the authors. Metropolitan regions emerge as the predominant locations frequented, alongside several precincts within the Yogyakarta district. The author

identifies openings within commercial edifices to be documented and analyzed as apertures facilitating interaction between individuals and their environment. This manuscript investigates openings from many vantage points to formulate an innovative methodology for their interpretation, transcending conventional considerations of functionality and aesthetics. The inquiry endeavors to proffer a novel and significant perspective on the design of openings. Architects possess the capacity to impart distinctive interpretations that enliven a structure.

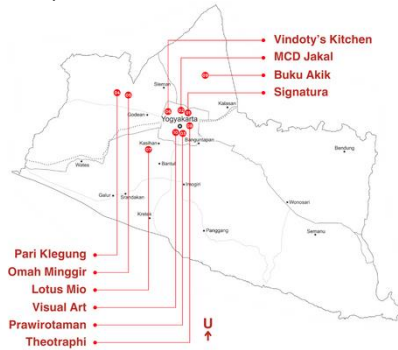


Figure 1. Location of Case Study Area in Yogyakarta

Source: Author (2024)

2. Literature Review

Since living in caves, humans need light to enter light to see in indoor space. Several caves were discovered in China and Europe, and it was found that humans dug holes to create openings (Sanafi, 2023). It proves that connecting with indoor and outdoor spaces is essential for humans. Several studies say that humans are more attracted to space with many openings. Apart from providing air ventilation, the opening offers lighting and integration between spaces. Windows and doors are the elements most often encountered in the context of building openings. However, it is not just limited to windows and doors; openings are defined as all holes in the building.

According to Sanafi (2023), architects implement openings in buildings in the context of the main elements of the facade. Openings also give visitors a first impression of the architectural experience. In general, windows or openings are usually in the walls of buildings, but in development, the openings can be formed on the roof or are called skylights—the difference in each form of opening lies in the amount of lighting and air that enters.

The famous architect Le Corbusier used openings in the 19th century to provide light in British factories so employees felt more comfortable working. The development of windows continues to increase in various modern construction techniques and has become global in various standard types. The opening element in a building ultimately becomes the main fundamental component in architectural design (Sanafi, 2023).

The orientation of the opening or facing direction will affect how it captures light and air into the building. In addition, the need for privacy is physiologically determined by the presence of an opening. It is designed in various transparencies according to the needs of building users. In designing an opening, the architect needs to understand the function of the building. This is related to how the opening can become a design solution. Several studies

discuss how openings such as windows answer thermal and lighting problems by optimizing their function (Tikhomirov, 2018).

Research on the contribution of building opening design to the traditional character by Ja'afar et al. (2018) shows that contextual design about the environment can impact the preservation of local identity. Adjustments to their functional purposes should also accompany efforts in designing contextual openings. Thus, this research provides insight into the fact that opening design encompasses a building and contributes broadly through the character it fosters.

Historically, architects have used geometric ratios to determine the dimensions of openings in composing their proportions with various building parts (Nassar et al., 2020). Different proportions have been used to arrange various building elements, which have resulted in distinct characters. Analysis and discussion of heritage buildings reveal that window designs possess unique proportions, beauty, and distinctiveness that can be examined in depth.

In addition to aspects of proportion and beauty, Ludlow (1976) mentions that providing users with physiological and psychological experiences through window design is crucial. This underscores the importance of guiding new research beyond mere empirical physical aspects and considering window design's broader conceptual or philosophical dimensions.

Based on literature studies, openings are widely researched as objects that function as lighting and ventilation. Openings are researched to produce the most optimal shape capable of providing thermal comfort to the building. Apart from its function, the opening has a deeper meaning. The study in this paper understands the phenomenon behind an opening from a researcher's perspective by looking at reality from an architectural perspective. This study actively observes and discovers the conceptual side of openings by considering aspects of location, culture, time, and the surrounding activities.

3. Research Method

In discerning novel perspectives while examining architectural openings, this study employs a qualitative methodology grounded in theoretical frameworks. The empirical data collected pertains to the phenomena associated with the openings of various commercial edifices. This commercial precinct is regarded as more audacious in its exploration of openings in terms of functional utility and geometric configuration.

Figure 2 illustrates the research framework relevant to the examination of architectural openings. The initial empirical phase involves observation, focusing on cafes and restaurants within the scope of commercial edifices. Everyday activities near the opening include utilizing laptops, reading, conversing, and appreciating the surrounding view. These activities, often unnoticed, are subtly shaped by the presence of the architectural opening.

The resultant field data will undergo systematic analysis to comprehend the observed openings from an architectural standpoint. The collected data encompasses dimensions, transparency, typology, functionality, and associated components. Subsequently, the data will be further categorized, emphasizing the interpretation of

reality and the abstraction of experience across a spectrum of novel themes. The thematic classification derived from this novel perspective on the analysis of an opening engenders theories relevant to understanding such architectural features.

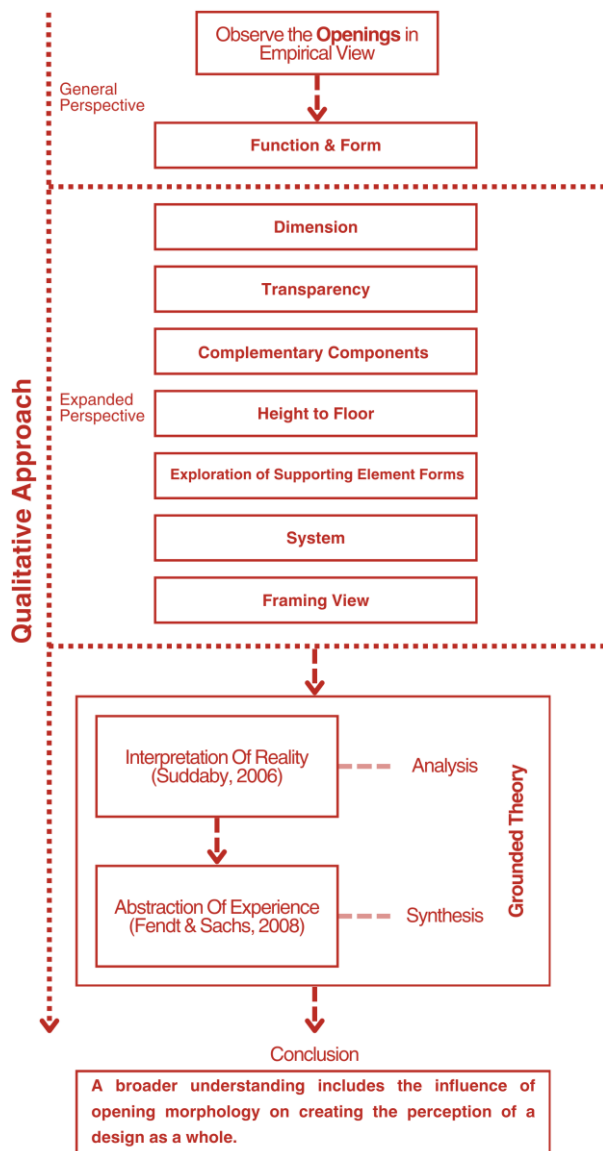


Figure 2. Research Framework in Reading Opening
Source: Author (2024)

4. Results and Discussions

The initial impression is usually reflected when people see an opening: form and function. For example, if the building functions as a cafe with a traditional Javanese concept, the opening will be a wooden window or door and

a typical "krepyak" system. This design will create a general perception that one is in a homey rural area, although in the end, each person's perception will be different.

Figure 2 also shows that after looking at openings from a general perspective, there is a broader perspective in reading openings beyond empirical limits. Conceptual thoughts, historical values, and the story behind an opening are interesting to explore because that is where the accurate understanding of design begins.

Apart from its dimensions, transparency, complementary elements, systems, and ability to frame the view, the opening facilitates human interactions. And activities in the surrounding area. According to Soliman (2013), certain aesthetic judgments are expressed by an architectural element, one of which is the opening. This level of perception becomes part of the complete design process in achieving a suitable architectural design.

4.1 Reading through Forms

In the context of the intensity of activity around the opening, the influence of the opening form with a modern design tends to be more passive than a conventional opening design. This phenomenon occurs because traditional designs in modern times are increasingly rare, so people are interested in creating interaction activities at this opening. This aligns closely with what Idrus et al. (2024) stated. Community engagement can be enhanced by combining traditional design elements with modern ones that meet the functional demands of society while still respecting cultural narratives. For example, the Pari Klegung restaurant and Cafe Omah Minggir have almost the same opening typology. Human interaction around the opening is quite active, providing space for transaction activities and opening up exciting kitchen activities to be presented to customers.

Then, Cafe Theotraphi, with a wooden window design and a sliding system, actively opens when the barista serves coffee that has been made and when transaction activities take place. For the Vindoty's Kitchen restaurant, the opening is actively used by customers when choosing the menu and picking up food like at a warteg (the phrase for a traditional restaurant that provides home-cooked Javanese food).

Figure 3 also illustrates a different situation from Cafe Signatura and several restaurant openings in the Prawirotaman area; the relatively modern and minimalist design tends to be passive in the context of activity intensity. In general, the influence of the opening form is significant in generating user interaction in the building.

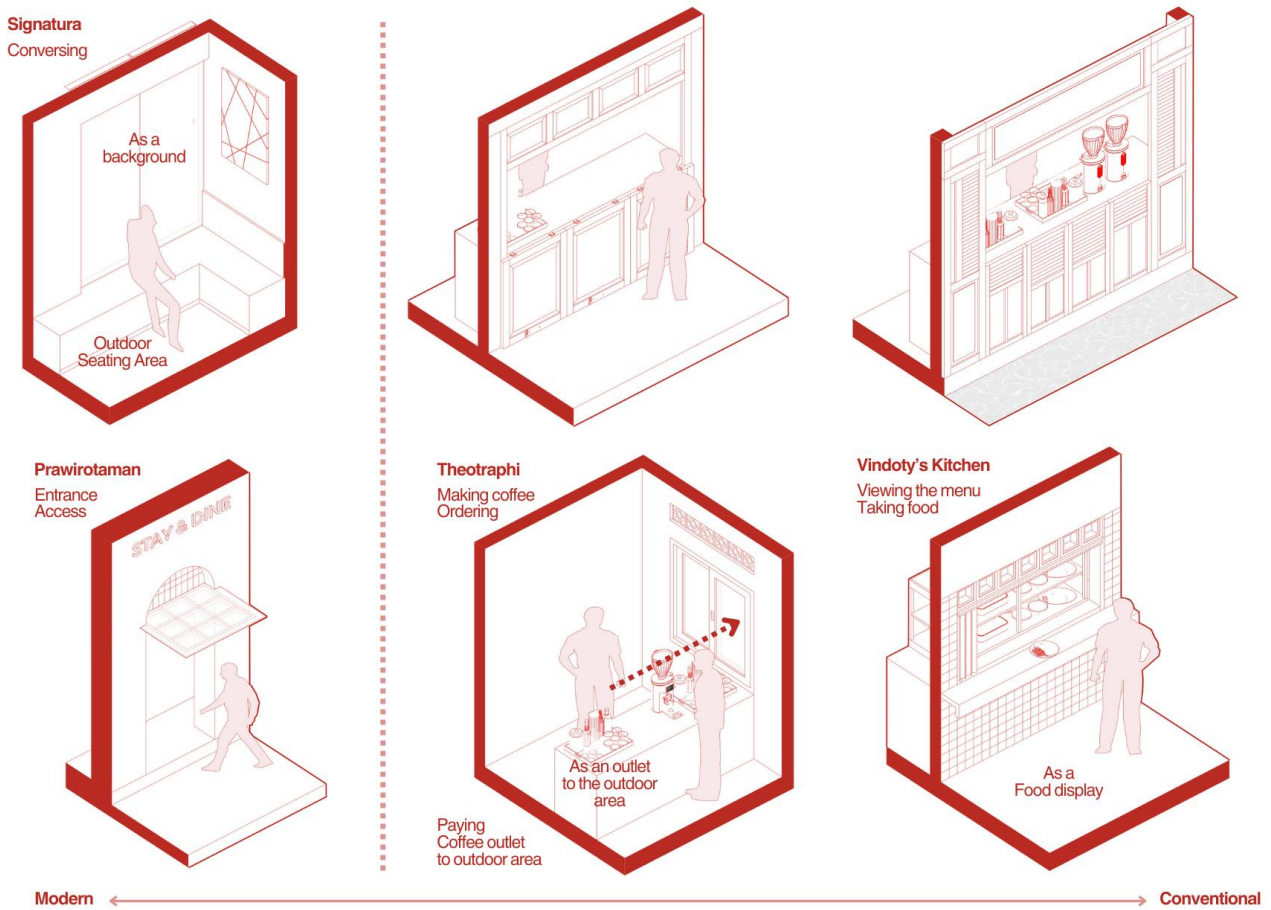


Figure 3. Reading form of the opening
Source: Author (2024)

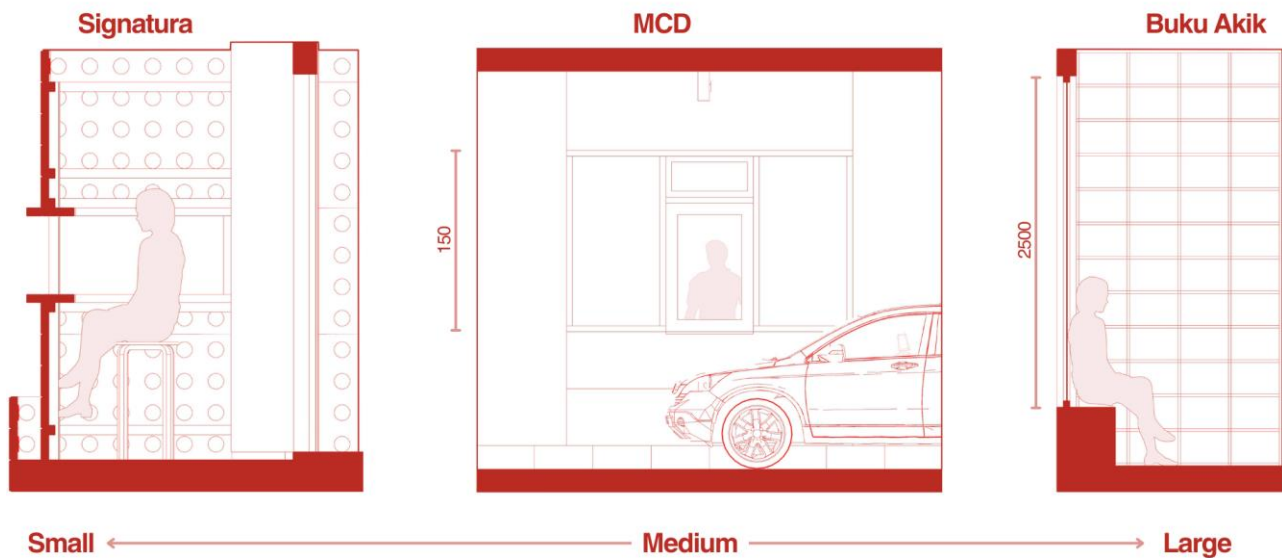


Figure 4. Reading dimension of the opening
Source: Author (2024)

4.2 Reading through Dimension

Figure 4 explains that the dimensions of the opening not only adjust its function but also influence human activities. As at Cafe Signatura, small dimensions tend to create closeness between humans and openings. Then, medium opening dimensions in buildings are usually quite focused on adjusting the type of activity, such as the window in the McDonald's drive-thru area, which makes it easy for staff

and customers in the vehicle to make transactions. Moreover, large opening dimensions like those in the Buku Akik tend to interact more passively with users because they are usually used as a background. Hence, the indoor atmosphere is more integrated with the outdoor space.

4.3 Reading through Transparency

Reading the opening through its transparency provides a

new definition besides its function regarding the amount of light and ventilation that enters. The existence of an opening offers a high limit of privacy value when it cannot reflect activities in the space. Indirectly, users will tend to passively interact with openings that have lower transparency, such as in the Pari Klegung section of Pomah (lodging). Frosted glass is placed in the bedroom to maintain privacy while still controlling the proximity of the outside and inside spaces. On the other hand, at Cafe Omah Minggir, there is an opening without glass, eliminating the boundary between the kitchen space and the cafe area so that customers can directly witness the coffee-making activity. The openness created by openings without glass allows for integration between spaces. This relates to the design method of Luigi Caccia Dominioni, as studied by Saeki, T., & Katagiri, Y. (2024), demonstrating that the design of openings can manipulate the relationship between adjacent spaces. Then, at the Akik Bookstore, the clear glass in the opening provides a boundary between the inside and outside space, giving the impression of being closed. Moreover, at Theotrapi, the glass with full stickers directly becomes a block view, which makes activities in the room more focused.

4.4 Reading through Components

In its development, the opening does not simply stand alone but is equipped with components that adapt to the design objectives. Figure 6 illustrates that this additional component holds a unique function and meaning through the image displayed in the opening, regardless of its function. At the Lotus Mio cafe, carved ornaments were added at the entrance to strengthen the local character,

which attracts customers, especially tourists, to experience the Javanese feel. The historical values formed become the identity of the opening in building a cafe atmosphere.

Some of the perceptions that emerged in this research include:

1. The ornaments on the Lotus Mio give the impression of the locality that the building wants to highlight.
2. Curtains in Vindoty's Kitchen, apart from conceptually wanting to give a homely and warm impression, the curtains are used as protection for the food served.
3. The canopy at the restaurant in Prawirotaman is not only limited to providing shade but also creates a transitional space from outside to inside.
4. The platform in the McDonald's Drive area creates an ergonomic aspect that accommodates taking food orders.
5. The railings in Pari Klegung not only provide an element of safety, but the horizontal arrangement of the railings gives a contrasting impression to the vertical opening elements.

4.5 Reading through Its Height From the Floor

The height of an opening impacts its affordability and usefulness for users in accommodating an activity. Figure 7 shows that placing an opening that is too high tends to make it unreachable by users, thereby significantly limiting activities that involve them directly. On the other hand, a low and large opening means it is no longer seen as an opening but rather as a wall, which, in the end, only acts as a divider between spaces. A height of around 1 meter or as high as an adult's waist is the most ergonomic positioning of the opening to accommodate active activities.

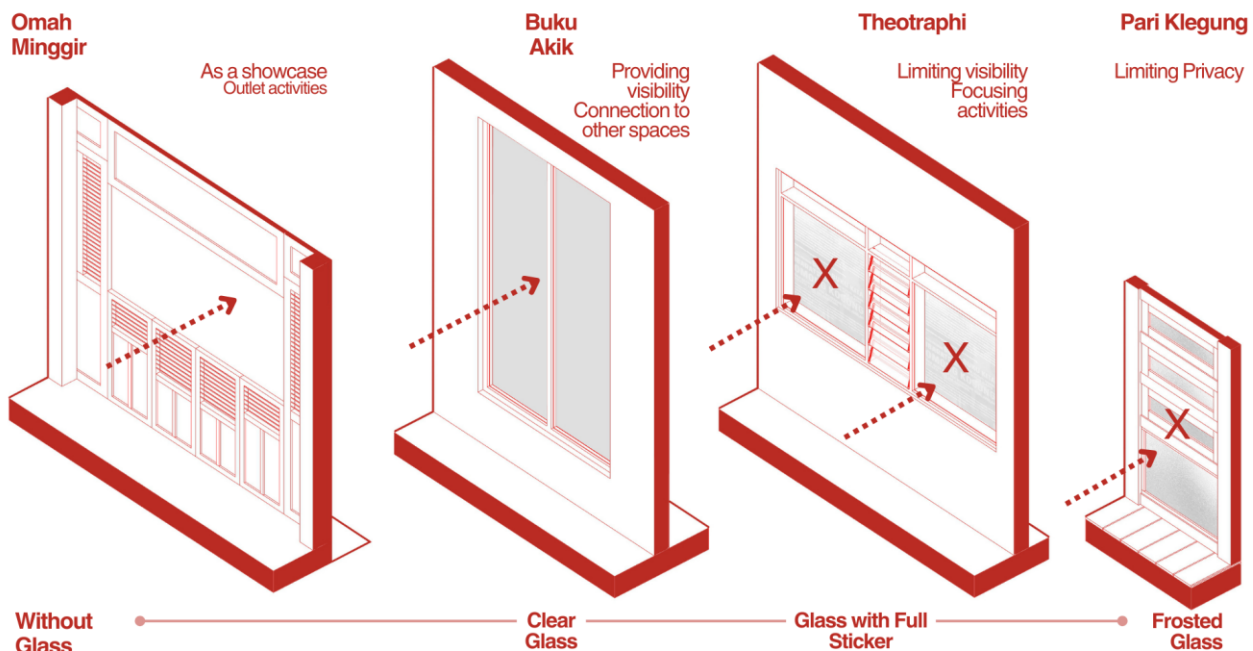


Figure 5. Reading transparency of the opening
Source: Author (2024)

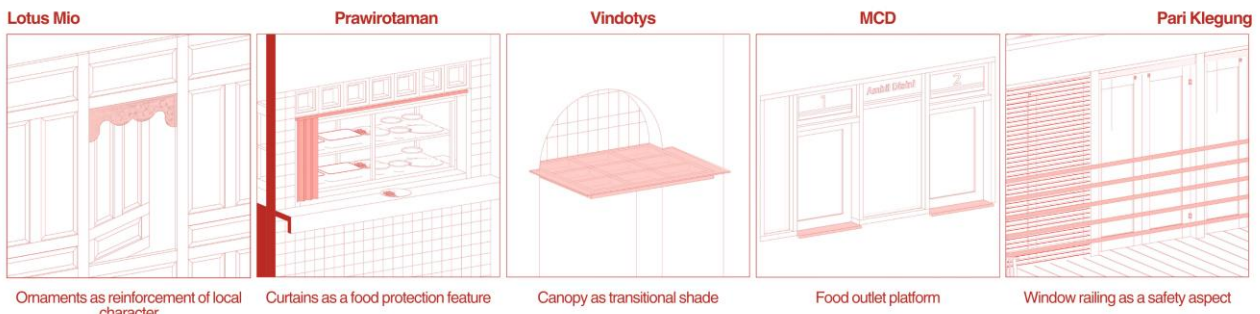


Figure 6. Reading components of the opening
Source: Author (2024)

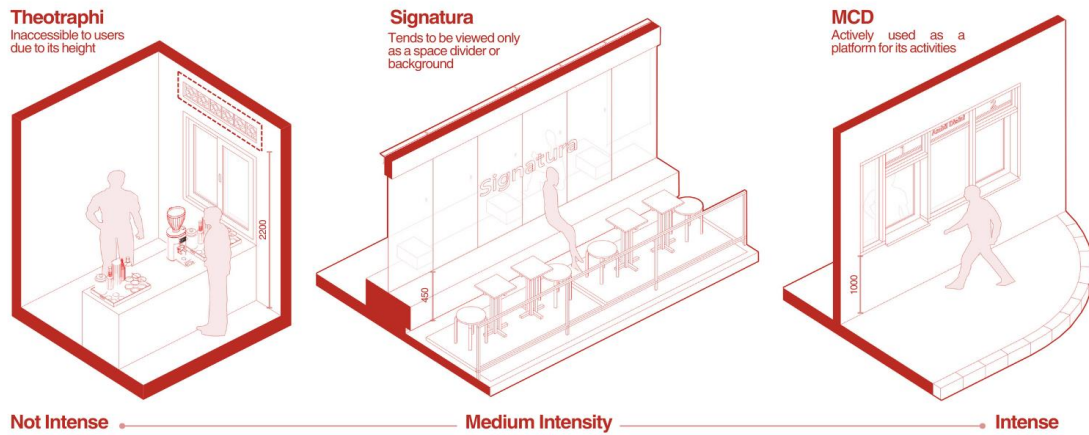


Figure 7. Reading height of the opening
Source: Author (2024)

4.6 Reading through the Exploration of Supporting Elements Forms

Figure 8 illustrates the several opening designs in this research, which added supporting components to emphasize the opening itself. A box-shaped canopy is provided at the entrance of Cafe Signatura, which directly extends the entrance area to this building. Subconsciously, people are directed to go inside and feel the transition of outer and inner space on several steps towards the entrance.

At the Pari Klegung restaurant, the thickening of the walls is not just a stone wall structure; this thickness provides space to move from one room to the next. The perception of transitional space also occurs in restaurants in Prawirotaman, which use canopies for more than their function as eaves.

4.7 Reading through System

Figure 9 shows the types of window systems often encountered, such as dead windows, sliding windows, nako

windows, and double swings. These systems are usually determined based on the building's function and availability of space. However, there is another meaning behind a window system, such as building a specific impression to create a complete translation of the opening design concept.

At Buku Akik, blackout windows capture daylight and focus activities in the book reading room. The sliding window in the McDonald's drive-thru area indirectly responds to the car window opening system, which also shifts vertically. The harmony of this system is an adaptation of the opening to the activities around it.

The nako window, which is located between two fixed glass windows, gives the impression of an imaginary boundary that divides the territory of the customer's seating area. Also, the double swing window in Pari Klegung is the most appropriate because when people open it with both hands, the impression of openness to nature is what this opening wants to capture.

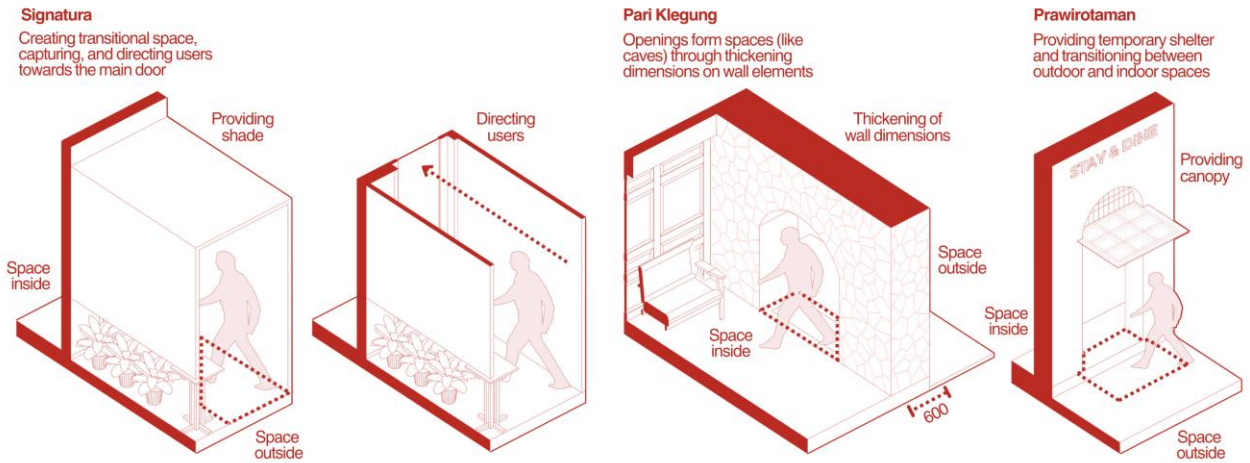


Figure 8. Reading through a supporting element of the opening

Source: Author (2024)

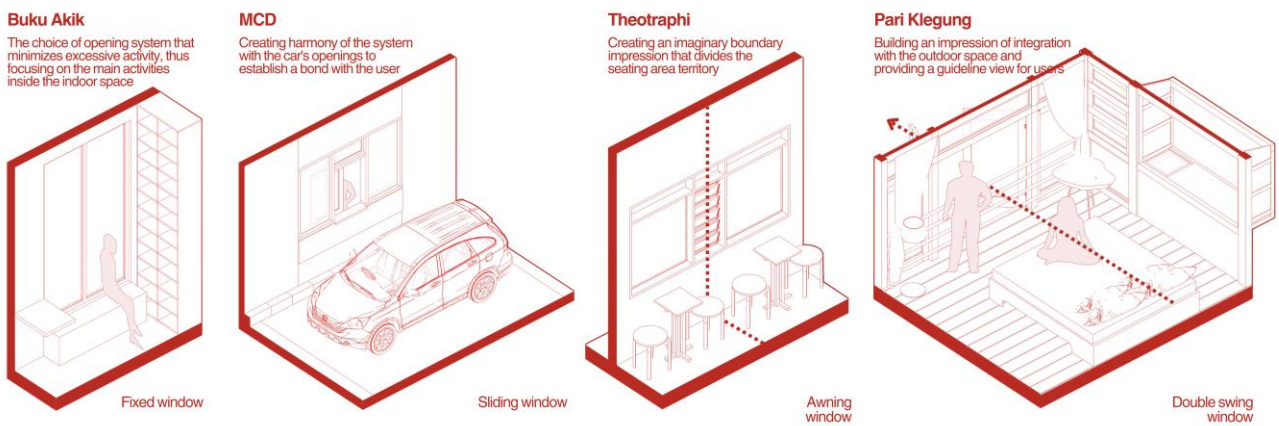


Figure 9. Reading the system of the opening

Source: Author (2024)

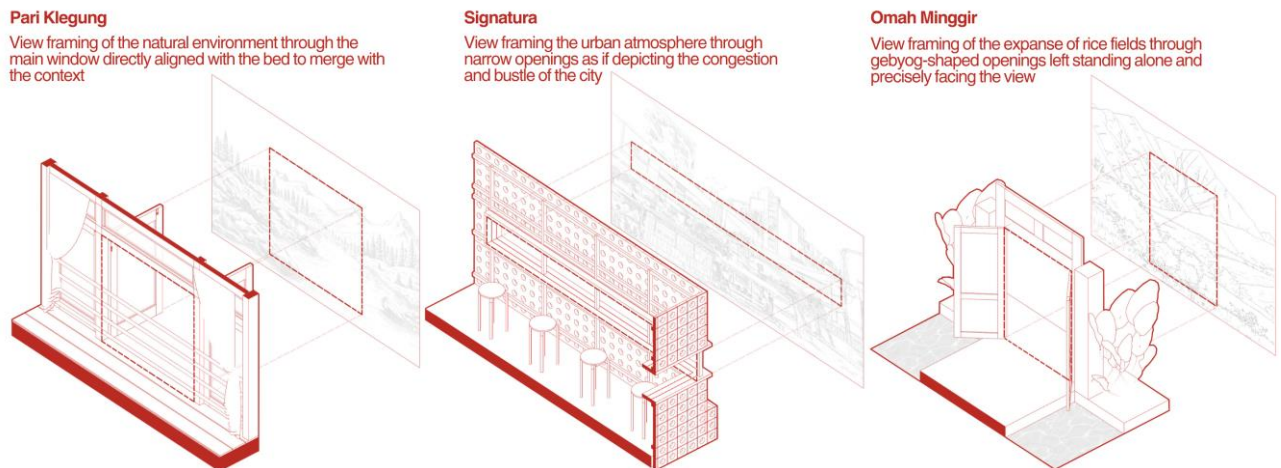


Figure 10. Reading through view framing

Source: Author (2024)

4.8 Reading through View Framing

The context of the view around the building at an opening is one of the things that will be captured. More than just capturing what can be seen from the opening from the inside out, there are memorable things that are the most memorable for users.

4.9 Assessment Rubric for Openings

Efforts made in reading an opening through the eight perspectives outlined earlier have led to a deeper understanding. In his book, Robert Venturi (1977) argues that creativity in the configuration of design elements can generate complexity and contradictions rich in meaning within the context of architecture. Therefore, an opening can contain implicit meanings and shape the character of the design based on six essential aspects, which are summarized through a multi-perspective reading of the opening. As for mapping the capability of an opening to accommodate implied meanings and character formation in design, a spider web diagram (Figure 13) and a straightforward assessment rubric are created (Table 1).

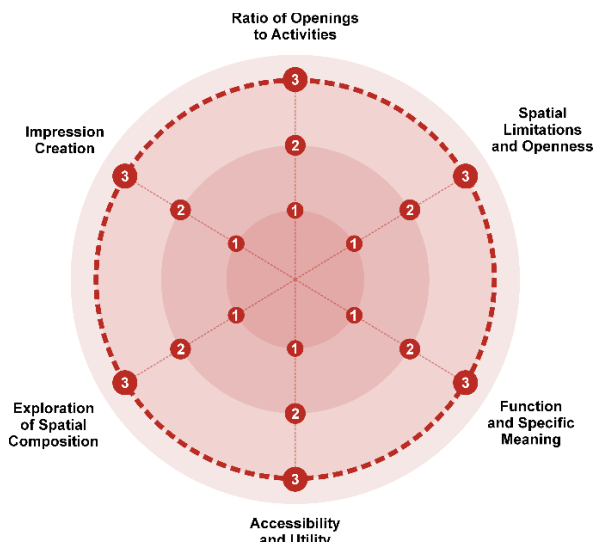


Figure 11. Spider web diagram
Source: Author (2024)

Table 1. Assessment rubric

Points	1	2	3
Ratio of Openings to Activities	Large Ratio, Low-Intensity Activities	Moderate Ratio, Moderate Activity Intensity	Small ratio, high activity intensity.
Spatial Limitations and Openness	Low Transparency	Moderate Transparency	High transparency.
Function and Specific Meaning	Empirical	Conceptual	Philosophical.
Accessibility and Utility	Hard-to-reach, low-intensity activities	Easy access, moderate activity intensity.	Easily accessible, with high activity intensity.
Exploration of Spatial Composition	Having the ability to separate space	Having the ability to connect spaces.	Having the ability to insert space.

Impression Creation Through an opening Through openings and activities. Through openings, activities, and overall space.

Source: Author (2024)

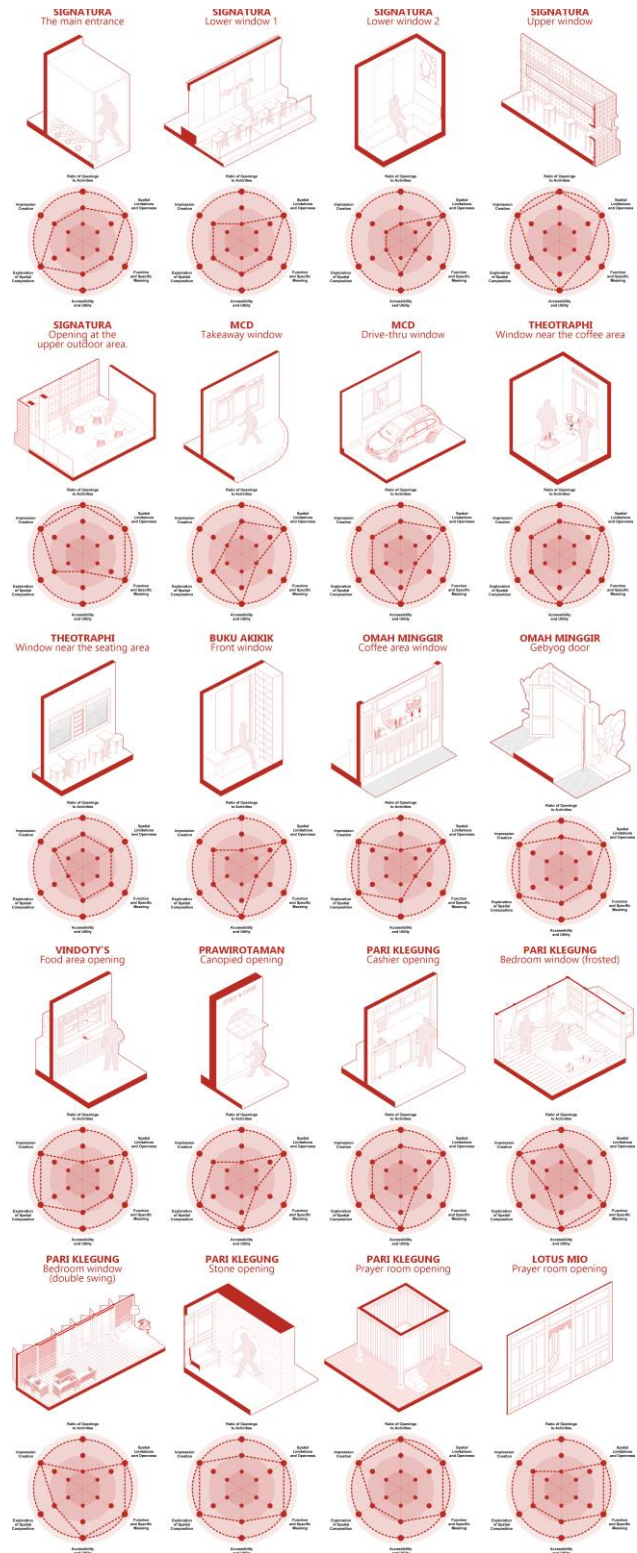


Figure 12. Mapping of openings
Source: Author (2024)

4.10 Assessment of openings and their patterns

The previously prepared assessment rubric maps the capabilities of various observed openings in forming design

characters. The mapping results can be seen in Figure 12, which is presented as a spider web diagram. The data obtained through mapping these openings will then be overlaid based on specific emphases on the eight perspectives mentioned earlier to examine the emerging tendency patterns.

The emphasis on the dimensions of the opening results in two pattern tendencies: when the opening is made with large dimensions and when it is made with small dimensions. A large opening dimension tends to result in a significant ratio between the opening and the activities around it, with a relatively low intensity. Large openings often have a more straightforward utilitarian function and lack symbolic or specific meaning within the context of the space, resulting in a rather general and non-profound impression.

Conversely, openings with small dimensions tend to create a more intimate and specific relationship with their surroundings. Small openings can provide sharper visual focus, directing attention to particular elements and creating a more intense spatial experience. Nonetheless, both large and small openings share similar characteristics regarding space limitation and openness, accessibility, usability, and the potential for exploring spatial composition.

Large openings are more open and inviting, while small openings are more selective and restrict views. However, both can be used to create variation and dynamism in space design, offering different experiences to users based on the specific context and purpose of the building.

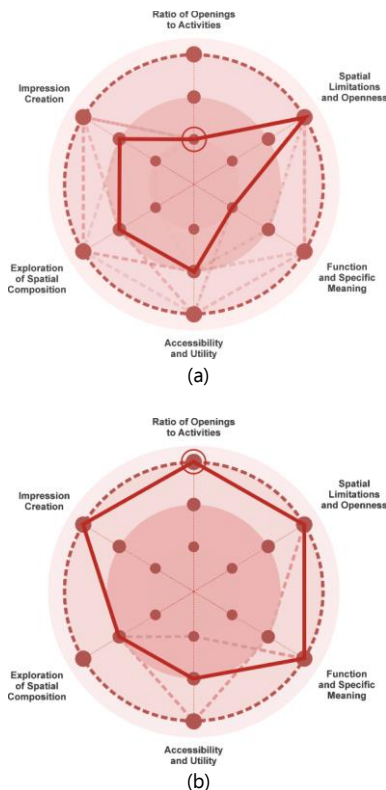


Figure 13. The pattern emphasizes the large (a) and small (b) dimensions
Source: Author (2024)

The emphasis on the transparency level of an opening indicates a pattern that tends not to be designed to have a

specific function and meaning. High transparency is typically associated with large-dimensional openings and is expected to be easily accessible but with a moderate intensity of activities around it. Design exploration of supporting elements is often conducted, resulting in efforts to create a high level of distinct impression.

The application of high transparency openings in this study is often used in commercial buildings (such as cafes), whereas the opposite tends to be true in more private buildings. This aligns with research in Malaysia by Ja'afar and Harun (2018) on user comfort and the effectiveness achieved in commercial buildings by utilizing large openings with high transparency. The study also found that prioritizing privacy in residential buildings is crucial for users, thus avoiding high transparency in the design of openings.

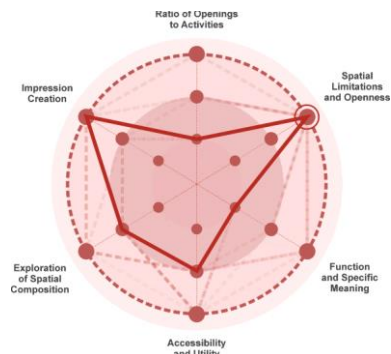


Figure 14. The pattern emphasizes transparency
Source: Author (2024)

Figure 14 shows the emphasis on components within an opening, complementing it with specific function and meaning, forms a pattern that tends to create a memorable impression. Opening components are typically integrated into openings with a moderate ratio between dimensions and the activities around them, and they are easily accessible to users.

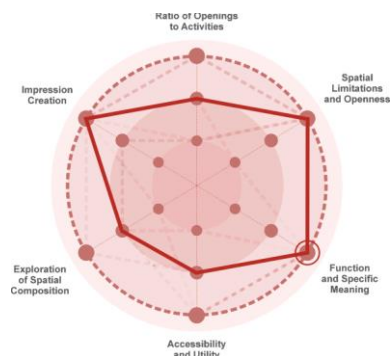


Figure 15. The pattern emphasizes opening component
Source: Author (2024)

The emphasis on the placement of an opening is closely related to the level of accessibility and utility of the opening. An opening within easy reach creates a high level of spatial openness but may not have a specific function and meaning. Based on the tendencies shown in Figure 18, openings placed within easy reach and with high utility tend to create easy-to-read and understandable impressions for users.

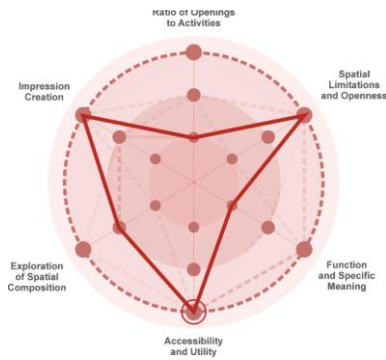


Figure 15. The pattern emphasizes the placement of the opening
Source: Author (2024)

The emphasis on exploring the design of supporting elements of an opening can expand the possibilities for architectural spatial composition exploration. This emphasis forms a tendency that can enhance the ability of openings to embody specific functions and meanings, ultimately creating a unique impression.

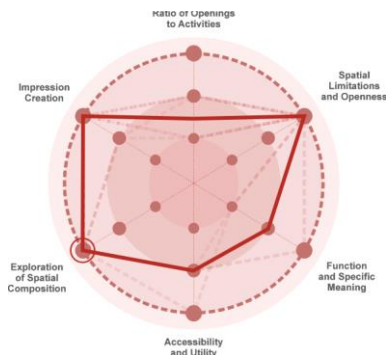


Figure 16. The pattern emphasizes the exploration of supporting elements
Source: Author (2024)

The last emphasis is on the combination of form, system, and view framing of an opening. This emphasis is primarily aimed at creating a unique impression. Emphasizing the combination of these three aspects is closely related to embedding specific functions and meanings in the opening without disregarding ease of accessibility, as well as the ratio between the dimensions and activities happening around it at a moderate level.

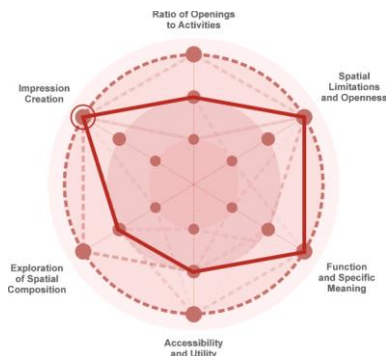


Figure 17. The pattern emphasizes the combination of form, system, and view framing
Source: Author (2024)

5. Conclusion

It is like reading a book; it is not just about reading the presentation word for word on each page, but rather trying

to understand and explore the meaning of each word until it comes to a deeper and more conceptual understanding. This methodology was subsequently modified to facilitate the examination of the occurrences surrounding the aperture. Investigations are conducted on elements perceptible to the senses, encompassing attributes such as form, dimensions, opacity, constituents, elevation, and analysis of the morphology of supportive structures, systems, and perspectives to elucidate the phenomena.

The emerging phenomenon directs us towards a novel understanding that openings encompass more than mere functionality and aesthetic form. At a particular juncture, an opening may evoke an image akin to a work of art, capable of engendering an impression, possessing specific significances, and being subtly conveyed through an affinity for its empirical characteristics. Conversely, as an architectural component, it can define the essence of a space, thereby articulating a comprehensive design philosophy.

The fundamental nature of this comprehension can be utilized during the design planning phase, particularly concerning the opening, ensuring that the resultant work transcends mere superficial "appearance" and embodies profound character and significance. This principle extends beyond entrance design; it applies to architectural design in a more extensive context (Figure 18).

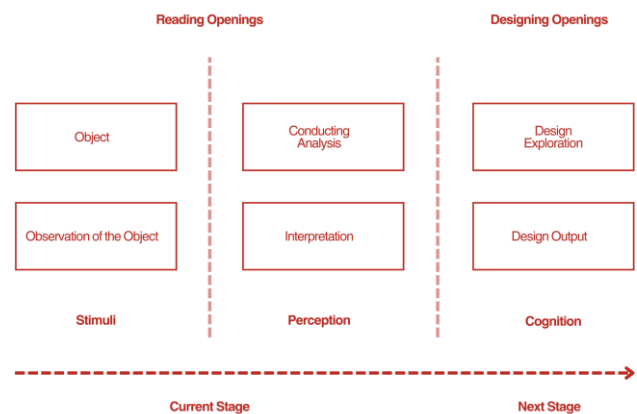


Figure 18. How to read an opening
Source: Author (2024)

The investigations and analyses conducted concerning the introductory aspects and the subjects broached in this instance may serve as a foundational basis for subsequent scholarly inquiries. In forthcoming research endeavors, additional observations must be performed across an expanded range of data and conducted repeatedly until data saturation is achieved, thus guaranteeing that the resulting research is more comprehensive and accurately represents the overall characteristics of openings.

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