

Materiality and Sensibility: Phenomenological Studies of Brick as Architectural Material

Tony Sofian ^a / Iwan Sudradjat ^b / Baskoro Tedjo ^b

^a School of Architecture, Planning and Policy Development,
Bandung Institute of Technology, Indonesia
Corresponding author: tonysofian@me.com

^b School of Architecture, Planning and Policy Development,
Bandung Institute of Technology, Indonesia

Received 2020-01-03; Revised 2020-04-15; Accepted 2020-05-06

ABSTRACT

An incessant challenge for the architects nowadays is how to design architectural projects that support the creation of meaningful experiences, benefitting from the interconnection between building materiality and human sensibility. The purpose of this study is to provide a phenomenological understanding of brick as an architectural material and how people perceive its architectural space and interpret its architectural meaning. Method of phenomenological analysis from Moustakas (1994) is adopted to guide the whole research procedures; using in-depth and multiple interviews with the users of three different buildings who shared experiences in inhabiting and interacting with the environment created with brick as an architectural material.

Keywords: *phenomenology, materiality, sensibility, brick*

INTRODUCTION

Brick is a material widely used for building purposes. Experiences of inhabitants who resided in a brick building are essential in understanding the materiality of brick in architecture. Merleau-Ponty (2002) remarks that in the pre-rational world, the five senses are crucial for human existence; they serve as gateways to the understanding of life world. Equally, the human senses also serve as a gateway to the understanding of materiality in architecture. Architects are now increasingly aware that material selection in architecture is of prime importance. It should be taken into consideration at the initial phase of the architectural design process to secure the materiality, the experiences, and the meaning they wish to convey by the building. Pallasma (2012) confirms that architectural experiences, including material quality, space, and scale, are all based on the human senses that interact and support one another. Materiality, as intended by architects, can generate a variety of architectural experiences and meanings. This study will particularly explore the materiality of brick in architecture as conveyed by three brick buildings designed by contemporary architects in Indonesia.

This study has four aims: The first is to portray the relationship between the materiality of brick and the sensibility of peoples who occupy three buildings purposefully selected as cases of study. Second aims to depict architectural perceptions and interpretations generated by the materiality of brick in the three case study buildings. Third is provision of an alternative reference for architects who are interested in creating meaningful architectural experiences, based on the interconnection between building materiality and people's sensibility. Fourth initiates an inductive inquiry on materiality in architecture.

In inhabiting the built environment that they established, humans are continuously trying to relate to and understand the space by connecting it with distinct objects. Humans see objects in a certain area and understand them by connecting them with the sensation of being near or far from other objects. This kind of spatial relationship is applied unconsciously using sensory, perceptual, and conceptual systems. As stated by Merleau-Ponty, through the depth of our view, the speed, softness, and hardness of objects arise (Holl, 2006; Malnar, 2004).

Zumthor (2006) argues that humans cannot capture and experience a place directly. They experience it through "the atmosphere, all the things that exist, the people, the sound of airflow, nature sound, color, material presence, texture, and shape," through all forms that humans can appreciate. The atmosphere is the first impression that humans can get when entering a place, and soon they will find out whether they like it or not. Humans feel an atmosphere that directly affects their perception and mightily colors their spatial experiences (Griffero, 2017).

Steven Holl asserts that the reality of architectural experience is based on the tectonic language of buildings and comprehensible from the construction actions for the senses (Holl, 2006: 35). Architects prioritize the involvement of senses as a critical factor in designing built environments; while bearing in mind that pleasant architectural experiences would derive from intimate contact between building materiality and human sensibility.

METHODOLOGY

This study discloses the interconnection between building materiality and human sensibility. It analyzes authentic experiences of peoples who have spent a certain time in the buildings made of brick as regular users. Three brick buildings are purposefully selected as case studies: (1) Katamama Resort in Seminyak, Bali; located beside the famous entertainment center, Potato head, designed by AndraMatin (Figure 1). (2) Herbal Company Headquarter Java Plant in Tawangmangu, Central Java; situated in Tawangmangu Highland, designed by AndraMatin (Figure 2). (3) GMT Institute Office in Menteng, Jakarta; situated adjacent to Sudirman Railway Station, Jakarta, designed by PHL Architects (Figure 3). Purposive sampling has resulted in 12 regular users of these buildings as eligible participants of this study. This study relies heavily on in-depth and multiple interviews with the participants to collect information on their personal experiences in their interaction with the brick buildings they occupied.

Amongst many methods and protocols applicable to phenomenological research, this study owed much to Moustakas (1994), Colaizzi (1978), and also Yüksel et al. (2015). The phenomenological analysis procedures adopted for this study can be summarized into three main phases, as graphically shown in Figure 4:



Figure 1:
Katamama Resort in Seminyak, Bali



Figure 2:
Herbal Company Headquarter Java Plant in
Tawangmangu, Central Java



Figure 3:
GMT Institute in Menteng, Jakarta

- I. Phenomenological Reduction, which consisted of 6 consecutive steps:
 - 1) Horizontalizing (Listing all relevant expressions);
 - 2) Reduction of experiences to invariant constituents;
 - 3) Thematic clustering to create core themes;
 - 4) Comparison of multiple data source to validate the invariant constituents;
 - 5) Crafting of individual textural descriptions of participants;
 - 6) Crafting of composite textural descriptions.
- II. Imagination variation, which consisted of 2 consecutive steps:
 - 7) Construction of individual structural descriptions;
 - 8) Construction of composite structural descriptions.
- III. Essence
 - 9) Synthesis of textural and structural descriptions into an expression.

The analysis of data follows a systematic procedure progressing from a small unit of analysis to the larger one. The researcher highlights statements, sentences, or important quotes (significant statements) that provide an understanding of what elements that have been experienced by participants, to a broader unit of analysis (units of meaning) which give a more detailed explanation on "how" they experience it (Moustakas, 1994).

In performing phenomenological analysis, the researcher should put *epoché* into practice: to bracket themselves from previous studies. Giorgi (2009) sees this bracketing action not as an act of forgetting all previous experiences but as a precaution not to allow prior knowledge to interfere with the ongoing study so that researchers can focus solely on the experiences of participants involved in the current study.

The ultimate purpose of this phenomenological analysis is to capture the essence of brick materiality as perceived by the peoples who sense and experience it in the context of three case study buildings.

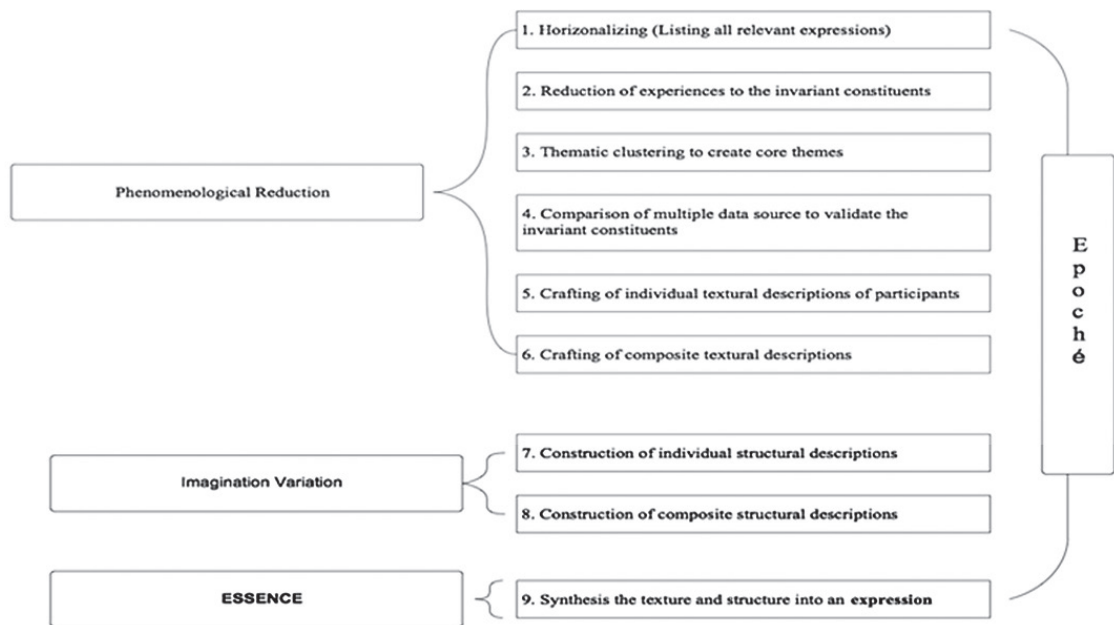


Figure 4:
Three main phases in phenomenological analysis
(Source: Adopted from Moustakas, 1994)

DATA AND ANALYSIS

The data collected through in-depth interviews with 12 regular participants consisted of responses concerning the materiality of brick as experienced by participants in their daily interaction with the three respective buildings. The process of data analysis follows the procedures as already outlined in Table 1.

I. Phenomenological Reduction:

In the horizontalizing process (step 1), the researcher extracts significant statements from 116 formulated meanings. Table 1 shows three examples of significant statements and formulated meanings interpreted from participants' responses on three buildings, namely Katamama (from the participant no. 3), Java Plant (from the participant no 4), and GMT International Office (from the participant no 2).

Table 1: Examples of Significant Statements & Formulated Meanings on the Materiality of Brick

Materiality of Brick	No	Participants	Significant Statements	Formulated Meanings
3 of 116 Formulated Meanings on Materiality of brick	1	KM3	We see the brick in terms of this color as if the color tells stories, especially with a combination. That is what makes us not feel lonely.	The different color combinations between bricks can form a story because the color patterns of each wall are different so that it does not feel lonely.
	2	JP4	I am comfortable here. What is certain is that it is convenient, because the place is cool. The building is unique here.	People enjoy doing activities in unique brick buildings.
	3	GMT2	It doesn't look like an office. It is cozy, so I cannot imagine if this is an office. Comfortable. I feel homey, like at home, not in an office.	I am doing activities inside a brick building that is comfortable and just like at home and not in the office.

In step 2, the research proceeds with the reduction of participants' experiences as reflected in 116 formulated meanings to invariant constituents so that it can subsequently continue with thematic clustering of the materiality of brick (step 3). Table

2 displays 11 cluster themes on materiality of brick resulted from inferences drawn from 116 formulated meanings. By comparing multiple data sources, the researcher then validates all these invariant constituents (step 4).

Table 2: Cluster Themes on the Materiality of Brick

1. Old buildings that create memories <ul style="list-style-type: none"> • Architecture can evoke childhood memories. • Memories of a Brick building standing magnificently like an empire.
2. Human intentions <ul style="list-style-type: none"> • Bricks made one by one using human hands to provide extraordinary energy. • Making bricks takes a long time and a lot of costs. • The unequal form of each shape and arrangement allows brick buildings to have a character that shows a human initiative.
3. Timeless <ul style="list-style-type: none"> • The color of the bricks has timeless patterns.
4. Modern and classic nuances of brick buildings <ul style="list-style-type: none"> • Brick buildings have a unique and classic impression, like being in a villa, not in an office.
5. Unique flexible buildings <ul style="list-style-type: none"> • Brick material is a flexible material applied to any building designs. • The shape of buildings made of brick material is different from each other.
6. A simple structure with a relaxed atmosphere doesn't feel like working <ul style="list-style-type: none"> • Brick material is pure and has an artistic soul. • Brick buildings are simple, beautiful though without being painted, more natural, and just the way they are.
7. Quietness in brick buildings like being isolated <ul style="list-style-type: none"> • A room made of brick material feels like being sealed
8. Natural scents of brick buildings <ul style="list-style-type: none"> • Bricks made of soil can arouse the smell of earth when exposed to rain. • The natural aroma of bricks brings up attachment to the building itself, giving a nostalgic feeling.
9. A sturdy building having an aging and industrial character <ul style="list-style-type: none"> • Moss is a natural aging process, making brick material more attractive, unique, and antique.
10. Color patterns that tell stories <ul style="list-style-type: none"> • Bricks have different colors after being installed into walls and look like having patterns that can form a story.
11. The wind greets through the gaps between bricks <ul style="list-style-type: none"> • Cool greeting

As soon as the validation process of invariant constituents concluded, the researcher can start with crafting individual and composite textural descriptions on the materiality of brick (step 5 and step 6). Table 3 presents the result of composite textural description of the materiality of brick derived

from individual textural description, cluster themes, and their descriptive formulated meanings. The composite textural descriptions reveal that "Brick is a material that can adapt to the context and have a variety of patterns, stories, and sensations."

Table 3: Textural Description of The Materiality of Brick

Cluster Themes	Descriptive Formulated Meanings	Composite Textural Description of Brick Material
1. Old buildings that create memories		Brick is a material that can adapt to the context and have a variety of patterns, stories, and sensations.
2. Human intentions	1. Bricks made one by one using human hands to provide extraordinary energy. 2. Making bricks takes a long time and a lot of costs. Very Indonesian, very local. 3. The unequal form of each shape and arrangement allows brick buildings to have a character that shows a human initiative.	
3. Timeless		
4. Modern and classic nuances of brick buildings	4. Brick buildings have a unique and classic impression, like being in a villa, not in an office.	
5. Unique flexible buildings	5. Brick material is a flexible material applied to any building designs. 6. The shape of buildings made of brick material is different from each other	
6. A simple building with a relaxed atmosphere doesn't feel like working		
7. Quietness in brick buildings like being isolated	7. A room made of brick material feels like being sealed	
8. Natural scents of brick buildings	8. Bricks made of soil can arouse the smell of earth when exposed to rain. 9. The natural aroma of bricks brings up attachment to the building itself, giving a nostalgic feeling.	
9. A sturdy building having an aging and industrial character	10. Moss is a natural aging process, making brick material more attractive, unique, and antique.	
10. Color patterns that tell stories		
11. The wind greets through the gaps between bricks		

II. Imagination Variation:

After finishing with the composite textural description, the researcher can jump into the second phase of phenomenological analysis: Imagination Variation. This phase consists of two consecutive steps; construction of individual structural descriptions (step 7), and construction of composite structural descriptions (step 8). Table 4 presents the result of composite structural description of the materiality of brick, derived from individual structural descriptions, cluster themes, and their imaginative formulated

meanings. The composite structural descriptions reveal that "Brick is a material that emits a natural aura and expresses honest crafts."

Reduction phase (Phase I), the narrative of composite textural descriptions explains what the participants have experienced from the materiality of brick. Hence, in Imagination Variation, the narrative of composite structural descriptions explains how the participants experience and feel about the materiality of brick.

Table 4: Structural Description of The Materiality of Brick

Cluster Themes	Imaginative Formulated Meanings	Composite Structural Description of Brick Material
1. Old buildings that create memories	1. Architecture can evoke childhood memories. 2. Memories of a Brick building standing magnificently like an empire.	Brick is a material that emits a natural aura and expresses honest crafts.
2. Human intentions		
3. Timeless	3. The color of the bricks has timeless patterns.	
4. Modern and classic nuances of brick buildings		
5. Unique flexible buildings		
6. A simple building with a relaxed atmosphere doesn't feel like working	4. Brick material is pure and has an artistic soul. 5. Brick buildings are simple, beautiful though without being painted, more natural, and just the way they are.	
7. Quietness in brick buildings like being isolated		
8. Natural scents of brick buildings		
9. A sturdy building having an aging and industrial character		
10. Color patterns that tell stories	6. Bricks have different colors after being installed into walls and look like having patterns that can form a story.	
11. The wind greets through the gaps between bricks	7. Cool greeting	

III. Essence: Synthesis the Texture and Structure Into an Expression:

The outcome of this phenomenological analysis is the essence of the materiality of brick. The researcher will elaborate detailed descriptions of the essence of the materiality of brick in the following part.

RESULT

Textural Description: Brick as Unique and Organic Architectural Material

Buildings made of brick material are unique. Small openings on the brick wall allow natural air to circulate and natural scents to fill in the room. When it rains, water that soaks the ground outside the buildings permeates a fresh earthy scent. People are

feeling invigorated when breathing the unique aroma of the soil soaked by rainwater. Buildings made of brick material stimulate a feeling of not wanting to be far away and always wanting to return to nature.

As the brick materials ages, they undergo a color-changing process. Brick materials exposed repeatedly to sunlight and rain will develop white, green, and black mosses, which make them even more rustic and look harmonious with their natural environment. Brick materials have different patterns and textures that create unique impressions when seen and touched. Their texture is not smooth; the lines between bricks create gaps and bulges because the artisan laid them manually. Brick materials also produce residues that create sensations when touched.

The use of brick materials in buildings demands the involvement of artisans who mold the clay and lay the brick manually with crafts and cares. It is the imprecise and nonstandard form of brick material that creates the unique characters of brick buildings. Constructing large buildings made of brick materials is not an easy task as good brick makers and bricklayers are not easy to find nowadays. This is particularly true when erecting brick walls without plaster to reveal the natural character of brick as an architectural material.

Walls made of brick materials are capable of preventing noises from penetrating the building; hence, preserving the silence and peacefulness inside the building. The sound insulating quality make it possible for the inhabitants to enjoy a comfortable life and contemplative atmosphere.

Structural Description: Brick as Living and Imaginative Architectural Material

A building composed of millions of bricks gives an impression of grand and magnificent architecture. It prompts admiration for the onlookers and reminds them of their memories in the past. Brick material reminds them of traditional buildings in the countryside. A building made of brick materials has a unique physical appearance due to the colors and minerals contained in them. Minerals, as elements of volcanic soil contained in bricks, can generate different colors to their visual appearances, such as red, orange, and black. This range of colors allows certain patterns and their related associative

meanings or imaginations to develop on the surface of brick walls. Likewise, they also allow certain atmospheres to emerge conveying comfortability, suitability, and relaxing effects of buildings made of brick, such as house, villa, even office, or workplace.

Buildings made of brick allows air to circulate better through wall openings so that the inhabitants always feel cool and comfortable, never suffer from excessive sweating. Fresh air easily penetrates the building and amicably greet the human skins with a gentle breeze, giving a relaxing atmosphere and pleasant ambiance to the surrounding milieu. As flooring materials, brick offers unlimited possibilities in terms of patterns, textures, and aesthetic values. Stepping on the brick floor will significantly generate different impressions from stepping on the ceramic floor, marble floor, or other flooring materials.

Appreciation and disapproval of the use of brick as architectural material are attributable to its long process of production, its intensity of craft and labor, its lengthy construction time expenditure, and its tedious and costly maintenance requirement. But all of these exertions are worthy because buildings made of brick are capable of granting a classic impression like a temple and a shrine, expressing the spirit and energy of the artisans, and incites the admirations of the inhabitants and the onlookers.

CONCLUSION

This study has initiated an inductive inquiry on the relationship between the materiality of brick and human sensibility. It adopted a phenomenological approach delineated by Moustakas (1994). It depicted architectural perceptions and interpretations that have been generated by the materiality of brick by analyzing authentic experiences of peoples who have spent a certain time in three different brick buildings, which are purposefully selected as case studies. The result of the study provides an alternative reference for architects who are interested in creating meaningful architectural experiences based on the interconnection between building materiality and people's sensibility. The reciprocal relationship indicates that there is a constant dialogue between human subjects and architectural objects. Human subjects learn and give a response to architectural objects according to their characteristics and properties; in return, architectural objects acquire their significances, values, and meanings in the mind of human subjects.

The materiality of brick expressed itself through its presence and function in the architecture of the building. Human subjects perceive, interpret, and understand the materiality of a brick through their bodily movement and sensibility; they store these experiences in their memories and occasionally express these experiences in their verbal responses. Brick, as an architectural material, has versatile tectonic properties in terms of its logic of construction. It has idiosyncratic imaginative properties, in terms of its distinctive aura and atmospheric creation. It also possesses socio-economical characters, in terms of its labor-intensive character in the construction processes of building made of brick.

Pallasma, J (2012). *The Eyes of the Skin: Architecture and the Senses*. West Sussex: John Wiley & Sons.

Polkinghorne, D. E. (1989). Phenomenological research methods. In R. S. Valle & S. Halling (Eds.), *Existential-phenomenological perspectives in psychology: Exploring the breadth of human experience*. Plenum Press, pp. 41–60.

Yüksel, P. & Yildirim, S. (2015): Theoretical Frameworks, Methods, and Procedures for Conducting Phenomenological Studies in Educational Settings, *Journal of Qualitative Inquiry*, 1-20.

Van Manen, M. (1990): *Researching lived experience: Human science for an action sensitive pedagogy*. Albany: State University of New York Press, New York.

Zumthor, P. (2006): *Atmospheres: Architectural Environments Surrounding Objects*. Birkhauser, Basel.

REFERENCES

Colaizzi, P. F. (1978). *Psychological Research as the Phenomenologist Views Existential Phenomenological Alternatives for Psychology*. New York: Oxford University Press.

Creswell, W. J. (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, 3rd ed. Sage Publication, Thousand Oak.

Giorgi, A. (2009). The descriptive phenomenological method in psychology: A modified Husserlian approach. Pittsburgh, PA: Duquesne University Press

Griffero, T. (2017): *Quasi-Things: The Paradigm of Atmospheres*. State University of New York Press, New York.

Holl, S. (2006). *Intertwining*. New York: Princeton Architectural Press.

Malnar, J. M., & Vodvarka, F. (2004). *Sensory Design*. Minneapolis: University of Minnesota Press.

Merleau-Ponty, M. (2002): *Phenomenology of Perception*. Routledge Classic, London, and New York.

Miller, D. (2005). *Materiality*. Durham and London: Duke University Press.

Moustakas, C. (1994). *Phenomenological Research Methods*. London-New Delhi: Sage Publications.

Pallasma, J. (2009). *The Thinking Hand: Existential and Embodied Wisdom in Architecture*. West Sussex: John Wiley and Sons.