



WATER RESOURCE MANAGEMENT IN SOUTHEAST ASIAN REGION

PROCEEDINGS OF THE 4 KYOTO UNIVERSITY – SOUTHEAST ASIAN FORUM

Bogor, 23 - 24 January 2009

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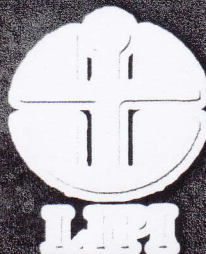
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Identifying Visual Characteristics of Ikonos Image Featuring Aesthetic Quality of Urban Landscape

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Abstract

Spatializing landscape aesthetic has an important role to make aesthetic map that can be used for urban landscape planning and analyzing. This research is initial research to be directed toward formulating the aesthetic map by utilizing Ikonos image. The research was conducted by using descriptive method through field survey and analysis of Ikonos image. The research consisted of several steps, they were analyzing visual characteristics of Ikonos image, field survey, assessment of terrain aesthetic, and analyzing correlation between visual characteristics with aesthetic quality. Geographical Information System was utilized to analyze visual characteristics of Ikonos image, and Scenic Beauty Estimation (SBE) was used for assessing the aesthetic of terrain. Result of the research generally shows there is a consistency of visual characteristics on Ikonos image featuring quality aesthetic on terrain. Visual elements indicate high quality aesthetic are vegetation, waterbody. Conversely, visual elements indicate low aesthetic quality are building and open area (without vegetation cover).

Keywords: Urban Landscape, Aesthetic Mapping, Aesthetic Quality, Visual Characteristics.

Introduction

Current researches on landscape aesthetic are generally assessing the landscape on terrain position at certain vantage points. Assessing the landscape aesthetic for regional scale was not many conducted yet, especially spatializing aesthetic quality of landscape. Spatializing landscape aesthetic has an important role to make aesthetic map can be used for urban landscape planning and analyzing. This research is initial research to be directed toward formulating the aesthetic map by utilizing Ikonos image. The purpose of this research is to identify visual characteristics of Ikonos image featuring aesthetic quality of urban landscape, especially Beji District, Depok City, West Java, Indonesia.

Methodology

The research was conducted in the year of 2006 at Beji District Area, Depok City, and West Java. The research utilized descriptive method by conducting field survey and analysis of Ikonos image. The research consisted of several steps, they were (1) analyzing visual characteristics of Ikonos image, (2) field survey (ground true check), (3) assessment of landscape aesthetic from terrain, and (4) analyzing correlation between visual characteristics of Ikonos image with terrain aesthetic quality. Geographical Information System was utilized to identify and analyze visual characteristics of Ikonos image. Scenic Beauty Estimation method (Daniel and Boster, 1976) was used for assessing the aesthetic from terrain on the basis of landscape units as shown in Fig. 1.

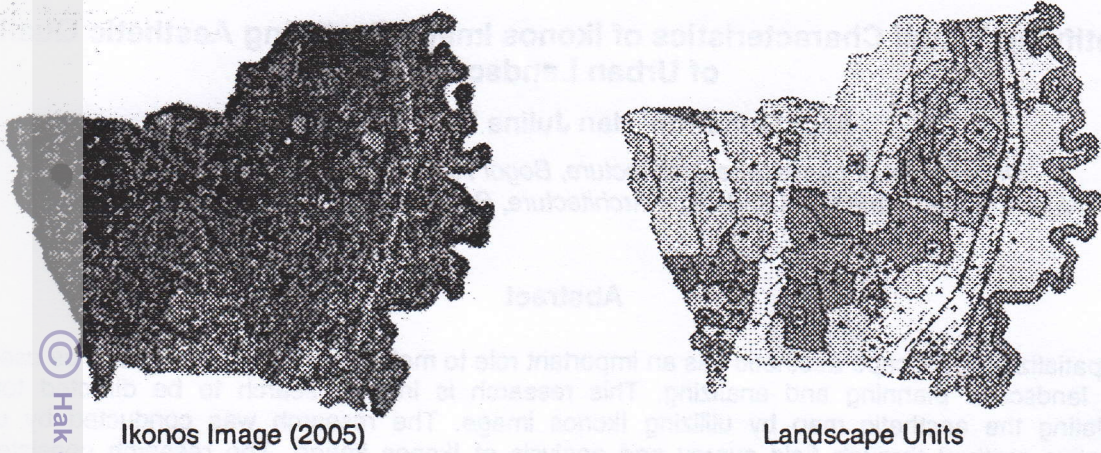


Figure 1. Ikonos Image and Land Units used in the Research.

Results and Discussion

Result of the research shows type of landcover visually is dominated by buildings; it covers around 69% of the total area of Beji District. Vegetation and water body landcovers are around 16% and 12% of the total area respectively. Openspace landcover and street corridor have the smallest area, it is around 2% and 1% respectively.

Aesthetic quality of Beji District spatially can be shown in Fig. 2. High aesthetic quality of the Beji District area covers around 19% of total area. Middle aesthetic quality of the district covers the largest of area, it is around 74%, and low aesthetic quality covers 7% of the total area.

High aesthetic quality is generally located at the area covered by trees such as the areas of Indonesian University campus and riverside. Middle aesthetic quality dominates the largest area of Beji District which consists of mix types of landcover. Areas with low aesthetic quality are located in southern part of Beji District. These are visually characterized by irregular pattern of and high density of buildings arrangement.

Table 1 showed percentage of the areas with high, middle, and low aesthetic qualities, and elements of scenic coverage (terrain based). The Areas with high quality of aesthetic (terrain based) are indicated by presence of high quality building (5.32%), vegetation (3.99%), and waterbody elements (8.74%) proportionally. The element of waterbody has played an important role or function for improving urban environment. The waterbody does not independently affect aesthetic quality of the area. It also depends on quality of surrounding the waterbody area such as presence of trees stand and others vegetation. Beside of the waterbody, elements of high quality building and vegetation also have various roles for beautifying urban landscape.

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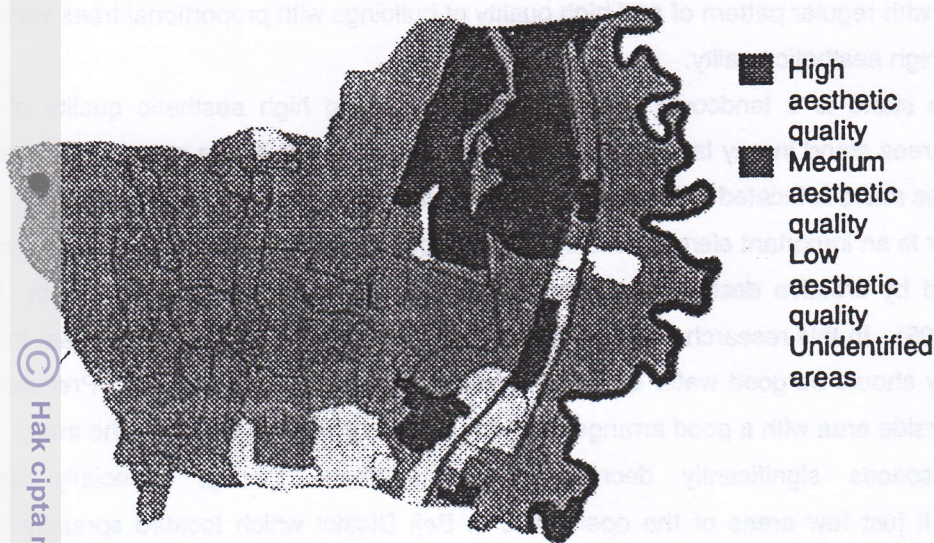


Figure 2. Aesthetic Map of Beji District, Depok.

Table 1. Percentage of the Areas for Various Aesthetic Qualities and Elements of Scenic Coverage

No.	Elements of Scenic Coverage	Aesthetic Qualities Categories		
		Low	Middle	High
1.	Building	6.37	56.98	5.32
2.	Vegetation	0.35	11.10	3.99
3.	Waterbody	0.28	2.96	8.74
4.	Openspace	-	0.74	0.38
5.	Corridor	-	2.22	0.57
	Total	7.00	74.00	19.00

Element dominates the areas with low aesthetic quality is also building (6.37%), but it usually constitutes the high density buildings. It psychologically reduces public opinion on urban landscape aesthetic. Presence of vegetation in scenic of landscape with high density building can increase the aesthetic quality. According to Gunawan research (2005) various qualities of building within an urban area can reduce the aesthetic quality, however, presence of urban vegetation can increase the aesthetic quality.

The visual characters of Ikonos image are categorized into 7 landcovers, they are regular and irregular pattern of building, trees stand, non-tree vegetation, waterbody, openspace, and street corridor. Irregular pattern of building can significantly decrease aesthetic quality of the areas. This covers small areas of southern part of Beji District which many of high density settlements located there. Otherwise, visual characters of regular pattern of building relatively show middle to high aesthetic quality of the areas. It is partly located at center part of Beji District. These results are the same as Gunawan's research (2005) conducted at terrain that presence of irregular pattern of buildings or urban areas in landscape of settlement can reduce aesthetic quality, otherwise, landscape

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of settlement with regular pattern of and high quality of buildings with proportional trees was evaluated as middle to high aesthetic quality.

Trees stand is a landcover that significantly featuring high aesthetic quality of the area. Presence of trees stand in any landcover can improve the aesthetic of the area. The area with high density of trees stand is located at University of Indonesia, northern part of Baji District.

Water is an important element in urban landscape. It can improve quality of urban outdoor air condition, and by creative design, the urban landscape can be more aesthetic (Booth, 1988; and Gunawan, 2005). In this research, waterbody can improve aesthetic quality of an areas. In this case, the waterbody should be good water quality and free from rubbish and silting up. Presence of trees stand at waterside area with a good arrangement can improve aesthetic quality of the area.

Openspaces significantly decrease urban aesthetic quality, especially unmanaged openspaces. It just few areas of the openspace in Beji District which located spreadly. Non-trees vegetation characterizes middle aesthetic quality. Street corridors can characterize both high and low aesthetic quality. The high quality is indicated by presence of trees stand along the corridor, and the low quality is indicated by absence of the trees.

Concluding Remarks

The visual characters of Ikonos Image landcovers can be used to identify the aesthetic quality of landscape on terrain. Regular pattern of built areas and vegetation cover play important role for predicting high aesthetic quality of an area. Irregular pattern of built areas and absence of vegetation indicate the low aesthetic quality of an area.

Acknowledgement

This research was supported by Department of Landscape Architecture, Faculty of Agriculture, Bogor Agricultural University (IPB). In this chance, we would like to thanks to the Government of Depok City, especially for Dra. Kania Parwati, MSi, who gave us permint to use their Ikonos image (2005) in this research.

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ISBN 978-602-96128-0-6



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