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Explorations of Young People's Sense of Place Using Urban Design Qualities in Surabaya, Indonesia

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Abstract: This study aims to assess a sense of place in the context of an Indonesian city through real-time walking experience. With rapid urban development, the cityscape may change, leading to a lack of a sense of place. Here, the sense of place was measured by utilizing individual reactions to different urban design qualities and perceptual qualities during walking. Previous methods on visitors' evaluation of places, walking experience and photographing, were adapted by adding two more stages: in-depth interviews and a workshop, obtaining participants' opinions and behaviours. The analysis results showed that the participants experienced the sense of place through physical and non-physical features corresponding to walking speed. While the old buildings and ornament details attracted participants' attention, this study demonstrated that the two-way interaction with residents also strengthened the sense of place. The major finding was that the participants were concerned about improving pedestrian infrastructure and the conservation of old buildings in the area. With the assistance of in-depth interviews and a workshop, participants' perspectives were visually reflected in a comprehensive way. This study may be helpful for urban planners to manage the sense of place in historic city centres under the pressure of rapid urban development.

Keywords: sense of place; urban design qualities; walking experience; photographs; in-depth interview; workshop; Indonesia

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1. Introduction

With roughly 151 million people, or over half of its population living in towns and cities, it is unsurprising that Indonesia has more than 20 cities with populations of over half a million people [1]. Rapid urbanization has put an enormous strain on the urban infrastructure, particularly urban transportation systems [2]. To address these shortfalls, Indonesia's government has embarked on several sustainable transport strategies, including the development of mass transit systems in six metropolitan areas under the National Medium Term Development Plan 2020–2024 [3]. Even though walking has traditionally been the dominant mode in Indonesian cities, non-motorized transport modes have received relatively little attention [4]. One reason is because private vehicle ownership is on the rise, increasing from 6.1% in 2017 to 6.8% in 2018 [5].

A major challenge facing municipal governments is therefore to resolve the tension between the need to upgrade and expand road infrastructure on the one hand, and the desire to preserve the pedestrian-centric lanes of the local districts, or *kampungs*, on the other [6]. A *kampung* is an enclosed neighbourhood within towns. To date, the tendency has been to develop roads for the sake of motorists, without due consideration for other aspects such as impacts on local business, safety, and landscapes. The impact of these trends is largely unknown because there is still very little research on walking in Indonesia's cities. While some studies have analysed factors influencing the propensity for walking in

Indonesia (for example, influence of urban form, land-use mix, accessibility, population density, and so on) [7–11], and the relationships between walking and health [12], few studies of Indonesian cities consider walking from the perspective of people's affective experiences of places or their "sense of place".

Though definitions vary, within the urban planning and environmental psychology literature, the term "a sense of place" has come to mean the different ways in which a person's perceptions of a place affect their experience, relationships, emotions, and meanings attached to a place [13–15]. This concept has gained attention among urban planners in recent years because it affects how people respond to urban regeneration and development projects [16,17]. This is particularly relevant to developing country cities, whose landscapes are going through rapid changes, including *kampungs*. *Kampungs*, also referred to as urban villages [18], are affected by urban vulnerability [19] due to the pressure of urban development projects. Recent studies on *kampungs* mainly discussed the physical risks (land, circulation, poor public space, lack of maintenance), social risks (social conflict, crime, relocation), economic risks (unstable income, livelihood) and environmental risks (flooding, pollution, absence of clear water) [20]. Even though there were studies of the sense of belonging and residents' place bonding in *kampungs*, no study has been done on the real-time walking experiences involving people, especially to explore and capture the sense of place. This makes it challenging for urban planners to use it as a guiding concept for their daily work.

In this regard, the current study aims to broaden the current discussions taking place on urban development in Indonesia to include subjective and affective aspects of people's walking experiences. Diagnostic, expressive, and organizational tools [21] were used to explore the perceptions of 23 young people (aged 19–45) of a small historic district, including the *kampungs*, in Surabaya, Indonesia. These participants, who are outsiders to this district, were asked to capture their impressions using their own cameras, which they then shared during an in-depth interview and a workshop. To integrate the verbal and visual data in a systematic way, the literatures on "sense of place" and urban design were reviewed to develop a theoretical framework with which to code and analyse the interviews. This framework used concepts borrowed from urban design qualities (imageability, enclosure, transparency, human scale, complexity) and individual reactions (sense of comfort, sense of safety) as the basis for coding and analysing the data collected [22,23]. The following research questions were raised: (1) how can urban design qualities and individual reactions describe the sense of place through real-time experiences? and (2) how do participants' responses contribute to urban design?

2. Literature Review

2.1. Sense of Place

The "sense of place" is a significant factor influencing the qualities of people's relationship with a place [24], and is used widely in multidisciplinary studies. For example, in environmental psychology, a sense of place includes a bonding between people and places and creates a meaning of their experience within the place [25,26]. Meanwhile, in the field of geography, a sense of place, which is known as topophilia, is the affective ties between people and the material environment [27]. In architecture, a sense of place is related to the distinctive characteristics of a building or space which some places have, and others do not [28,29]. Sense of place is evolved by the capability of the physical elements to stimulate the human senses and the people's engagement in activities [30]. At the city scale, some urban designers have tried to identify shared objects which give people an emotional bonding with a place [31]. Psychological bonding linking people with places needs to be protected during processes of urban regeneration and development. Weak psychological bonding can influence the emotional attachment to the place [32], and can be crucial in shaping human behaviour and enhancing mental health [24].

Previous studies suggested that there are several aspects which strengthen a sense of place, such as form (physical qualities), image (cognition, perception, and information),

and activity (street life, people watching, etc.) [33]. In the context of *kampungs*, a recent study showed that there are three aspects of sense of place, such as form (*kampung* layout, including building arrangement and orientation, form and building facade, street furniture, landmark); activity (social and domestic, behaviour setting patterns, social interaction); and meaning (place attachment and bonding with nature-family-social) [34]. To obtain the meaning of place, the third aspect of sense of place requires time or length of stay [35]. Since the study employs non-residents, who are not familiar with the place, the third aspect of the sense of place is not applied. Therefore, in this article, the definition of a sense of place focuses on the affective bonding between people and place from the perspective of aspect (buildings, streets, space, infrastructure, etc.) and activity (social engagement, activities, and interaction).

2.2. Walking and a Sense of Place

Walking is an act of exploring the natural and built environment, which allows people to experience the tactile nature of places [36] and engage with communities [30,37]. The experience involves the senses, combining feeling and thought [38,39], and it can change the way people perceive their environment [40]. While walking, people can observe the fine-grained built environment, see objects in detail, and notice the characteristics of the place by its visual and spatial features [41]. The visual details, that are only perceived when people walk, can evoke certain emotions, giving visual pleasure to the observer. Visual details such as street trees, human scale details (windows in human proportions, hand-crafted, etc.), and ornaments also generate a complex geometry [42], and at the same time affect biophilic urbanism, which means creating connectivity to the natural environment in the urban structure [42,43]. Such experiences are influenced by conditions such as the qualities of the space, physical form, weather and the qualities of light, and the perceptual framework of the observer (mood, previous experiences) [31,39].

Several studies link the subjective experiences of walking to people's sense of place. Geographers have indicated that walking helps in the establishment of a sense of place [36]. This may be because walking speed enables people to see urban elements, thereby helping to generate a sense of place [44] and a powerful means for social and cultural transformation [40]. Walking may also contribute to a certain level of psychological and physiological security, which can help develop the sense of place [45]. Walking becomes more exciting if there are things to see, hear, smell, touch, and taste [39]. These senses are associated with our emotions [39]. After deducing the meaning from public space, the senses affect psychology and evoke responses, either positive or negative feelings, as argued in semiotic theory [46]. Positive feelings are experienced when people's expectations about a place is met, and conversely, negative feelings are experienced when they are not [47]. These feelings are then aggregated to provide shared feelings in the community about which places feel good and which do not, especially when considering ways to improve the neighbourhood [48].

2.3. Urban Design Qualities and a Sense of Place

Many studies of walking have focused on the qualities of infrastructure from a technical perspective, but some also consider aspects such as attractiveness, uniqueness, and perceptual qualities which create comfortable spaces and exciting places [49]. Pedestrians perceive the built environment from the street view as a complete composition [50]. They have a chance to notice visual details and building surfaces, which are difficult to be perceived by motorized vehicle drivers [51,52]. Walking behaviour is therefore affected by physical features (sidewalk width, traffic volume, building height, number of people, street width, tree canopy, weather), urban design qualities as well as individual reactions [22,23].

Operational definitions of urban design qualities have been developed which use video clips to test experts' perceptions of various qualities believed to be related to walkability [53]. Based on their responses, operational definitions were developed for five qualities: imageability, enclosure, human scale, transparency, and complexity. These quali-

ties were further explored in Ewing and Clemente's study [23], where experts from the field of urban planning and design evaluated street scenes using a recorded video provided by the researcher. This formed the basis for the urban design qualities framework, as shown in Table 1, which has become one of the most coherent frameworks for describing the experience of the streets and designing pedestrian pathways [54].

Table 1. Operational definitions of urban design qualities.

	Definition	Keyword
Imageability	The qualities of a place that make it unique and legible. A place creates an impression and evokes feelings and emotions	Major landscapes, historic buildings, identifiers, etc.
Enclosure	The presence of imaginary defined space by the vertical (buildings, walls, trees, etc.) and horizontal (sky, trees, roof, etc.) elements.	Street segment with street wall, proportion of street wall and sky.
Transparency	The degree of visual connection which people can see; what lies beyond the street.	Windows, proportion of sky, arrangement of street furniture, active uses.
Human scale	A physical element is designed in relation to human size and proportion corresponding to human walking speed.	Building height, building details, texture, planters, visible street furniture, and street vendors.
Complexity	The visual richness of a place, which depends on the variety of the physical environment (the numbers and kinds of buildings, architectural diversity and ornamentation, landscape elements, street furniture, signage, and human activity).	Building colours, building accents, outdoor dining, public art, activities occurred in adjacent buildings and space.

(Souce: [23,55]).

The study of imageability or visibility [56] was investigated by Lynch, who focused on using the physical form to capture urban image. Hillier quantified and described the visibility and movement within the city's spatial structure [57,58]. To date, imageability has been studied in various contexts of places, including Indonesian cities. For example, it was found that in Indonesia, street qualities, activity and meaning contributed more to the urban image than imageability [59]. In local neighbourhoods, people perceived the built environment from its transparency related to the degree of perception to human activity, [60]. Looking at *kampungs* in Surabaya, it was shown that the social life or activity observation was more dominant than the imageability [61]. *Kampungs*, which serve as the hub for both social life as well as trade and economic activities, are lively and visually complex. This visual complexity is generated by human scale objects, which attracts people's attention. These human scale objects, that are visible to the eye, can provide a healing environment [43]. A previous study showed that the fractals (a pattern that repeated at different scales) evoked people's attention, visual performance, aesthetic appeal, and stress reduction [62]. In busy built environments, fractals may become the factor producing either positive or negative responses, because the human brain is attracted to these fractal structures [63].

To create a successful public space, it is necessary to consider the sense of enclosure (for example an arcade to create visual and spatial connectivity), visual interest, and ordered complexity [42]. The role of the sense of enclosure has been emphasized as a key to usable urban space [64]. In addition, public spaces must be designed by reflecting comfort and safety to make great streets [65] because they can influence our mental well-being [46]. Therefore, the individual's sense of safety and comfort are essential to establish mental well-

being [22,23,46]. Safety is perceived by the presence of people [66], or eyes on the street [67]. In general, a sense of safety is a person's ability to feel safe from crime and traffic [66]. Meanwhile, a sense of comfort in public space depends on levels of safety, setting, weather, and physical conditions [66]. Urban design qualities and individual reactions influence people to perceive the built environment, especially by walking [22].

Urban design qualities have been used as a framework in both quantitative studies [23,54,68,69] and qualitative studies [55,60]. Meanwhile, other researchers have also evaluated the street using personal observations [54,55]. The urban design qualities, together with the individual reactions, can be used as the basis to analyse people's subjective impressions of a place as well as to describe the character of the place. In the current study, this framework forms the basis for the "sense of place".

2.4. Participatory Studies of Walkability

Participatory planning is widely used by researchers in the scope of environmental psychology and environmental behaviour design research to promote a communicative transaction of participants in a specific context [21], such as a place with special characteristics and issues (historic neighbourhood in the city centre whose landscape are going to rapid changes). In participatory planning, individuals or groups of people, supported by tools, actively participate in the overlapping phase of the planning process, from planning and design to the decision-making's stage. Participatory planning needs tools (techniques) as a medium to promote the transactions and knowledge creation. Participants need to diagnose the context, express themselves through the tools given and organize resources, events, and processes. Therefore, types of tools are classified into: diagnostic (interview, walking tours), expressive (photographing and filming), and organizational (workshop) [21]. The participatory study often employs a variety of tools, for example, a combination of diagnostic, expressive, and organizational tools.

In this study, the walking session provided the primary data of experiencing the neighbourhood. When walking, people build up the perceptual qualities of a space, which influences the establishment of a sense of place. Thus, different people will develop different perceptions, even in the same circumstances and physical form. To investigate how a sense of place is created from the perceptual qualities of the observer, some studies have conducted field experiments and asked participants to walk through a route [47,70,71]. The field experiments can help planners to examine urban questions, test theories [72], guide local policies and record people's responses to proposals from other stakeholders such as city officials [47]. The challenge is then to effectively "capture" what these people see and feel.

Photographs and videos have been widely used to explore visual and spatial experiences, such as serial vision technique [73], in a variety of disciplines. Photographs are utilized to record the built environment, whether attractive or not [41]. Previous studies using photographs to perceive a sense of place are classified into two types. First, segmented serial vision captures visual and spatial experiences from the researcher's point of view [51,74]. Second, some types of participatory research have used photographs, for example to gather data from tourists [75,76], residents [76], students, and employees [70,71]. For example, Caption Evaluation Method (CEM) is used to understand visitors' evaluation of designated places using photographs and logbooks [70]. Another technique is Volunteer-Employed Photographs (VEP) [76,77], whereby participants are asked to take the photographs by themselves and then send back the camera, logbook, and questionnaire to the researcher [75]. In this study, CEM and VEP were adapted by adding three additional steps: an interview with each participant, recorded videos during walking sessions, and a workshop to discuss the results. This improved methodology is further explained in the next section.

3. Methodology

Visitors' evaluations of places were examined in previous studies [70,71,75–77], mostly in the context of tourism destinations, through two main methods of CEM and VEP described above. Both methods request visitors to report their experiences (favourable or

unfavourable) through photographs taken by themselves. Even though both methods use photographs as the primary data, the procedures are different. In CEM, all participants are gathered at one time, provided with a map and requested to walk around for one hour taking photographs and notes about their impressions [70]. Immediately after walking and taking a break, each participant is then asked to select ten photographs, put them in a form, and write down whether it was favourable or not [70]. On the contrary, VEP does not gather the participants but intercepts visitors and asks their willingness to participate in a survey [75]. In VEP, each participant needs to fill in a form before he/she is given a camera, a logbook (to write the reasons why they took specific photos during the survey), and a questionnaire [75–77]. After completing the survey, the participant is asked to send all the survey tools and questionnaires back to the survey administrator using an envelope with a paid stamp [75,76].

The research methodology of this study is largely in line with CEM and VEP, with some changes. First, the recruitment of participants followed the methodology of CEM, through a call for participants [70]. Those who were interested in architecture and town planning were selected. Second, participants' walking experiences were surveyed one by one separately according to a pre-arranged schedule. The authors argue that having different participants exploring places at the same time influences each other's preferences, which may bias their responses. Third, taking a note with a logbook was not used in this study. Considering that the location of study is the busy city centre with heavy traffic, it was not safe for participants to concentrate on walking, take notes, and pay attention to traffic at the same time. Instead, participants were asked to wear an action camera to record their walk and the scenes they experienced. Therefore, if a participant had an impression of a place, he/she talked directly, and the voices were recorded through the action camera. Fourth, the total number of selected photographs was different from the previous study [70]. In this study, twenty favourable and unfavourable images (10 images each) were collected. The authors argued that giving the participants twenty photos allowed them to explain more details for further discussion, rather than only giving them ten photographs. Fifth, both VEP and CEM use a form or questionnaire to write down the reasons for taking a photo or their impressions about a place. Because the questionnaires might not sufficiently explain what the participants wanted to say, an in-depth interview was further conducted. In this study, semi-structured in-depth interviews were used to explore the detailed responses from participants. Sixth, this study employed a workshop, at the final stage, to help participants share their experiences. During the in-depth interview, participants may not be aware of a specific situation. Therefore, a workshop was also organised to share other information which was found to be important, and also generate a unique summary of what should be considered for future development in the area. Participants were divided into small groups where they shared their experiences from the survey. Through the workshop, favourable and unfavourable objects along the walking routes were captured, adding to their statements about the sense of place. In this survey, therefore, previous methods [70,71,75–77] were adopted and adapted by the additional stages of an in-depth interview and a workshop.

In this study, the walking experience was the main activity to assess the sense of place. As suggested by a previous study, the urban design qualities were considered as the most comprehensive measurement for walkability [23,54,55,60,68]. Urban design qualities describe the perceptual qualities while experiencing the built environment in term of five operational definitions (imageability, enclosure, human scale, transparency, and complexity). Participants expressed their experiences in either positive or negative emotions. These emotions came from the meaning the people deduced from the built environment through signs [46]. For example, a participant saw an abandoned house. It could be a sign of negative emotions: a dark place where a crime may have taken place. In contrast, natural features were found to evoke positive responses which can reduce stress [78]. The participants' perceived emotions are essential to developing a sense of place because of its contribution to mental well-being [41]. In other words, the more the

positive emotions from the participants, the more they develop a sense of place. Therefore, during the workshop, all participants were requested to give a unique summary regarding favourable (positive) and unfavourable (negative) objects.

4. Site Selection and Procedures

4.1. Surabaya, Indonesia

Surabaya, Indonesia's second largest city in terms of population, developed under the Dutch colonial administration through industrialization and transportation development in the 1800s. Bubutan, an administrative district in Surabaya, was selected as the site for this research for two main reasons. First, Bubutan is one of the oldest settlements in Surabaya. Its name was derived from the word "*Bubut*" (lathe), a reference to the lathe craftsmen who lived in this area several hundred years ago [79]. With the establishment of Pasar Turi Railway Station in the Bubutan district in 1903, the area became an important activity centre of Surabaya City. It therefore has an abundance of old buildings with Javanese and Colonial architectural styles [80]. Although many of its buildings are in poor condition, Bubutan was declared an important cultural heritage settlement by the government [81], suggesting that it has potential to be developed into a tourist area. The second reason is because areas close to railway stations are important for transit-oriented-development (TOD) [82]. As Surabaya is one of the cities selected for the government's Medium-Term Development Plan 2020–2024, it is important to consider how to develop areas such as Bubutan which surround railway stations.

The Bubutan district has various land use characteristics, including a *kampung*, small home-based enterprises, private offices, governmental offices, railway station, wholesale stores, schools, as well as tourism destinations. The street network consists of boulevards in the arterial road connecting to small alleys and cul-de-sacs in the *kampung*, which creates a hierarchy from the public to private. Some small alleys are too narrow to allow motorcycles to pass. Bubutan is a representative case of a historic district in Indonesian cities which shares similar characteristics of physical layout. Based on the methodology used by a previous study, which connected the potential land-use characteristic and time allocation for taking a walk [70], a route was proposed within a walkable catchment area, as shown in Figure 1.

4.2. Recruitment of Participants

Twenty-three participants were recruited using a "call for participants" which was disseminated through social networking services (SNS). The number of recruited participants was determined by referring to a previous study exploring tourism destinations using VEP [76,77]. The prospective participants were asked about their willingness to be involved in both field observation and a workshop held on different days. If the participants were only able to join the field observation, they were deleted from the list. None of the participants had been to the area by foot; they had only passed through the main street on motorized vehicles. It was, therefore, the first time they were experiencing the area on foot. Young people, which are defined as those aged between 18 and 45 [83], were targeted because they constitute a large proportion of Indonesia's population and have an important influence on current and future mobility behaviours. Participants with an interest in architecture and town planning were selected [70]. Therefore, as shown in Table 2, participants came from different educational backgrounds and occupations, which reflected a large variety young people. The number of female participants was higher (N = 15) than that of male participants (N = 8). Most participants' ages ranged from 19 to 30 years old (N = 18). Participants' educational background were diverse, but most of them were studying architecture (N = 7), historical science (N = 4), design (N = 2), and urban planning and design (N = 2). In terms of occupation, a majority of participants were students (bachelor, N = 7; master, N = 3), followed by architects and planner (N = 4), lecturers (N = 3), company staff (N = 3), and the remainder were freelancer and housewife (N = 3). The data collection process consisted of diagnostic (walking tours, interview), expressive (photographing and filming), and organizational components (workshop design) [21].

Figure 1. Site selection from Map of Indonesia, Map of Surabaya, and the designated route.

Table 2. List of participants.

No	Gender	Age	Educational Background	Occupation
1	Female	38	Bachelor: Architecture	Part-time architect
2	Female	45	College: Administrative science	Housewife
3	Female	36	Master: Forensic anthropology	Lecturer
4	Female	26	Master: Architecture	Graduate student
5	Male	24	College: Design	Designer
6	Female	19	Bachelor: Architecture	Student
7	Female	19	Bachelor: Architecture	Student
8	Female	19	Bachelor: Historical science	Student
9	Male	20	Bachelor: Communication science	Student
10	Female	20	Bachelor: Historical science	Student
11	Male	19	Bachelor: Historical science	Student
12	Female	26	Master: Chemical engineering	Lecturer
13	Male	26	Master: Architecture	Graduate student
14	Female	25	Bachelor: Urban planning	City planner
15	Female	24	Bachelor: Civil engineering	Staff for rural improvement
16	Female	26	Master: Urban design	Graduate student
17	Female	39	Bachelor: Architecture	Architect
18	Male	25	Senior high school (social science)	Staff at Hotel
19	Male	36	Bachelor: Economic science	Staff at private company
20	Male	24	Bachelor: Biology	Freelance photographer
21	Male	23	Bachelor: Historical science	Student
22	Female	27	Bachelor: Architecture	Architect
23	Female	29	Master: Design	Journalist, lecturer

4.3. Implementation

4.3.1. Walking Session

All participants received the same explanatory training. The instructions were to take photographs of objects which evoked their emotions, whether favourable or unfavourable [41,47,48,70], using their mobile phones or digital cameras. Here, an unfavourable object means something which the viewer thought could be improved, and a favourable object indicates the viewer's interest to protect [84]. As it was thought that conducting the walking experience at the same time would influence participants' preferences when taking photographs, participants walked one at a time, based on a pre-arranged schedule. All participants were also asked to wear action cameras on their heads to capture their behaviour during the walking session.

4.3.2. In-Depth Interview

When the walking session was completed, photographs were printed as a tool for the in-depth interviews. Here, each participant was requested to select only ten photographs as the most favourable and ten as the most unfavourable [70]. After selecting photographs, a semi-structured interview was conducted, with questions embedded in the conversation between the interviewer and the interviewee, enabling more detailed answers [85]. Participants consented verbally to audio-recording [86], which lasted 30–60 min. Audio-recording is helpful when a limited number of participants are involved in such conversation-based interviews [85].

The process of the in-depth interview was divided into two stages. First, the participants were requested to share their experiences regarding the area before and after the walking session. These questions were addressed before discussing the selected photographs. For example:

- *Have you ever walked in some corridors of this area before?*
- *What did you think about the walking session, and what were your impressions of this place?*
- *Were there any objects that attracted or bothered you? What were they?*
- *Would you tell us the reasons?*

Second, the participants were asked to describe the selected photographs which were taken during the walking session. The key questions were mainly related to the motives, emotions, and feelings, whether favourable or unfavourable [41,47,48,70].

- *What was your reason or motive for taking this photograph?*
- *Why did you put it as a favourable/unfavourable object?*
- *Why did you like/dislike it?*

4.3.3. Workshop

After completing the walking experience and in-depth interview, all participants were invited to a workshop, where they were divided into small groups of five to six people in order to allow them to have an open discussion. Each group was supported by a facilitator and requested to actively discuss their impressions during the walking session. As was done in a previous study, the maps and photographs were also used as materials or the means of communication in order to promote discussion among participants [87]. The workshop aimed to generate a unique summary of what should be considered for the future development of the designated area.

4.3.4. Coding

The interview was coded to simplify the interpretation and generalization of the research results [88]. In the interview, the participants described the experiences and impressions. The descriptive coding from the interviews were summarized using keywords as the basic topic of qualitative data [89]. The urban design quality variables were not directly asked to the participants, but simple questions were used to obtain smooth discussion and to avoid biasing the participants' views. An example is shown in Table 3.

Table 3. Examples categorizing the transcribed interviews.

Transcribed Interviews (Translated to English)	Keywords	Urban Design Qualities
"This is rare. I have never seen a building like this before. You won't be aware of this if you ride a motorcycle."	Prominent, Distinctiveness, visibility	Imageability
"This is the most unique shop. Lots of lamps and made me want to come inside."	Seeing what lies beyond the shopfront, curiosity	Enclosure

(Source: in-depth interview).

5. Findings

5.1. Review of Selected Photographs

A total of 1410 photographs were collected during the walking session. The photographs had a wide range of subjects, ranging from human activities (people), individual buildings and visual details, to full streetscapes (a group of buildings, street scenes, and infrastructure). Of these photographs, 460 photographs were selected by participants based on the classification of favourable and unfavourable images, as shown in Figure 2. Favourable images showed that the participants shared an interest in building-visual details (47%), streetscapes (42%), and people (11%). Unfavourable images were dominated by streetscapes (60%), such as pedestrian infrastructure, which may have affected the perceptual qualities during walking experiences.

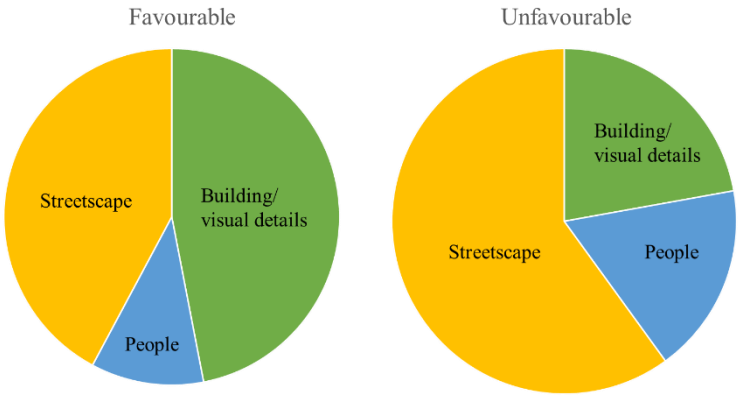

Figure 2. Favourable and unfavourable images. (Source: 460 photographs selected by participants).

Regardless of favourable or unfavourable objects, 460 selected photographs were categorized according to the urban design qualities and individual reactions during the in-depth interview. The results, as shown in Table 4, demonstrated that the distribution of photographs was mainly in the variable of human scale (177 photos), sense of comfort (79 photos), imageability (65 photos), sense of safety (57 photos), complexity (39 photos), transparency (22 photos), and enclosure (21 photos). Human scale was perceived by the participants through the neighbourhood's physical objects, which corresponded to human walking speed. This was shown during the in-depth interview: a participant noticed the details, "*I can see the detail of everything (the local neighbourhood) on foot*" (participant no. 8, female, 19); another participant recognized the type of the store along the streets: "*By walking, now I know about this store selling this, that store selling that*" (participant no. 15, female, 24); and one more participant felt close to the neighbourhood: "*Everything seems to be close. I can feel the atmosphere of street vendors, and human activity*" (participant no. 23, female, 29). Here, the authors did not take into consideration the personal characteristics of the participants when interpreting the results. The results described that participants' interest in the streetscape and building design. At the same time, they are also concerned about the poor condition of the sidewalks during the walking session. Regarding the urban

design qualities and individual reactions, a bigger picture of people's perceptions could be recognized through the human scale, psychological and physiological comfort, distinctive and unique objects, human activities, and spatial dimension.

Table 4. Distribution of photographs.

Participant	Imageability	Enclosure	Human Scale	Transparency	Complexity	Sense of Safety	Sense of Comfort
1	3	-	2	2	3	6	4
2	5	2	5	1	4	-	3
3	5	-	3	1	4	4	3
4	1	-	13	3	1	1	1
5	4	2	6	1	3	1	3
6	1	1	10	1	1	4	2
7	3	1	4	1	3	2	6
8	1	1	13	1	1	-	3
9	2	-	7	2	1	1	7
10	2	-	10	1	2	3	2
11	5	-	11	2	2	-	-
12	1	1	11	1	-	3	3
13	1	2	8	1	4	-	4
14	1	3	7	-	-	4	5
15	2	-	11	1	-	5	1
16	-	2	6	-	2	4	6
17	7	3	4	-	1	5	-
18	3	1	10	-	1	2	3
19	2	1	5	1	2	3	6
20	4	-	8	-	1	3	4
21	6	-	4	-	3	1	6
22	4	1	6	1	-	4	4
23	2	-	13	1	-	1	3
Total	65	21	177	22	39	57	79

5.2. Urban Design Qualities and Individual Reactions

5.2.1. Imageability

Participants noticed those objects which evoked emotions. They had strong, unique characteristics, especially in the form and ornament details, which the participants had not seen in other places. Table 5 summarizes responses to imageability from the in-depth interviews. Most participants mentioned about distinctive characteristics of old buildings (N = 45), which could strengthen the image of a place, followed by responses to city landmarks (N = 8), revitalization (N = 5), ill-maintained old buildings (N = 3), history (N = 1), and unclear characteristics of streetscapes (N = 3).

Table 5. Summarized results of participants' responses to imageability (multiple answers).

Summarized Items	N
Distinctive characteristics of old buildings (form, visual details, architectural style, and colour)	45
Prominent as a city landmark because of its size and location	8
Adaptive reuse of old buildings (revitalization)	5
High potential yet not well-maintained old buildings	3
Unclear characteristic of street furniture, image of the place	3
History of the past happened in the building	1

Though the responses varied, the most mentioned objects illustrating imageability were old buildings, a gate located in the centre of the business district, and monuments (Figure 3). Even though its height from the surroundings did not dominate the objects, the uniqueness and colour selection were outstanding and easy to be perceived by the participants. Figure 3b,c show the old buildings which attracted the participant's attention because of the location at the corner junction (Figure 3b) and attractive appearance of architectural elements (Figure 3c).

Figure 3. Photo collage representing "imageability". (Source: participants' photographs selected by authors).

A small white gate received favourable responses from the participants (Figure 3a). Previously they had only passed by and were not aware of this gate. They walked through the gate through the walking session and felt the changing atmosphere from the busy shopping street to the quiet *kampung*: *"The arc shape gives me a sense of transition from the hustle-bustle of the street to the calmness of the residential area with an abundance of old buildings. I feel intimate after entering the gate"* (participant no.7, female, 19). The arch shape of the gate also evoked feelings in another participant: "*It is unique. I have never seen the arch shape gate like this in Surabaya*" (participant no.9, male, 20). Participant noticed the gate because of the distinctive character: "*Is it an old gate? It is visually appealing, contrasting with the surrounding environment. It becomes a point of interest*" (participant no.1, female, 38). The presence of the conserved old gate was an effort to protect the place, history, and culture: "*It is an expression of respect to the history, culture, and the kampung*" (participant no.22, female, 27).

Participants responded that the building in Figure 3b was visually prominent, and the window arrangement and roof form made it unique: *"I am very happy when passing through the street and alleys with abundance of old buildings. The unique form at the corner is fascinating, it is like the one in Surabaya Museum (another building), isn't it? We can enjoy the view of the building from this point"* (participant no.12, female, 26). However, bad building conditions evoked the negative emotion of the participant: "*Unfortunately, this building's condition is not well maintained, even though people are still using it*" (participant no.3, female, 36). This condition also occurred on the other old buildings, which required serious repairs.

Seven out of the 23 participants noticed the building in Figure 3c as the presence of the imageability through the building form, window design, floor pattern, railing details,

and the veranda. They were also glad that the old building was still in use: *"It is a well-maintained old building and still in use. The visual details are well-preserved, I saw some old buildings had removed these kinds of details"* (participant no. 20, male, 24). Another participant emphasized the adaptive reuse of old buildings: "*I appreciate all old buildings, especially the ones which are still in use, it is very positive*" (participant no.17, female, 39). This building played a significant role during the Battle of Surabaya (in 1945) as a meeting place for people struggling the Independence: "*It is a historical place, when the people gathered here to issue the resolusi (prescript)*" (participant no.19, male, 36). The prescript's text was printed as a monument, so the participant could recognize and read it.

5.2.2. Enclosure

Enclosure provided a territorial space in which participants felt comfortable to a certain degree. When the degree of the enclosure was achieved, as shown in Figure 4, people perceived the built environment with a high sense of comfort and safety. Table 6 shows that in the study area the imaginary space is captured by vegetation and big trees (N = 14), walls of the alleys (N = 2), awning or overhanging structures (N = 3), and street furniture (N = 2).

Figure 4. Photo collage illustrating "enclosure". (Source: participants' photographs selected by authors).

Table 6. Participants' responses to enclosures (multiple answers).

Summarized Items	N
Enclosed by trees and vegetation	14
Building's awning	3
Enclosed by street furniture	2
Enclosed by walls of alleys	2

The degree of enclosure affects a sense of safety, shown by the visual separation between space for motorized vehicles and space for pedestrians, and a sense of comfort, due to the protection from direct sunlight through the overhanging roof. The participant noticed a low degree of enclosure when there was no visual separation between the road and sidewalk, and the overhanging roof was short, thereby failing to protect the pedestrian from the heat (Figure 4c).

Some participants perceived enclosure by the lines of trees line, especially in the area close to the railway station (Figure 4a). The distance between the trees and other trees created protection (from the traffic), leading to a sense of safety: *"The trees are so big that it doesn't feel hot. There is a proportional distance from here (pointing to the trees) to there (other tree line) and it makes the sidewalk much more comfortable"* (participant no.7, female, 19). Another participant mentioned the streetscape was nice and looked forward to seeing the trees growing: "*The trees, sidewalks, and the planters are neatly arranged. If the trees grow bigger and taller, it will make the sidewalks much more comfortable*" (participant no.2, female, 45). The comfortable space, because of the degree of enclosure, invited more people to come and

enjoy the space for optional activities: "*Many families take a walk, (for example) mother and her daughter/son*" (participant no.12, female, 26). One more participant also saw these activities: "*I saw a mother and her baby here (pointing to the photograph), it means that the sidewalk is very safe even for women whose has to hold a baby*" (participant no.16, female, 26).

No trees could be replaced by the awning or overhanging roof, as shown in Figure 4b, to protect the pedestrians from the hot weather, especially in Surabaya: "*A roof is crucial here because Indonesia is very hot. Buildings with awnings are more pleasure for pedestrians*" (participant no.22, female, 27). The awning or overhanging roof created a shady space for pedestrians: *"It is about the overhanging roof. It is not the part of the main structure, it is an additional (structure) but (it is) interesting. It can create a shade, like an arcade. Shady"* (participant no.14, female, 25). In *kampung*, where the streets were narrow, the walls were high enough to make shade. However, when it was necessary to protect the space from the sun, the non-permanent awnings served as a roof.

In Figure 4, the lowest degree of the enclosure was perceived in Figure 4c. The weather was one of the factors which established the feeling of comfort in a public space, as mentioned by a participant: *"It is so hot. No shade at all. Sidewalk is not comfortable. No planters, no shadow. It is in the right side of jalan tembaan (the name of the street)"* (participant no.6, female, 19). The low degree of the enclosure not only influenced the feeling of comfort but also the sense of safety, especially from traffic.

5.2.3. Human Scale

Objects on a human scale depend on sizes and proportions which humans can easily perceive. The responses from participants varied from visual details or ornaments (N = 65), social space for interaction (N = 21), planters (N = 20), street furniture (N = 14), human activities (N = 14), street vendors (N = 10), obstacle for pedestrians (N = 8), shop display (N = 8), motorized vehicles (N = 7), old graveyard (N = 4), the scale of the street perceived from the proportion of building heights (N = 4), as well as the maintenance of the old buildings (N = 2). These responses are summarized in Table 7.

Table 7. Participants' responses to human scale elements (multiple answers).

Summarized Items	N
Visual details (windows, ornaments, signs with symbols or letters, etc.)	65
Space for social interaction	21
Planters	20
Street furniture	14
Human activities	14
Street vendors	10
Obstacles for pedestrians	8
Shop display	8
Motorized vehicles	7
Old graveyard	4
Scale of the street or pedestrian space	4
Old building's maintenance	2

While walking, the participants noticed many visual elements they had never seen before. As mentioned earlier, the variable of human scale reported the highest number of categorized photographs among urban design qualities and individual reactions. It is shown that the participants paid attention to close objects (for example, at eye level) during the walking session. For example, the participants reported that they saw books in the bookshop display or the gallons of water on the truck. The way the owner arranged

the display affected the participants' senses which were connected to their emotions. A disordered display could be a sign of negative feelings for the participants.

Figure 5a shows the planters in front of the house in the alley of a residential area. Participants felt surprised that the residents could optimize the limited land area for the green space: *"The atmosphere is interesting. Comfortable. This is in the small alley, and the house looks like still in use. The building is interesting. It is cool and visually comfortable, maybe it is because of the planters"* (participant no. 1, female, 38). Another participant also reported regarding the planters: "*This kampung is neatly arranged, also the pavement, clean and no trash, and plenty of planters*" (participant no. 5, male, 24). Planters in *kampungs* were put in front of the house in small planter boxes or pots. They were visually comfortable and did not obstruct the facade of the buildings.

Figure 5. Photo collage illustrating "human scale". (Source: participants' photographs selected by authors).

Generally, houses in *kampungs* were primarily one-storey buildings. Therefore, the proportion of the height of alleys to their length in the residential area was mostly equal. When there was one building with more than two storeys, the view was obstructed (Figure 5b). The regulation or design guideline of the building heights, especially in the historical districts, became a concern for policymakers: *"There is a three-storey house nearby with a high fence. It reflects that there is a distrust towards other people who are living in the same area. I don't like because of the form (white and tall). The form is like a gentrification. It occupies the area and replaces the old buildings. It (the characteristic) is different from other buildings"* (participant no.8, female, 19). Figure 5b illustrates three-storey buildings while most buildings were only one-storey buildings. Moreover, the physical characteristic of the building was different from its surrounding. This disharmony in the human scale disrupted the view.

At the eye level, participants noticed visual details of the buildings, such as ornaments on the walls and roofs: *"The ornament is like the one in Jogja (name of City in Java)"* (participant no.9, male, 20). Figure 5c shows that the roof details and numbers attracted participants' attention. The appearance of the details reminded them of those in another city. The size and proportion of the number were legible at the speed at which humans walk: "*There is an ornament, (but) I don't know what the meaning is, I just like it*" (participant no.18, male, 25). The ornaments were considered as an aesthetic aspect for participants, even though they did not understand the meaning.

5.2.4. Transparency

Table 8 shows that transparency was perceived in the presence of windows and walls, which affected the degree of visual connection. Windows and walls were vertical elements that gave visibility inside the buildings or spaces. In the Bubutan district, especially in the main street, shops were easily found. The active use of shopfronts indicated economic activities in the study area. Shops adjacent to the streets attracted the participants because they could observe what was beyond the surface of the shopfronts: The interior, goods display layout, the furniture, the lighting design, etc (N = 6). However, transparency was not only perceived through the shopfronts, but it was also perceived through the sense of openness in the abandoned building's windows and the waste heap collection (N = 14). Other participants noticed the transparency in the alleyway (N = 2) due to the presence of

the light. The degree of visual connection depends on many factors, such as the light, the material (clear glass or reflective glass), the weather, and the size of the opening.

Table 8. Participants' responses to transparency (multiple answers).

Summarized Items	N
Sense of openness	14
Shops adjacent to streets	6
Alleyway	2

Figure 6a shows a narrow shop selling fabrics with a high degree of transparency. The colourful pile of cloth rolls attracted participants' eyes. The transparency, which was composed of the visual interaction between outside and inside, created a sense of openness: *"I saw this shop among others in Kramat Gantung (the name of the street), and it is the narrowest shop. The goods are stacked vertically and for me it is interesting. One of the staff is sitting on the pile of cloth rolls. It is so colourful and unique in the term of using a limited space"* (participant no. 4, female, 26). Participant no. 4 could easily observe the interior because the size of the opening was wide.

Figure 6. Photo collage illustrating "transparency". (Source: participants' photographs selected by authors).

However, a different sense of openness is shown in Figure 6b, where the visibility of the waste heap disrupted the visual comfort of pedestrians while passing through the streets. Here, the walls are physical elements which control transparency. *"It looks like waste collectors, doesn't it? They collect used plastics and obstruct the view. It must be covered because it is not comfortable. Putting a fence is good solution"* (participant no.1, female, 38). Another participant emphasized: "*It is a waste collector and visually uncomfortable*" (participant no.11, male, 19). Because there was an absence of walls to cover the view, participants were able to notice the activity inside: "*It is dirty and a lot of garbage over there, I saw two people inside*" (participant no.8, female, 19).

Figure 6c describes an empty building with a door and windows. The lack of natural and artificial lighting made the inside of the building not visible. It aroused the feeling of mystery and curiosity from the participants. They took a sneak peek into the window of this empty building: *"It is an ex-office. I don't like it because the building is in a bad condition even though it is listed as one of the cultural heritage properties. I showed her (the assistant) to peek at the inside of the office. Seen from the building type, it is an office with high ceiling and spacious interior."* (participant no.11, male, 19). Another participant also tried to look at the inside of the building due to curiosity: *"Actually, it is a beautiful building, but it is damaged. I take a sneak peek at the inside. So scary. Hope it doesn't get demolished"* (participant no.3, female, 36).

5.2.5. Complexity

Table 9 shows the participants' responses to complexity. The participants noticed that complexity was not only achieved from the building complexity (N = 10), but also from

a mix of various activities on the street (N = 27), including the mix between pedestrian activity and motorized vehicles, visual richness from the food stalls placed in the adjoining spaces for the motorcycle ride-hailing drivers who were waiting for customers. Moreover, the complexity of space was perceived when a bookshop expanded its reach by putting chairs in adjacent spaces. Other participants mentioned the wall painting (N = 2), which attracted their attentions.

Table 9. Participants' responses to complexity (multiple answers).

Summarized Items	N
Crowdedness and mixture of various activities	27
Complexity of building appearance	10
Wall painting	2

Figure 7a shows the complexity of traffic violations, which led to chaos. A motorbike was parked improperly on the street, even though there was a traffic sign indicating that parking was prohibited: *"It is too crowded, dense, everything mixes on the street and it doesn't look in order. Many motorized vehicles, street vendors, improper parking area, big trees but not well-maintained. It is not neatly arranged"* (participant no.2, female, 46); *"Chaotic activities. It displays the congestion"* (participant no.3, female, 36). Another participant reported she was unwilling to walk due to the weather and traffic: "*It makes me unwilling to walk because of heat and chaotic traffic*" (participant no.10, female, 20).

Figure 7. Photo collage illustrating "complexity". (Source: participants' photographs selected by authors).

Figure 7b shows a traditional market entrance inside the *kampung*. Participants perceived it as lively economic activity, but others saw it as unfavourable due to the visual discomfort of the walking experience: *"It is very interesting. Located in dynamic business district, there is still a traditional market in the middle of historic district. It is unexpected view."* (participant no.19, male, 36). According to the participant, the reason which made this view unfavourable was the cleanliness and disorganized nature of the street vendors' tents: "*Chaotic. A lot of tents of street vendors, dark, and dirty*" (participant no. 3, female, 36). Another participant noticed this view and felt unsure whether she liked or disliked it. Yet, from the perspective of lively activity, she liked it: *"Between favourable and unfavourable, it is dynamic of city life. I like the activity, but it is chaotic"* (participant no. 1, female, 38).

Public art on the walls gave a visual richness, as shown in Figure 7c. This thematic mural provided a message for the younger generation to always remember the independence struggle of the national heroes. At the same time, the mural expressed the identity of the place as a historic district: *"National heroes from Surabaya. In my opinion, a mural is a good option instead of vandalism. Mural is much more comfortable"* (participant no.21, male, 23). However, passive walls also became a media for vandalism, which caused the degradation of the property's social and cultural value: *"It is vandalism. The government and the residents must take care of the old buildings in the local neighbourhood"* (participant no. 21, male, 23). On the other side of the street, a mural was combined with small planters, which attracted

the participant's attention: "*It is good, (because) they put the planters in the limited space*" (participant no. 13, male, 26).

5.2.6. Sense of Safety and Sense of Comfort

While the five domains described above fall under the category of urban design qualities, participants also expressed their feelings regarding the sense of comfort and sense of safety under the category of individual reactions, as shown in Table 10. The reaction or response toward the built environment varied from physiological to psychological aspects. The results showed that the participants were concerned about the traffic safety awareness (N = 51), condition of the sidewalk (N = 23), such as material (whether it was slippery or not), damage, and improper function. Moreover, the participants also noticed the visual comfort (N = 40), which affected the perceptual qualities (dirty sidewalks, electrical cable obstructing the views, visual chaos, damaged street furniture, abandoned buildings). Other participants mentioned the absence of waiting space in the area of study (N = 3).

Table 10. Participants' responses to sense of safety and sense of comfort (multiple answers).

Summarized Items	N
Traffic safety awareness	56
Visual comfort	54
Damaged sidewalk	23
Unavailable space for waiting	3

The sense of safety and comfort were revealed through the view of the damaged sidewalk (potholes), which were harmful to pedestrians (Figure 8a): "*A hole at the sidewalk. I could fall into the hole if I did not notice. You can see the rebar (a steel reinforcing rod in concrete) here, if I fell into it, I could get injured. I cannot imagine if it is raining, it is totally dangerous*" (participant no. 17, female, 39). This was also emphasized by another participant: "*Dangerous. The cover is broken, it has not been repaired, and (there is) no sign (of this broken sidewalk) for the pedestrians*" (participant no. 3, female, 36); "*You should always look down to avoid falling into it*" (participant no. 6, female, 19). Conditions which made the participants look down to check whether the sidewalk was good or not distracted them from the walking experience.

Figure 8. Photo collage illustrating "sense of safety" and "sense of comfort". (Source: participants' photographs selected by authors).

In Bubutan, Figure 8b indicates a security guard (*Pos Kamling* in Bahasa Indonesia means Post Guard to create a safe environment) in front of the shop-houses. The presence of this feature gave a sense of safety to the people who were passing by: "*A rare security post reflects the connectivity among the communities. The communities have a sense of responsibility toward the area. The position of the post does not bother the pedestrians*" (participant no. 22, female, 27). Another participant mentioned the community: "*This building (appointing the*

pos kamling) shows the closeness of the community. The community has a responsibility to make the kampungs safe" (participant no. 22, female, 27). While participant no. 19 explained that the pos kamling is originally from Indonesia: "*It is unique because it is located in the front of the shop-houses, not the kampung. This is our authentic safety system*" (participant no. 19, male, 36).

Figure 8c is recorded by a participant expressing discomfort about a clothesline in a *kampung* alley. The sense of safety and comfort were highly related to physiological and psychological security: *"Dirty. It is a comfortable alley with old buildings, but I found this view in one of buildings. They hang the laundry in front of the building, it is uncomfortable. They must hang the laundry at the back side of the house or at the balcony. I don't want to see this kind of things"* (participant no.13, male, 26). Another participant mentioned that the clothesline should not disrupt the view because it was at eye level: "*Maybe they don't have enough space for drying the laundry. But, the laundry should not disrupt the view. It is visually uncomfortable*" (participant no. 4, female, 26). In a limited space of the *kampung*, the laundry activity must be taken into consideration when making creative design ideas in the future.

5.3. Shared Perceptions through Workshop

Table 11 summarizes the results of the group workshop on developing a sense of place during the walking experience. All participants took part in the workshop after they had finished the interviews. The participants were divided into groups of 5–6 people, and the photographs classified into favourable and unfavourable images were displayed. They shared similar interests in the pedestrian infrastructure, lively environment with activities, visual comfort through green spaces, and the presence of old buildings in the study area. However, poorly maintained buildings and the cleanliness affected the participants' reactions toward the experiences. All groups mentioned that the motorbike driver violated the traffic rules, which affected the sense of safety as well as sense of comfort for the pedestrians.

Table 11. Shared perception keywords in the workshop.

	Favourable	**Unfavourable**
Group 1	Comfortable sidewalks, friendly people, attractive old buildings' decoration, calm alleys, unique buildings, unexpected response, and children friendly.	Visually uncomfortable view, negative unexpected response, unhygienic food stalls, uncomfortable sidewalks, chaotic, traffic violation.
Group 2	Comfortable for pedestrians, old buildings, shady and green, unique of mixed land-use, abundance of landmarks, historic, lively activities.	Traffic violation, harmful electrical cable, congested, waste, poorly maintained buildings.
Group 3	Eye-catching, colourful, compactness, space for pedestrians, clean and spacious.	Traffic violation, damaged sidewalks, incompatible function of the space, dirty, congested, less thermal comfort.
Group 4	Lively activities, old buildings, planters and parks, street furniture, solar panel street lighting.	Poorly maintained buildings, sidewalks, traffic behaviour, empty buildings, waste, and poor signage.

(Source: Design Workshop).

The favourable and unfavourable objects in Table 11 generated a unique summary of what should be considered for the future development of the Bubutan district. These objects were the results of participants' responses towards the local neighbourhood. They deduced the meaning of buildings and streetscapes, which could signify negative and positive feelings. A perceived physiological and psychological security in the study area depended on how many negative and positive feelings occurred. The feelings became a significant factor in establishing mental well-being in the towns or cities. Therefore, the

discussions suggested that the number of favourable objects should be increased, while on the other hand, unfavourable objects must be eliminated.

6. Discussion

6.1. Understanding the Sense of Place through Urban Design Qualities

Sense of place is defined by the characteristics of the place. The operational definitions of urban design qualities and individual reactions describe the characteristics of a place during walking experiences, while the imageability (one of the operational definitions) was related to sense of place, while being influenced by other operational definitions including legibility [23]. However, the study suggests that other dimensions of urban design qualities can also be employed to assess the participants' sense of place. In the context of the Bubutan district, we found that the participants shared the physical aspects through mentioning the narrow streets (enclosure), the shopping arcade and sidewalk with trees (transparency), visual richness including the chaos (complexity), activities and objects at the human level (human scale) that contributed to the development of imageability, which made the place unique, legible, and impressive.

The young people in the study were all outsiders, or non-residents, who experienced walking through the Bubutan district for the first time. Regarding imageability, participants noticed the unique physical characteristics, such as old corner buildings and buildings whose colour were different from their surroundings. In other words, these features helped provide legibility, and ease of wayfinding, in certain locations. This study also found that non-measurable features (e.g., memory of past time, nostalgic feeling) appeared several times during the interviews. For example, one female participant (participant no. 23) noted how the history of the building reminded her of the young people's fight for independence. She heard the story from *Bu Risma* (the name of the former Mayor of Surabaya City). Her (*Bu Risma*) grandfather (her father's uncle), one of those young people and one of the co-founders of an Islamic organization, came to Surabaya and struggled to defend Indonesia's independence. For this participant, the history of Islamic organizations and Indonesia's independence was attached to this building. These non-measurable features enriched the uniqueness of the place. Meanwhile, there were also damaged old buildings in the Bubutan district. These buildings, which attracted participants' attention, represented the urban vulnerability as they could be improved or demolished in the future. Old buildings could remind people of past experiences (revolution period) and provide distinctive characteristics [90]. However, the demolition or poorly managed old buildings could affect people's sense of place.

The enclosure was perceived through experiencing the tactile nature of the place [29]. In the study area, shade became the main concern for the participants. In the hot, humid weather, like that found in Surabaya, the role of shadows to create the place was significant. Putting benches on the sidewalk could invite people and create social interaction [39,41]. However, in the study area, the presence of shade came as a priority. People would not use the benches if the surrounding area was hot and not enclosed enough. Referring to the participants' responses, they were not comfortable walking, mainly in the main street, because there was no shade. Here, providing a continuous arcade can provide visual and spatial connectivity, and promote usable urban space [42,64]. Therefore, developing the enclosure in a public space depended on the physical condition and the weather [66].

As the most perceived objects during the walking experiences, the participants noticed an abundance of visual details at the human scale, including the buildings and landscape, which related to the physical element. As a part of urban design, the details of the buildings (ornaments, part of the building form, and fences) and the surrounding landscape (planters, traffic signs, and other street furniture) affect our mental well-being [43,46,78]. Even though the detail element was visually small, the presence of the detail could provide a strong identity of the place. For example, the ornaments on the wall only existed here, in the Bubutan district. Even though the sizes of the ornaments are small, they generate organized complexity in the urban structure [42]. Therefore, the unique feature of details could also

contribute to imageability. In term of building height, as mentioned by the participants, the height of the new building in the historic *kampung* disrupted the view. The differences in building height in the historic district led to disharmony in the environment. Moreover, it could affect the character of the place and become placeless [32]. Changing the transport mode from walking to riding a motorcycle also affected the human scale [51]: "*Oh, I (have) just recognized about this place when walking...*" (participant no.17, female, 39). She noticed being here (in the place) because of the action of walking. When the number of people riding motorcycles increased, the detailed elements of the human scale might vanish, because no one noticed them any longer.

The degree of visual connection, or transparency, in the study area, was mostly perceived through the sense of openness. Transparency is related to the material condition and a sense of awareness of the space beyond [22]. In the main streets, the shopfronts were the most perceived objects by the participants, while in the *kampungs*, windows of the residents' houses attracted the participants' attention. As mentioned in a previous study, streets or alleys with windows provided a perception of human activity [65]. Here, transparency is seen to be related to human activity [60]. Transparency is crucial at the street level [22,23]. The material of the windows, walls, doors, and the sense of openness can affect people's mental well-being [46]. For example, according to the participants, the waste heap should be covered by vertical elements to manipulate or hide the view. The view of the waste heap could bring a sign of negative feelings for the participants.

The qualities of complexity relate to the visual richness of a place, which depends on the variety of the physical environment, including human activity [23,55]. We found that during the walking experiences, participants didn't see human activities only in terms of working, selling goods, sitting, etc. They were also integrated into a two-way interaction with local people through sending greetings, smiling, and having a short conversation. Regardless of favourable or unfavourable objects, photographs did not capture the interactions or engagements with local people. These experiences were captured by the recorded videos. As shown in Figure 9, for example, during the walking experience, the participants talked with local people on the street and bought a snack from local street vendors. The hospitality of people gave a good impression to the participants and made them feel close to the place. Here, human activity was not only seeing a place as a one-way interaction but also something experienced in two-way interactions, and it contributed to the non-physical aspects. As mentioned in the previous study, people's engagement in activities can strengthen the sense of place [30]. In addition, activity and social life observation were the most prominent in the *kampungs* and Indonesian streets [59–61].

Figure 9. Interaction between participants and people on the street captured by recorded video. (Source: modified by authors).

In terms of the sense of comfort and safety, pedestrian infrastructure, including the sidewalk and surrounding environment, must be well considered. Since the field observation was conducted during the daytime, the biggest obstacle for walking experiences was traffic. Participants reported that they felt unsafe from the traffic, especially in the main streets. Feeling safe from crime and traffic contributed to the sense of safety [66]. In the

study area, feeling safe from traffic was only achieved in the *kampung*, not the main streets. It is because the physical condition of the sidewalks was bad (holes, broken). It was also the same for the sense of comfort. Participants reported that they felt more comfortable in the *kampung* than in the main streets due to the lack of noise, a visual surprise of details (participants could observe more details at human walking speed), and a high degree of enclosure (shade). This indicated that the physical and non-physical infrastructure in the main streets needed to be improved.

6.2. Shared Objects and Contribution to Urban Design

Individual and shared perceptions through in-depth interviews and the workshop revealed that participants shared common interests. These perceptions indicate which places feel good and which do not [48]. As visitors, the visual and spatial characteristic of the place, especially the old settlement, attracted their attention. They mentioned that the location was good as a background for taking fashion photographs (participant no.9, male, 20). Another mentioned that the vibrancy of the area made her start to do on-the spot sketching (participant no.1, female, 38), while other participants were also eager to take photographs.

The government has improved physical infrastructure such as pedestrian paths in several main streets in an effort to achieve a walkable city. However, during the walking experiences, the participants found that the sense of safety and sense of comfort, in terms of psychological aspects, were still lacking attention. It means that the government must consider these qualities (i.e., whether the sidewalk is accessible or not) and maintain the physical infrastructure to avoid damaging the facility. As mentioned repeatedly during the in-depth interviews, not all old buildings were in good condition. Managing old buildings through conservation activity (such as adaptive-reuse, revitalization, reconstruction) would bring positive effects on the mental well-being in the city [24,32]. This has been emphasized by a previous study [49], which mentioned that it is not enough to only consider physical features when creating a walkable city, but also important to think about the perceptual qualities which were psychological features. The psychological feature is demonstrated in the results of the workshop discussion on the comfortable sidewalk. A comfortable sidewalk could improve the process of generating a sense of place, because while walking, people can see objects in detail and notice the characteristics of the place [41].

Bubutan is representative of historic districts in Indonesia, many of which are located in the city centre and still have residents living there. Considering the sense of place, participants, as the representatives of young visitors, valued the form and activity aspects of sense of place. Bubutan is not the only place for seeing and enjoying the old buildings, shops, landscapes, but it is also a place for living because local people from generation to generation have lived there for a couple of years. The participants' responses and emotions can contribute to the knowledge of architects, urban planners, and the government to improve and manage development pressure and urban transformations of historic districts [48].

6.3. Limitations and Future Studies

The study revealed that the photographs were useful in helping participants to describe the motive and reason for their perceptual qualities. However, during the in-depth interview, several challenges arose. For example, during the interviews, participants found difficulties in classifying whether the shared objects were favourable or unfavourable. In one case, the presence of old building was considered favourable, but the condition it was in was found to be unfavourable. The in-depth interview helped the authors to recognize the reasons behind participants' views toward the objects [88]. However, not all participants could easily explain their opinions, reasons, and motives during the interview.

Inviting outsiders to experience the local neighbourhood environment created an opportunity to listen to their opinions. However, the study also led to four limitations: First, the field survey required a long time (14 days) because the walking experiences by

participants were held one by one. Moreover, the walking session time was only from 8:00 a.m. to 5:00 p.m. (weekdays and weekends), and the study did not consider the walking experiences during nighttime due to several considerations (e.g., time availability of the participants, dead town at night, less visibility, and safety). Second, this study only examined two aspects of the sense of place [34]: form and activity aspects. Third, recorded video data in this study was utilized to observe the participants' interactions with the place, which are not captured by the photographs. However, the authors are still exploring ways to incorporate this data, which was of considerable size, into the analysis. The analysis of this data will be conducted at a future date, when an appropriate methodology is found, so that the videos can complement the static images and verbal impressions already captured in the above study. Fourth, the analysis presented here has not considered the participants' different backgrounds (educational backgrounds, ages, gender, and occupations).

The above limitations suggest the necessity of further improvements for future studies. First, to avoid difficulties in explaining the reasons by participants, it is necessary to use evaluation sheets before conducting in-depth interviews. The evaluation sheets composed of specific statements may help participants better understand their responses towards the built environment [70,71,75–77]. For example, the researcher can request the participants to write their responses on an emotion scale or to answer specific questions regarding the site. However, adding more diagnostic-type tools (questionnaires or evaluation sheets) can extend the time needed for the field survey of each participant. Second, it is crucial to try to include the measurement to the meaning aspects of a sense of place (place attachment and bonding) by considering their length of stay [34,35]. The meaning of place aims to measure the people-place bond through emotional connection of place. Since the place attachment is measured by the length of time, participants who are involved in the study must have experienced the site before. In the city centres where the landscape is undergoing rapid change, it is necessary to study visitors' place attachment [91–93], place attachment and residential satisfaction [94], and place meaning and historical public spaces [95]. Third, there is clearly a need to take into consideration the backgrounds of the different respondents. In the current study, participants were selected because they had an interest in architecture and town planning. Participants with different backgrounds have different experiences. The coding process and interpretation of the findings could take into consideration the age, gender, or other characteristics of the participants. Since the study viewed and interpreted the responses from general perspectives of young people, aged 19–45, future studies may invite a broader range of participants. For example, the participants could be classified into those who study architecture and town planning, and those who do not [96], or based on occupations, such as students and non-students [70,71].

7. Conclusions

To create a walkable city, it is not enough to only focus on physical features, such as sidewalks, lighting, and traffic. It is also important to pay more attention to psychological features, which are related to people's real-time experiences. This study has explored the sense of place in the Bubutan district from the eyes of outsiders. The photographs taken during the walking session visually recorded participants' responses to the built environment, while the in-depth interview, the video recorded via an action camera, and the workshop revealed the participants' opinions and behaviours, both negative and positive. The analysis results have shown that through walking experiences, the participants noticed physical features related to buildings, visual details, and streetscapes, and non-physical features associated with the warmth of local people and social interaction. Memory and history were attached to the physical features that affected participants' feelings.

The objects shared by participants can inform urban designers and planners about the features that contribute to favourable and unfavourable impressions, thereby helping them identify what should be protected and improved when further developing the Bubutan district. Historic neighbourhoods, like that found in Bubutan, have been shown to create unique responses from pedestrians, evoke memories and past experiences, and support

people's mental well-being. Guidelines for improving historic neighbourhoods should consider people's responses and feelings through urban design qualities and individual reactions. For example, in this study, participants responded most to human scale qualities such as building ornaments and details, social space for interaction, and planters. Another design quality which attracted attention was enclosures, particularly the desirability of objects which provide shade such as arcades or trees. In cities with sunshine throughout the year, such as Surabaya, shade makes people feel comfortable when walking through the streets. Further studies, for example in other historic districts, would be useful for informing urban design guidelines.

The methodology in this study proved helpful in arousing a deeper level of attention and interest from the participants, such as feelings and perceptions regarding pedestrian infrastructure improvements and conservation activities. These issues need to be considered by the local government when designing urban conservation strategies. The methodology adopted in this study could be applied to the development of other historic neighbourhoods, not only in Indonesia, but also in other countries.

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