フィリピンのボホール地区チョコレートヒルズにおける観光客の景観嗜好

Landscape Preference of Tourists in Chocolate Hills, Bohol, Philippines

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Abstract: Chocolate Hills is a tourist spot in Bohol, Philippines. There are two viewing resorts offering two unique panoramic views of the hills. This study aims to investigate the landscape preference of tourists in its present condition and for future development. A survey was conducted on tourists in two viewing decks to identify the most interesting part in the existing panoramic view and evaluate the attractiveness and importance of the landscape elements in the present land use, and to determine the landscape expectation of tourists for reference in future developments. The informants were provided with a camera, a questionnaire and landscape illustrations as research tools during the survey. An area in the panoramic view was identified by tourists as the most interesting part of the panoramic view. The study suggests that special attention should be given to the identified part in the management of the landscape. Tourists gave equal importance to hills (grasslands), forests, and farmlands, but expressed preference for viewing hills that are uncovered with trees. The reason of this preference, as a result of Correspondence Analysis, is to give emphasis on the physical characteristics of the features. This is supported by another part of the survey when tourists were asked to choose their preferred landscape from the different possible landscape illustrations.

Keywords: *Landscape preference, Chocolate Hills, Bohol, Karsts landscape*

キーワード: 景観嗜好, チョコレートヒルズ, ボホール, カルストランドスケープ

1. Introduction

The Chocolate Hills is an unusual karsts landscape found in the island of Bohol, Philippines (Figure 1). It is dominated by geologically formed conical hills randomly spread over an area of more than 14,000 hectares at the central part of the island. A vast number of 1,268¹⁾ hills averaging from 70 to 100 meters high vary in density on several municipalities. The greatest concentrations of the Chocolate Hills are in Sagbayan, Batuan, and Carmen (Figure 2). There are several theories regarding its formation but the most accepted conjecture is gradual limestone weathering.

“Chocolate Hills” was coined describing the seasonal change of color from green to brown during the summer months, resembling hills of chocolates. It is included in the list of tourist destinations of the Philippine Tourism Authority and has been declared the country's 3rd National Geological Monument, proposed for inclusion in the UNESCO World Heritage List of Natural Monuments (UNESCO²⁾).

However, aside from being a recognized natural landmark for tourism, Chocolate Hills has also been utilized to develop agriculture and forestry

for generations. Land use can be described as: (1) farmlands dominated by rice fields; (2) forests that were outcome of the reforestation projects of the Department of Environment and Natural Resources, and (3) grasslands on the hills which dictate the seasonal color change. These three land uses have inevitably become integral parts of the whole landscape of Chocolate Hills. However, due to policies and forest management, it has developed into an evolving landscape. Because of the changes, landscape appreciation by the tourists, among others, has become the concern of policy makers, planners, the local government, and the tourism agency.

Chocolate Hills is a landscape composed of several stakeholders. If policies and management do not give cautious deliberation to all stakeholders, conflicts on land use are usually expected which result in sustainability issues. Tourists are one of the major stakeholders. There have been discussions in the management of Chocolate Hills that tourists' perception should be considered to strengthen tourism. But, what is the tourists' perception? This study was conducted to obtain the opinion of tourists regarding the landscape of Chocolate Hills.

Tourist landscape preference evaluation is an important contributory tool in the management of landscapes. It can also be very useful in policy making (Eleftheriadis, et al.⁴⁾) and in planning (Rudenas, et al.⁵⁾) that particularly address situations linked to evolving landscapes. Since policies and planning dictate forest management and land use change of a landscape, it is important for policy makers and planners to study and incorporate tourists' perception and preferences of the landscapes, that would create pleasing views and earn positive feedback, as well as to understand why such views were preferred.

Landscape preference studies can be conducted in numerous methods such as the use of photographs (Shafer Jr and Brush⁶⁾; Aoki⁷⁾; Dearden⁸⁾), videos (Schroeder and Orland⁹⁾), and landscape simulators (Karjalainen and Tyrvaenen¹⁰⁾). However, there are more limitations in using media as

Figure 1. Locator map of the Bohol in Philippines.

Figure 2. Map of Bohol. Dark gray are municipalities with the highest concentration of hills, light gray are municipalities with the lesser concentration of hills. Courtesy: Sundita and Gonzalez³⁾

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compared to on-site investigation. Responses for evaluation in on-site investigation are believed to be more accurate (Aoki¹¹). On-site investigation could also provide a uniform basis of evaluation to respondents. It presents the respondents a variety of possible viewpoints and provides them various means of assessment other than visual sensory. Landscape preference studies using on-site survey are scarce but seem challenging.

The objective of the study is to investigate the landscape preference in its present condition and for future development through on-site survey. In particular, this study intends to identify the most interesting part of the panoramic view, evaluate the attractiveness and importance of the landscape elements in the present land use, and to determine the landscape expectation of tourists for reference in future developments.

2. Methodology

(1) Research Area and Land Use

Of the 1,268 hills, two were developed into viewing resorts for tourism: Chocolate Hills Complex in Buenos Aires, Carmen and the recent Sagbayan Peak in San Agustin, Sagbayan. Chocolate Hills Complex was constructed in 1970 and was opened to the public in 1972 (Bohol Tourism Office¹²) while Sagbayan Peak was officially inaugurated in May 31, 2003 (Fuentes¹³).

The valley floors are largely used for rice cultivation which has sustained rice production for centuries and its importance as regional rice producer continues today. In some areas, the hills are also utilized as pasture for draught animals (water buffalo) during rainy season (Urich¹⁴). The hills and valley floors have also been employed for reforestation projects. Reforestation in Chocolate Hills is highly prioritized because deforestation is directly linked with degradation of both water quantity and quality (Urich and Reeder¹⁵). Forestry is as important as agriculture in the management of karsts landscape. However, due to the complexity of this landscape, balancing the land use for agriculture, forestry, and the hills for tourism had become a big challenge the Chocolate Hills is facing.

(2) Survey and Analysis

A survey was conducted in the two viewing resorts, Chocolate Hills Complex (CHC) and Sagbayan Peak (SP), from January to February 2010. There were 75 tourists (5% of the average daily guests¹⁶) randomly surveyed per day for two days, one on a weekend and one on a weekday. A total of 150 tourists per resort were surveyed for the two days and a total of 300 tourists for the two viewing resorts. Each tourist was provided with a questionnaire and camera, and was guided accordingly by the interviewer. The survey consisted of identifying the most interesting part of the panoramic view, evaluating the attractiveness and importance of the landscape elements and determining the landscape expectation of tourists using illustrations.

In identifying the most interesting part of the panoramic view, tourists were provided with a camera for them to take their personal favorite view around the viewing deck. In the analysis, the midpoint of each photo was first identified and plotted on the panoramic photo to determine distribution pattern of the midpoints. From the distribution pattern, frames were positioned focusing on the major features (i.e. hills, rice fields, etc.) discerned from the collective midpoints. Each photo was then categorized according to the identified frames. The results of the two analyses were consolidated to come up with a more conclusive result.

Evaluation of the attractiveness and importance of the landscape elements was conducted by interviewing the informants if they found the hills, farms and forests in their present state attractive or scenic and important part or element of the view. They were also asked what kind of

forest cover they prefer for the hills in a question form in the survey. The options were: (1) *Uncovered*; (2) *Partially Covered*; and (3) *Covered*. Furthermore, the reasons for preference were obtained by asking open-ended questions (i.e. Why do you prefer such hill cover type?) during the survey.

Results for the attractiveness and importance of elements were verified through simple descriptive analysis. Respective analysis on the preferred hill cover type and the reasons of tourists behind their preference was performed to obtain tangible results on hill cover preference and to understand the nature of evaluation. Generally, the categories of the reasons were based on landscape properties (Zube, Sell, et al.¹⁷). In addition, other categories were based on the landscape indicators (Tveit, Ode et al.¹⁸; Ode, Tveit et al.¹⁹). Furthermore, considering the local situations in Chocolate Hills, the two categories as landscape externalities (Türker, Öztürk et al.²⁰; Gios and Clauser²¹) were added as shown in Table 1. Categories were subjected to Multiple Response (MR) and Correspondence Analysis (CA) to obtain the most likely reason for the choices of informants.

In determining the landscape expectation of tourists, illustrations of different landscape scenarios were presented for tourists' assessment. Landscape expectation in this study refers to tourists' ideal image or visualization of Chocolate Hills landscape including its land use in the future. The scenarios presented possible land use combinations of forest, grasslands and agriculture on the hills and valleys from its present condition. It offered tourists the chance to express the kind of landscape they would generally expect for Chocolate Hills. The choices for landscape preference were: (A) trees covering the entire hill, (B) trees from bottom two-thirds of hill to valley, (C) trees covering the bottom two-thirds of the hill, (D) trees covering entire hill and valley, (E) trees from bottom one-third of the hill and valley, (F) trees covering bottom one-third of the hill, and (G) trees on the valley only.

3 Results

(1) Profile Analysis

The average age computed was 32.7 years old in SP and 33.9 years old in CHC; 34 years old and below accounted for the 2/3 of the guests. There were more young adults visiting SP compared to CHC. More than half of the guests both in SP and CHC were first-timers. However, between the two sites, CHC had more first-time visitors than SP. Most tourists were from different parts of the country: 64.5 % from outside of Bohol, 26.3% from Bohol, and 9.2% from overseas. CHC had more guests from outside Bohol and overseas as compared to SP.

(2) Landscape Evaluation Analysis

1) Identifying the most interesting part of the panoramic view

From the plotted midpoints on the panoramic photo, the distribution

Table 1. Description of categories

Category	Description
Landscape Properties	
Feature	refers to the landscape elements; physical properties
Form	shape and configuration of a landscape element
Landscape Indicators	
Coherence	unity of a scene, degree of repeating patterns of color & texture, correspondence between land uses and natural condition
Complexity	diversity and richness of landscape elements and features, interspersed pattern in the landscape
Ephemera	refer to landscape change related to season or weather
Historicity	historical continuity & richness present in the landscape
Imageability	the ability of a landscape to create a strong visual image in the observer & thereby making it distinguishable & memorable
Naturalness	perceived closeness to a preconceived natural state
Stewardship	the sense of order and care present in the landscape reflecting active & careful management
Landscape externalities	
Economic	livelihood and source of income
Environmental	protection of landscape elements for ecological reasons

Figure 3. Panoramic view in Sagbayan peak²²⁾. S1 (white dotted line) was the identified most interesting spot.

Figure 4. Panoramic view in Chocolate Hills Complex. C1 and C2 (white dotted line) were the identified most interesting spots.

Table 2. Group of photos identified in SP and CHC

Sagbayan Peak			Chocolate Hills Complex		
Frame	Count	%	Frame	Count	%
S1	96	64.4%	C1	55	37.2%
S2	27	18.1%	C2	48	32.4%
S3	7	4.7%	C3	22	14.9%
S4	13	8.7%	C4	3	2.0%
S5	3	2.0%	C5	10	6.8%
S6	1	0.7%	C6	7	4.7%
invalid	3	2.0%	C7	3	2.0%
Total	150	100.0%	Total	148	100.0%

pattern identified six frames (Figure 3) from the 150 SP photos and seven frames (Figure 4) from the 148 CHC photos. The focal point of each frame²³⁾ is described in Table 2. These frames offered different landscape views and have different land uses. In SP, 64.4% of the informants took photos of frame S1 where the view was composed of hills, rice fields, coconut trees, overlooking sea and another island. In CHC, 37.2% of the informants took photos of frame C1 and 32.4% of the informants took photos of frame C2 which, if combined, offered two prominent hills surrounded with trees and clustered hills behind.

2) Evaluation of the attractiveness and importance of landscape elements

Guests responded with strong affirmation regarding the attractiveness of the hills. An average total of 98.3% of guests of both sites found the hills attractive. The attractiveness of the farmlands and forests yielded positive results but less imposing as the evaluation for the hills. On both sites, a significant percentage (90.9%) of the respondents interviewed found the farms in the valley attractive. As for the forest, 83.9% expressed it was attractive. Apart from determining if the elements were attractive, it was also investigated if they were important parts of the view. The results show that both farms (84.9%) and forests (88.1%) were considered significantly important parts of the view, especially in CHC. Although there are disparities in the results of the two sites regarding the importance of landscape elements, all elements were considered by informants as attractive and important part of the view.

In both sites, almost half of the informants expressed their preference for viewing hills that are uncovered or not vegetated with trees but 32.9% preferred to view hills partially covered with trees (Table 3). At present, hills in SP can be described as mostly uncovered while hills in CHC are partially covered. Categories of reasons why informants preferred *Uncovered*, *Partially Covered* or *Covered* hills were summarized into

MR and presented in percent of responses in Table 4. Furthermore, CA (Figure 5) was performed to determine distinctive reasons for preference. For *Uncovered* hills in SP, the informants' reasons were based on its Form while for *Partially Covered*, the informants' significant reasons were based on Complexity. Tourists could enjoy several elements of the landscape while maintaining its scenic view. For *Covered*, the prevailing reasons were Coherence, Naturalness, and Environmental. The reasons did not pertain to aesthetics but more on practical reasons. In CHC, similar to SP, *Uncovered* hills obtained reasons associated with Form, Feature and Stewardship. The reasons were based and focused on the physical characteristics of the elements. The preference for *Partially Covered* was founded on the Imageability, Coherence, Complexity and Ephemeral characteristics; the presence and harmony of the elements providing the most scenic view. For *Covered* hills, the reasons for

Table 3. Preferred hill cover type by tourists

Categories	Sagbayan Peak			Chocolate Hills Complex		
	Covered	Partially Covered	Uncovered	Covered	Partially Covered	Uncovered
environmental	34.8%	7.1%	0.0%	18.9%	17.9%	0.0%
naturalness	21.7%	4.3%	0.0%	18.9%	17.9%	3.6%
imageability	26.1%	34.3%	29.2%	24.5%	25.6%	41.1%
coherence	8.7%	11.4%	7.1%	17.0%	10.3%	3.6%
feature	4.3%	20.0%	24.8%	9.4%	10.3%	5.4%
stewardship	0.0%	0.0%	0.9%	0.0%	0.0%	14.3%
form	0.0%	14.3%	36.3%	1.9%	2.6%	26.8%
ephemera	0.0%	2.9%	0.9%	3.8%	0.0%	3.6%
economic	0.0%	1.4%	0.0%	1.9%	7.7%	0.0%
complexity	4.3%	4.3%	0.9%	3.8%	7.7%	1.8%
Active Margin	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4. Reasons for the tourists' preference

Hill Cover Type	Sagbayan Peak		Chocolate Hills Complex		Total	
	Count	%	Count	%	Count	%
Uncovered	62	43.1%	73	50.3%	135	46.7%
Partially Covered	46	31.9%	49	33.8%	95	32.9%
Covered	36	25.0%	23	15.9%	59	20.4%
Total	144	100.0%	145	100.0%	289	100.0%

Figure 5. Symmetric Normalization of Categories (○) and Preferred Hill Cover Type (▲) in SP (left) and CHC (right)

preference were related to Naturalness and Environmental. In both sites, the reasons for preferred hill cover were unique. *Uncovered* was selected to give emphasis on the physical characteristics of the elements, *Partially Covered* was selected for scenic quality, and *Covered* was selected for environmental reasons.

3) Landscape expectation of tourists

In the survey, the informants were asked to choose their landscape expectation for Chocolate Hills from the seven prepared illustrations (Figure 6). The results of the preferred landscape by guests from the illustrations prepared were tabulated and presented in Table 5. Guests in both sites preferred Landscape G or the landscape where trees are limited on the valley only, giving emphasis on the shape of the hills. This result is also supported by the results in Table 4. The second preferred landscape by guests is Landscape E which is closely similar to Landscape G except that Landscape E has more trees situated at the bottom one-third of the hill.

4. Discussion

A spot or two in the panoramic view in both viewing resorts were identified to be critical and most interesting for the tourist. In SP, the selected site was a single spot with clustered hills and farmlands at the valley, overlooking the sea. In CHC, the selected sites were the spots where two prominent hills, surrounded with trees at the bottom and valley. In making developments for both sites, it would be better for planners to give priority on these spots because they are regarded by the tourists as the most interesting spots in the panoramic view.

In the survey conducted to 300 guests of both SP and CHC, it has been found out that tourists find the hills, forests, and farms individually attractive and important parts of the landscape. The farms and forests complement the hills, which are the unusual elements, thereby creating a unique landscape. Most tourists prefer hills that are not covered or vegetated with trees. The reason is mainly to give emphasis on the physical characteristics of the elements.

Table 5. Preferred landscape illustrations by informants

Landscape preferred	Sagbayan Peak		Chocolate Hills Complex		Total	
	Count	Column Valid N %	Count	Column Valid N %	Count	Column Valid N %
Landscape A	1	0.7%	3	2.0%	4	1.3%
Landscape B	3	2.0%	8	5.3%	11	3.7%
Landscape C	3	2.0%	5	3.3%	8	2.7%
Landscape D	9	6.0%	2	1.3%	11	3.7%
Landscape E	44	29.5%	52	34.7%	96	32.1%
Landscape F	33	22.1%	24	16.0%	57	19.1%
Landscape G	56	37.6%	56	37.3%	112	37.5%
Total	149	100.0%	150	100.0%	299	100.0%

Figure 6. Illustrations of Landscape A to G in SP (left) and CHC (right) used during the survey

Among the seven landscape illustrations presented to tourists of SP and CHC, the illustrations where tree growths are limited at the bottom of the hill and/or at the valley only were the preferred landscapes. This finding is partly supported by the result on the hill cover type survey. Results indicate the strong resolution by tourists that show not only their preference for a landscape that would provide a view that emphasizes the hills but also their understanding of the importance of the farms and forests as parts of the landscape. If that should be the case, forest and farm developments should be encouraged at the valley floors. This will not only address environmental issues and support local livelihood but will also provide tourists a more scenic view. In addition, farmers could also utilize the grasslands on the hills for draught animal pasture, a practice that is believed to be effective in maintaining the grasslands and limiting the encroachment of forests towards the hill.

Further study is highly recommended on the landscape recognition of other stakeholders such as the local community and forest managers.

Notes and References

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