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The strategy of preserving the city's architecture character of Malang by using SWOT analysis approach as an effort of sustainable development

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Abstract. Regional characters and city architecture research are prominent information required to observe the regional elements. Main objectives of the research are to maintain Malang city identity and to determine regions or buildings that can be preserved as local regulations in the sustainable development. The location that was taken as a case study was Malang in East Java Province. The data were collected in this study by using several methods; interviews and visual observations. The data which were obtained from such methods were classified based on the benefits and the depth of the meaning of the data. The data triangulation was also performed. The SWOT analysis was employed to describe the strategy in this study. The research findings region and architecture character can be used as a basic concept in the determination of sustainable development policies of Malang.

1. Introduction

The growth and development of the city are motivated by various aspects such as population growth, scientific and technological progress, dynamics of economic activities, development of communication networks, and transportations. All of the aspects above will changes the function of area and the characteristics of city architecture. If it is regulated properly, these factors will directly affect the decrease of quality of urban space function and city identity. Malang is Dutch colonial town that has been developed since 1914, so that the existing buildings are historic buildings, and each of the buildings should be maintained as an element of urban architecture. The aim of this work is to present the strategy of preserving regional characters and city architectures of Malang to achieve sustainable development.

2. Theoretical Review

2.1. Definition of Preservation

Preservation is an activity indirectly that related to the artifacts maintenance in the similar physical condition. The aesthetic background should not be added or subtracted. The preservation activities in historic area or buildings are related to cultural value in the wider community life. The principles of preservation are as follow:

1. To obtain a physical identity of environment
2. To get a Sense of place



3. To obtain the historical value of the city district
4. The architectural value increase of the area and the building
5. Economic benefits increase
6. Place of inspiration
7. As an initiator of tourism and recreation activities
8. To Increase the value of education in the community.

Historic areas and buildings are used as artifacts that good for commemorate events in the past [1].

2.2. Definition and Character of City

Character in terms of language have the same meanings to the nature or characteristics [2]. According to [3], that the character is a sensory experience that involves various sensing such as smells, sounds, and sight. In the context of the old town, the character is formed from a process or persistence of urban elements in a fairly long period of time. Therefore, according to the observations of the urban experts, character is realized from the combination of quality, such as topography, geology, building materials, road pattern and boundaries (territorial) ownership in the past. Experts also argue that the urban character of the city will be more unique investigated if the supporting elements have been long-lived character, and image elements of the city has developed in the mind of the population. There are several factors that make up the character of a city according to [3].

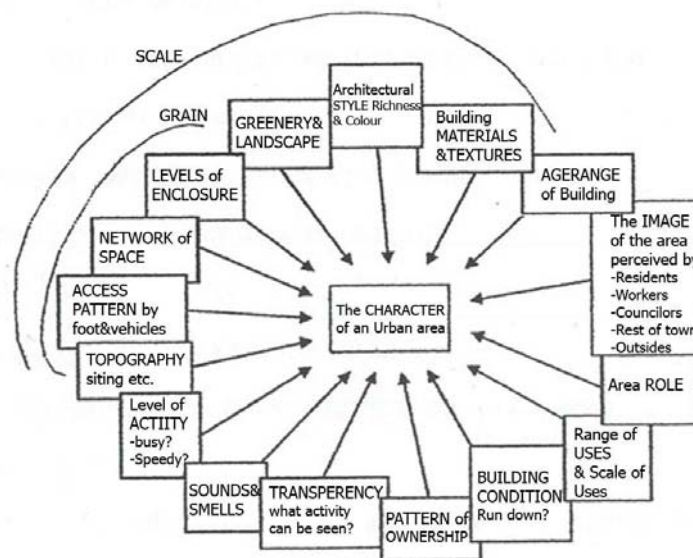


Figure 1. 'What is Character'? [3]

According to [4], there are three basic components of the character of the city: the physical quality, function and activity, as well as the meaning or symbol. However, Graham has given limits to researchers who will assess city in terms of character, among others:

- i. Privileged architecture

- ii. Climate, in this case it is the quality and quantity of light, precipitation, and temperature difference
- iii. Natural spatial patterns
- iv. Places associated with the memory of the population
- v. Pattern past the old buildings in urban areas
- vi. Culture and history of the region
- vii. Activities undertaken in these areas are seasonal such as religious ceremonies, parties and other cultures
- viii. Environmental quality informative.

Based on the description above can be concluded that the character of the city are the quality resulted from the combination of various components and elements within the city. Therefore, the character research of the city need to be observed to the quality of the city that is therein. The quality considered above covers physical quality, function and quality of activities both negative and positive. An intensive observation is applied to the elements, components and elements in a specific city, because the quality will give a response in the character formations that have the potential to establish the identity of an urban area.

2.3. *Character and Identity*

Described that identity have a common sense with the character [5]. In the field of architecture of the city, [6] defined identity as person stage in recognizing and remembering a good place or region than anywhere else clearly and individually or at least has its own character. According to [7], identity is a quality that makes it an easily recognizable place, also says in his article titled *Identity of Place (A Case Study of Kuantan Town Centre, Malaysia)* that the establishment of the place identity is affected by unique or distinctive character.

Furthermore, [8] explained that in a preparation and an arrangement of elements there is a principle study that shows a strength form in homogeneity. Moreover, it also generates a stand out character of which become the main identity of the place. The statement "stand out" from above refers to the strength of these characters as distinctive, essential, and unique. From all of the above statements, it can be concluded that the character and identity have a close proximity quality. Additionally, the character is also an important element in the identity of place. This means character and identity are two elements interconnected in shaping the quality of the place or the region.

2.4. *City Architecture as Artifacts*

According to [9], city is an artifact which is combination of the site, the event, and the sign. Moreover, the idea of locus that is an urban ritual is very important for the continuity of history because it is where the sustainability of a city can be achieved through the monuments that have been built as the city's architecture. Thus, it can be described that city architecture is a physical and a non-physical of city aspects studies. The physical studies consider the relationship between urban space and mass as well as its form and pattern. While the non-physical studies observe the relationship between social, cultural, and religious.

2.5. Sustainable Development

According to [10], a sustainable development is the development that meets the needs of the present generation without reducing the ability of future generations to meet their own needs. While according to [11], sustainable development aims to improve the welfare of society, to meet human needs and aspirations. This development to find the equity of development between generations in the present and future. In line with the above concept, [12], states some effort to realize the sustainable development that are:

- Intergeneration equity benefit means that the utilization of natural resources for growth needs to consider the reasonable limits in ecosystem or environmental systems control. In addition, it need directed to replaceable natural resources and reducing exploitation of unreplaceable natural resources.
- Safeguarding the sustainability of existing natural resources and the environment. Moreover, preventing ecosystem disturbances in order to ensure a good quality of life for future generations.
- Utilization and management of natural resources to increase the economic growth.
- Maintaining the welfare of community both present and future (inter temporal).
 - Maintaining the benefits of natural resources and environment development that have long-term or sustained beneficial effects between generations.
 - Maintaining the quality of human life between generations in accordance with their habitat.

Based on description above can be concluded that sustainable development is sustainable development is an effort to meets the needs of the present generation without reducing the ability of future generations to meet their own needs both in terms of economic, socio-culture and city architecture.

The concept of environmental protection against the effects of sustainable development emerged in the 1980s. The sustainable development can be defined as a development process for stimulating socio-economic development in a many levels such as country, regional, and local related to environmental conservation. This fact can be focused on adaptive capabilities development and opportunities to preserve social, economic and ecological systems for present and future generations [13]. According to the standard of the World Bank, sustainable development have three important aspects there are economic sustainability, social sustainability, and environmental sustainability [14]. The relationship between economic and social aspects, social and environmental aspects are compatible and complementary. The economic aspect needs high cost for environment, hence green growth concepts are needed [15-16].

2.6. Strength, Weakness, Opportunity, and Threat (SWOT)

SWOT analysis is a common method used to analyze internal and external factors in the environment. In addition, this method also called strategic planning method used to evaluate a fourth aspect above internally and externally in various spheres, such as analysis of regional character and the city architecture. From the above statements, SWOT analysis approach are summarizes internal and external factors as one of the important factors to maintain the architectural character of Malang.

3. Methodology

Malang was chosen as a case study because the interview and the visual observation techniques were used as a methods in this research. The interview technique was used in order to describe about the socio-culture societies of Malang. The visual observation technique was used in order to measure the physical elements for support the city region character of Malang. While, the SWOT analysis was used to determine the region character and city architecture.

3.1. Data Analysis Method

The data obtained from interviews and visual studies compared using triangulation, and compared critically with theories that have been described both through the study of literature as well as important documents, so there has been found architectural character of the area and the city. Then the findings of

the character, identity and image of the city will be strengthened with a SWOT analysis, which is useful to gain strength (S), weakness (W), opportunity (O), and threat (T). The research findings – SWOT analysis - can be used as a basis for determining the development policy of the urban area, the preservation of urban areas, and urban development, especially in Malang.

4. Result and Discussion

The interview analysis was done through the ability of respondents in remembering the value and meaning of historic building environment as an element of city architecture character. The interview analysis is emphasized on several aspects; firstly, the quality of the design compared to other places. Secondly, shapes and features of the specific façade. Thirdly, atmosphere of the region, uniqueness of the supporting elements, and the last were cultural, architectural, and historical values.

Based on that analysis, it can be explained that the area (Ijen Road Area), Building (Malang city office, PLN office, Avia shop, Cor Jesu Senior High School, Frateran Junior High School, twin buildings, Heart Jesus church, Kelenteng, Oen shoap, and several shopping centers in the Malang have a very strong urban architecture. A visual or photo interpretation analysis is one of psychological analysis to get architecture character of Malang. This analysis was completed through the ability of respondents in remembering the value and meaning of the region (environment) and building based on the arrangement of photos. The results of this method are able to conclude that the area of historical value and buildings that form and display the unique facade can provide a strong memory of the community. The facade view of this unique urban architectural element is also a determining factor in shaping people's perceptions. The results of the analysis through the interpretation of the image as shown in Figure 2; 3 and 4 is worth 80% to 100% as follows: Tugu (100%), Ijen (100%), Alun-Alun (80%), City Hall (100%), PLN Office (93%), Frateran Junior High School (87%), Dieng Plaza (90%), Sarinah (83%), Avia shop (97%), (97%), church (90%), temple (97%), and mosque (93%).



Figure 2. (a). Tugu of Malang, (b). Ijen, (c). Alun-Alun, (d). Malang city hall.

Source: Field Survey, 2013



Figure 3. (a). PLN office, (b). Frateran Junior High School, (c). Dieng Plaza, (d). Sarinah.
Source: Field Survey, 2013

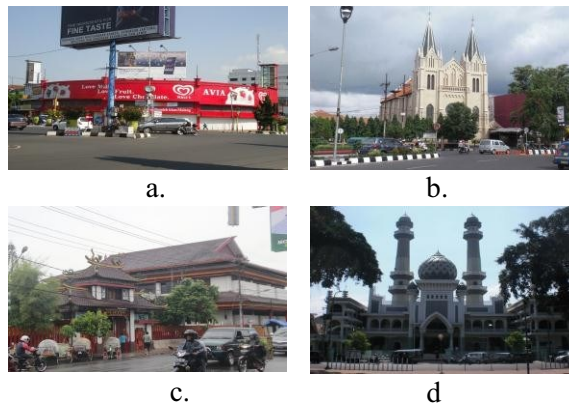


Figure 4. (a). Avia shop, (b). Church, (c). Temple, (d). Mosque.
Source: Field Survey, 2013.

4.1. SWOT Matrix

Based on the SWOT analysis above, the strategies which can be employed is shown in this Table 1.

Table 1. Qualitative Analysis of Strategy between Strength and Opportunity [17]

<p style="text-align: center;">EXTERNAL</p> <p>FACTORS</p> <hr/> <p>INTERNAL FACTORS</p>	<p>Opportunities</p> <ol style="list-style-type: none"> 1. Regional character finding and city architecture are able to be an icon and identity of Malang; 2. Revive Malang city's slogan; 3. Some regions and typical building found by researchers can be implemented as the conservation region and cultural heritage building; 4. Maximize region function implementation to increase economy value in Malang; 5. People and government should make relation to improve the strength; 6. Give visual pleasure as well as pedestrians and drivers convenience for people in Malang City.
<p>Strengths</p> <ol style="list-style-type: none"> 1. Originality of old building (Dutch colonial building); 2. Enhancement of esthetic value with presence of historical monument; 3. Enhancement of regional character that have historical value. 4. Strengthen the region image in the presence of colonial building, green opened-area, and other visual element; 5. The feature of Malang with presence of recreation place; 6. Improvement of living cost in term of knowledge in the presence of educational region; 7. Improvement of public prosperity. 	<p>Strengths-Opportunities Strategy</p> <ol style="list-style-type: none"> 1. Maintain the originality of city architecture and regional characters which have historical value as an icon and identity by issuing the regulation of Malang (S 1, 2; O 1); 2. Conservation and preservation implementation to the recreational, educational, and industrial regions in order to increase people prosperity as well as give visual pleasure, pedestrians and driver convenience (S 5, 6, 7 ; O 2, 3, 4, 6); 3. Give opportunity to the people for rearranging Malang layout (S 1, 2, 3, 4; O 5).

Table 2. Qualitative Analysis of Strategy between Strength and Treat [17]

<p style="text-align: center;">EXTERNAL</p> <p>FACTORS</p> <p style="text-align: center;">INTERNAL FACTORS</p>	<p>Treats</p> <ol style="list-style-type: none"> 1. Value and behavior change of Malang society because of globalization issues; 2. The strategic condition and position of Malang city result in acceleration of regional character and architecture alteration in Malang city; 3. The presence of unstable government policy.
<p>Strengths</p> <ol style="list-style-type: none"> 1. Originality of old building (Dutch colonial building); 2. Enhancement of esthetic value with presence of historical monument; 3. Enhancement of regional character that have historical value. 4. Strengthen the region image in the presence of colonial building, green opened-area, and other visual element; 5. The feature of Malang with presence of recreation place; 6. Improvement of living cost in term of knowledge in the presence of education region; 7. Improvement of people prosperity. 	<p>Strengths-Treats Strategy</p> <ol style="list-style-type: none"> 1. Disseminate information about the importance of colonial buildings as assets of local government to the entire community of Malang through counseling (S 1, 2, 3, 4; T 1, 2) 2. Government policy that maintain places serving as refreshing area for Malang is required (S 5; T 3); 3. Need to revive the Malang slogan (Malang Tri Bina Cita) as the city of education, tourism, and industry (S 4, 5, 6, 7; T 2, 3); 4. Need spatial arrangement that serve as a productive industrial area (S 6, 7; T 3).

Table 3. Qualitative Analysis of Strategy between Weakness and Treat [17]

<p style="text-align: center;">EXTERNAL</p> <p>FACTORS</p>	<p>Opportunities</p> <ol style="list-style-type: none"> 1. Regional character finding and city architecture are able to be an icon and identity of Malang ; 2. Revive Malang City's slogan; 3. Some regions and typical building found by researchers could be implemented as the conservation region and cultural heritage building; 4. Maximize region function implementation to increase economy value in Malang ;
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INTERNAL FACTORS	<ol style="list-style-type: none"> 5. People and government should makes relation to improve the strength; 6. Give visual pleasure as well as pedestrians and drivers convenience for people in Malang
Weaknesses <ol style="list-style-type: none"> 1. Less public awareness to contribute in maintaining the character of the region and preserving the old buildings in Malang (Dutch colonial buildings); 2. There is no local regulations to establish historical building set to be used as a heritage building. 	Weakness - Opportunity Strategy <ol style="list-style-type: none"> 1. Give information to the public about not only the importance of historical value but also architectural area of the city to revive the Malang slogan - Tri Bina Cita (W 1; O 1, 2, 3, 4, 6); 2. Need to immediately create local regulations associated with old buildings as heritage (W 2; O 1, 3, 5).

Table 4. Qualitative Analysis of Strategy between Weakness and Opportunity [17]

<p style="text-align: center;">EXTERNAL</p> <p>FACTORS</p> <hr style="border: 0; border-top: 1px solid black; width: 100%;"/> <p style="text-align: center;">INTERNAL FACTORS</p>	Treat <ol style="list-style-type: none"> 1. Value and behaviour changes of Malang society because of globalisation issues; 2. The strategic condition and position of Malang result in acceleration of regional character and architecture; 3. The presence of unstable government policy.
Weaknesses <ol style="list-style-type: none"> 1. Less public awareness to contribute in maintaining the character of the region and preserving the old buildings in Malang (Dutch colonial buildings); 2. There is no local regulations to establish historical building set to be used as a heritage building. 	Weakness - Treat Strategy <ol style="list-style-type: none"> 1. Disseminate information about the importance of the historical value of the area and the architecture of the city in maintaining the identity of Malang city to the public (W 1; T 1, 2); 2. Should immediately establish local regulations associated with the old buildings in the city of Malang as a heritage building (W 2; T 3).

4.2. Internal Factor Evaluation Results

After conducting the analysis of internal factors, it might be identified some strengths and weaknesses of Malang regional character and architecture. These factors might be included in the table of Internal Factor Analysis (IFA) and are able to be calculated. The value was obtained by valuing each factor according to the relative importance for research. Details of value 0.0 (not important) to 1.0 (very important), then for

each factor will be judged based on whether the relevant factors are as (4) = the main strength, (3) = small strength, (2) = small weakness, and (1) = major weakness. By multiplying value and score, it will obtain the value of each factor and then summed to obtain the total value of the IFA results. Table 5 shows IFA assessment.

Tabel 5. Internal Factor Analysis (IFA) [17]

No.	Strengths	Score	Value	Total
1.	Originality and condition of old building (Dutch colonial);	3	0.9	2.7
2.	Enhancement of estetic value with presence of historical monument;	3	0.5	1.5
3.	Enhancement of regional character which have historical value;	4	1	4
4.	Strengthen the region image with colonial building, green opened-area, and other visual elements;	4	1	4
5.	Malang has special features by providing recreation places;	3	0.7	2.1
6.	Improvement of living standard in term of knowledge by preparing education region;	3	0.8	2.4
7.	Improvement of Malang people prosperity.	4	0.9	3.6
TOTAL STRENGTH				20.3
No.	Weakness	Score	Value	Total
1.	Less public awareness to contribute in maintaining the character of the region and preserving the old buildings in Malang (Dutch colonial buildings)	2	0.8	1.6
2.	There is no local regulations to establish historical building set to be used as a heritage building.	1	1	1
TOTAL WEAKNESS				2.6
TOTAL			22.9	

4.3. External Factor Evaluation Results

After conducting analysis of external factors, it is possible to identify some strengths and weaknesses of Malang regional character and architecture. These factors might be included in the table of External Factor Analysis (EFA) and its value can be calculated. The value was obtained by valuing each factor according to the relative importance for research. Details of value 0.0 (not important) to 1.0 (very important). Then for each factor will be judged based on whether the relevant factors are as (4) = the main strength, (3) = small strength, (2) = small weakness, and (1) = major weakness. By multiplying value and score, it will obtain the value of each factor and then summed to obtain the total value of the EFA results. EFA assessment tables is described in Table 6 below:

Table 6. External Factor Analysis (EFA) [17]

No.	Opportunity	Score	Value	Total
1.	Regional character finding and city architecture are able to be an icon and identity of Malang City	4	1	4
2.	Revive Malang City's slogan (Tri Bina Cita Kota Malang).	3	0,6	1,8
3.	Some regions and typical building found by reseachers can be implemented as the conservation region and cultural heritage building.	4	1	4
4.	Maximize implementation of region function to increase economy value in Malang;	4	0,9	3,6
5.	People and government should makes good relation to improve the strength;	3	0,8	2,4
6.	Give visual pleasure as well as pedestrians and drivers convenience for people in Malang.	4	0,9	3,6
TOTAL OPPORTUNITY				19,4
No.	Treath	Score	Value	Total
1.	Value and behaviour changes of Malang society because of globalisation issues	1	0,9	0,9
2.	The strategic condition and position of Malang result in acceleration of regional character and architecture.	2	0,7	1,4
3.	The presence of unstable government policy	1	1	1
TOTAL TREATH				3.3
TOTAL			22.7	

4.4. Summary of SWOT Analysis Result

From the calculation of IFA and EFA value, it was obtained results for IFA value = 229 and EFA value = 22.7. Furthermore, SWOT analysis diagram can be arranged to determine the relative position of the results about the character of the area and the architecture of the city which is located in the first quadrant, second, third, or fourth. The SWOT analysis calculation is as follows:

- Point X is the difference of multiplying "score" by "value" for each strength and weakness.

Strength	= 20.3
Weakness	= 2.6
Point X	= Strength – Weakness
	= 20.3 – 2.6
	= 17.7
- Point Y is the sum of multiplying "score" by "value" result for each strength and weakness.

Opportunity	= 19.4
Treat	= 3.3

$$\begin{aligned}
 \text{Point Y} &= \text{opportunity} - \text{treat} \\
 &= 19.4 - 3.3 \\
 &= \mathbf{16.1}
 \end{aligned}$$

The application of the calculation described above is able to provide an information that relative position located at coordinates (17.7; 16.1) is in the first quadrant (see Figure 5). This means the character and architecture of Malang region has strengths and opportunities. Hence, it is able to arrange strategies to take advantage of existing opportunities by using the power elements and architectural areas of the city that have been found through previous analysis. Strategy which is appropriate with the architectural character of Malang was the aggressive strategy.

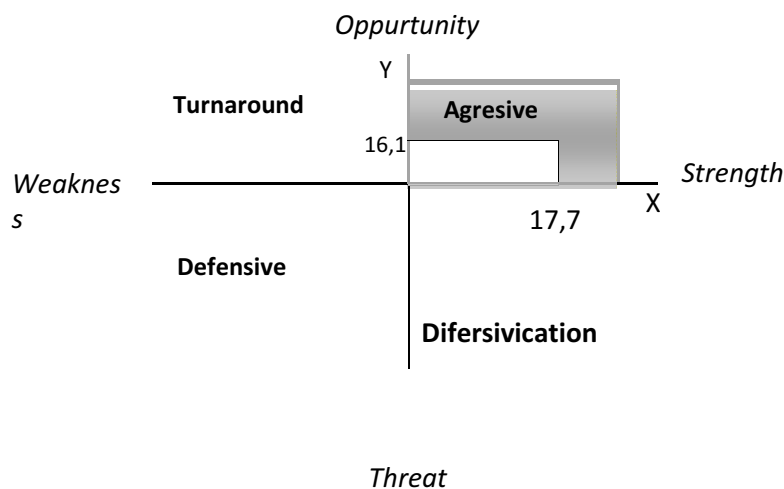


Figure 5. Regional Character and City Architecture Relative Position [17]

Based on evaluation above, it can be identified strategies that maintain the strength and opportunities as follows:

4.5. External Factors

Opportunities

- The findings of regional character and city architecture, which has been described above, are able to be employed as an icon and the identity of Malang.
- Relive the Malang city's slogan by retaining the elements that support these slogans, such as architectural characters that have an image of the education building recreational building and shopping area.
- Some regional and typical building were found by the researchers can be used as a conservation and cultural preservation buildings;
- Optimizing the utilization of the region functions to increase the economy value of Malang;
- the government and the community, (intellectual community (Universities) and the general public) should have a better participation in the spatial arrangement of Malang;
- Improvements in several areas in Malang to get convenient for viewing, walking, and driving especially for people who live in Malang

4.6. Internal Factors

A. Strengths

1. The nature condition of old buildings in Malang can be controlled;
2. The historical value of Malang was showed by strongest of their architecture character
3. The Malang identity can be strengthened with colonial buildings and visual elements effect that have retained its existence or aesthetic values.
4. The enhancement of living cost, prosperity, and convenience through the provision of educational, economical, and recreational facilities.

B. Strategy Strengths-Opportunities

1. Maintaining the nature of the city architectural character which have historical value as an icon and city identity by making a regulation issued of Malang city local government (S 1, 2; O 1);
2. Do some conservation and preservation of region , such as : recreational areas, educational areas, and industrial areas, which are able to improve of people's lives, raise of economy, provide a visual comfort, convenience of pedestrians, and driver for people who live in the Malang city (S 5, 6, 7; O 2, 3, 4, 6);
3. Provide an opportunity for the intellectual public community and the general public community in the spatial arrangement of Malang (S 1, 2, 3, 4; O 5).

5. Conclusion

According to the findings of this study, the originality and uniqueness of region as well as architecture in Malang are able to be implemented as heritage.by using socialization strategy about the importance of the historical value to maintain the city identity and revive Malang City's slogan (Tri Bina Cita Kota Malang) to the public. Our results indicate that to increase people prosperity as well as visual pleasure, pedestrians and driver convenience for Malang people are better to do some conservation and preservation to the recreational regions, educational regions, and industrial regions. Therefore, the main conclusion is that the government should makes a regional regulation, which related to the area and architecture as a cultural heritage.

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