

Study on the Applied Principle and Current Situation of 'Conservation First and Development Afterward' on Jeju Island - Emphasis on problems of landscape damage -

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국문요약

제주^는 환경이나 경관적인 측면을 우선시하기보다, 지역경제 활성화라는 개발명목으로 시설물의 고도를 완화하거나 사업지구의 요건을 완화시킴으로서 특혜논란과 아울러 환경, 경관 훼손의 논란이 끊임없이 이어져 왔다. 2007년 태풍 “나리”의 피해를 통해 많은 시민들이 과거 개발정책과 개발방식에 대하여 비판적 시각을 갖기 시작한 것은 개발정책의 새로운 변화를 가져오기 시작하였다.

제주를 더욱 제주답게 할 수 있는 것은 원풍경 혹은 근풍경 배경으로서의 중산간의 기능에 대한 인식의 전환과 아울러 주요 경관요소중의 하나인 오름과 하천에 대한 배려가 도시계획속에서 이루어져야 할 것이다. 왜냐하면, 제주의 경우, 도내지역-도심지 경관개발에 있어서 간과 할 수 없는 부분은,

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도내지역의 한라산, 오름 등의 조망권을 어떻게 살려 나갈 것인지에 대한 고민이 필요하기 때문이다. 그것이야말로 제주의 지역색이라고 할 수 있다. 개발은 편리하고 쾌적한 환경을 만들기 위한 것이기에 경제적 요인만이 중심이 될 수 없고 사람보다 자동차가 중심이 될 수 없는 것이다. 개발된 공간 속에서 살아가야 하는 인간이 중심이 되어야 하는 것이다. 따라서 비인간적인 난개발이 되지 않기 위해서는 개발검토 단계에서부터 자연과 인간을 중심으로 하는 개발마인드(Mind)를 전제로 작업이 이루어져야 할 것이다.

이러한 개발에 대한 문제인식 위에 본 연구에서는 개발형태와 문제점을 정리해 보고 제주사회의 주요관심사였던 케이블카(Cable car) 설치에 따른 경관문제의 시뮬레이션(Simulation)을 통해 문제점과 개선방안을 모색해 봄으로서 선보전 후개발에 대한 기본적인 적용원칙 제시가 주요 목적이다.

본 연구에서는 선보전과 후개발의 키워드(Key words)를 중심으로 개발과 경관적 측면에서의 문제점분석을 2단계로 구분하여 분석하여 정책적 추진 원칙의 방향을 제시하였다. 즉, 먼저 제주에서의 전반적인 개발형태와 문제점을 정리해 보고 둘째, 제주사회의 주요관심사였던 케이블카 설치에 따른 경관문제의 시뮬레이션을 통해 문제점과 개선방안을 모색해 봄으로서 셋째, 선보전 후개발에 대한 기본적인 적용원칙을 제시하였다.

결론적으로 세심하고 세밀한 정책적 입안보다는 결과에 집착하는 정책결정자들의 문제이기도 하거니와 개발에 대한 보상심리에서 기인하는 문제이기도 하다. 지속가능한 도시, 슬로우시티(Slow City)는 환경훼손을 최소화 하는 개발방식을 최우선시하고 천천히 실천해 가는 삶의 도시이자 생태도시, 문화경관도시이다. 그렇다면 제주다움의 실현, 문화경관 형성은 어떻게 해야 할 것인가? 그 해답은 제주가 가진 독특한 제주의 땅에 대한 이해와 제주사람들의 오랜 시간을 통해 습득하였던 생활공간에 대한 이해, 그리고 제주적인 스케일(Scale), 즉 「땅」, 「공간」, 「스케일」에 초점을 둔 기본적인 개발방향을 제시하고 있다.

주제어: 문화경관, 시뮬레이션, 선보전 후개발, 케이블카, 제주다움

I. Background Information & Purpose of the Study

Jeju Island is the largest island of Korea located south to the peninsula and leading resort and tourist destination that has been developed. Mt. Halla (1,950 meters high), the highest mountain in S. Korea, stands in the center of the island and has beautiful scenery designated as World Natural Heritage by UNESCO

However, the island has been substantially developed due to its beauty for the purposes of tourism and residential improvement. Consequently there have been damage to natural scenery and frequent occurrence of disasters causing a number of problems.

The typhoon "Nari" taught us a number of lessons in 2007. It was a good example that revealed the substantial influence of the result of the development-driven policy to all of us. In retrospect, policies of Korea had concentrated on development, and Jeju Province was not an exception. Its urban planning, housing policy as well as tourism policy had focused on development. Furthermore, it had even loosened controls on height of buildings and requirements of districts of large-scale projects to attract foreigners' direct investment with little regard for its environment and scenery. As a result, they had caused controversy over special favor for developers and damage to environment and landscape. The typhoon "Nari," however, have changed its people's perspective and caused new change in the development-driven policy since 2007.

Development cannot be thoughtless for the environment and is to create a convenient and comfortable environment; thus, we should not take only economic factors into consideration as if automobiles cannot be valued more than human beings. People should be considered first because they are the ones who live in developed space; therefore, nature and people should be the main issue when development is planned.

This study is to organize these environment and development problems and suggest the fundamentally applied principle of 'Conservation First and Development Afterward' by discovering problems and measures through the environmental simulation of the Ropeway that was one of major issues in the local community.

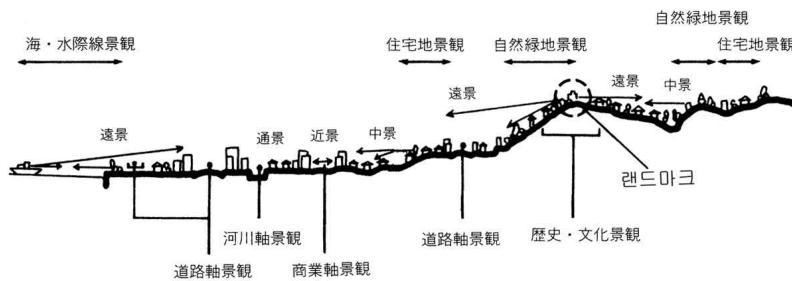
II. Main Subject

1. Current Situation of landscape & Landscape

1-1. Scope of landscape and its Theoretical Framework

1) Scope of landscape

The vista-line is different according to the place and the geographical conditions. For Jeju island, the most considerable factors are Mt. Halla, seas, "Oreum" (hills), and streams when the landscape plan is drawn. Okinawa's landscape planning that is similar to the one of Jeju island in terms of the geographical condition as an island, is a good reference material (Picture 1),



[Picture 1] Various vista-line of viewscape(case of Nago city in Okinawa)

(source : Mimura Hiroshi (1997) Urban Planning for Coexistence in Community, Gakugeisha Publishing)

moving along with the road with different scenery, and changing

the eyesight with that and being seen sometimes from the high location or from the distant ship.

Depending on the focus, there are the near view, middle view, and distant view. To look at the near view makes the middle and distant view the background while looking at the distant view make the panorama without focus. Eventually **landscape** is the comprehensive dimensional space, divided into three-stage spaces that are large, middle and small landscape.

Take Jeju as an example, dividing large, middle, and small landscape. The small landscape in Jeju City includes shape, color, and arrangement of scattered buildings, roads and decorations on the streets, and they are not forming harmonious beauty.

In terms of the middle landscape, each region and district is designated but doesn't consider properly the correlation or potential development direction of inter-region and district.

Streets on the side of major arterial roads and its additional roads, cultural assets district, commercial district, and stream neighborhood have not been formed each regional or district unique landscape, with unclear division of region and district which could attract the small landscape about the early-mentioned buildings.

In particular, the ban-lifting of greenbelt area is in process without the concrete responding measures, raising fears that it could lead to reckless city expansion and rapid change of cityscape and natural landscape.

The large landscape has the contained space to the south in the backdrop of Mt. Halla and the sea to the north direction as well as the open space to the east and west generally on the gentle slope.

The large landscape from the roads or the sea, is formed as if it encounters the nature, adding accent to the village with the clear line around the neighboring areas and concentrating on one spot that is contrary to its natural soft shape, all of which get together to show the landscape looking like the confrontation between the nature and the artifact.

2) Theoretical framework of landscape

In theories on the visual structure of landscape, landscape factors defining the nature of prospect are visual point, field of vision, direction, major scene, and distance according to Uehara Keiji (1943). Along with that, R.B. Litton proposed as factors to analyze landscape, distance, location of visual point, shape, shape of space, light and sequence in order to analyze landscape.¹⁾

Uehara Keiji intended to make clear the nature of prospect while R.B. Litton focused on characters (definition) of shape and space and tried to analyze the nature of whole landscape.

In terms of visual structure of landscape, German architect and urban planner in 19th century, H. Martens suggested more progressive view in which under the concept that the

1) 上原敬二(1943), 日本風景美論, 大日本出版, pp.394-401.

comprehensive emotional pleasure or dysphoria in art was related to human visual field and visual angle, proposed the answer based on indicators such as distance and angle of elevation, which became the established theory in current urban planning.

Even though each scholar has their own analysis factors on landscape, generally the visual structure of landscape or the nature of landscape is able to be clear according to 8 following factors: visibility & invisibility, distance, eyesight projecting angle, depth of invisibility, angle of depression, angle of elevation, deep sight, and shade & brightness by sunshine, with details as follows.

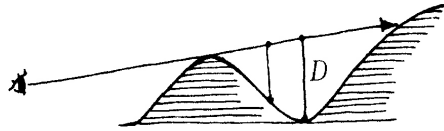
- Visibility & invisibility: the most basic concept to make clear which landscape is seen and not seen.
- Distance: the indicator to make clear what the landscape is like according to the distance from the visual point to the object.
- Eyesight projecting angle: when a landscape is seen as the area factor, the projecting angle to the dimension is closely related to the easy disclosure of that dimension. It is the indicator to make clear for the dimension to be seen easily.
- Depth of invisibility: the unseen area from certain visual point is due to the right before obstacle. It is the indicator to represent the unseen grade as the depth of vertical direction (picture 2).
- Angle of depression: the indicator to make clear the relation between the nature of landscape from the projecting angle and

the sense of place in the visual point (picture 3).

- Angle of elevation: the indicator to make clear the nature of the landscape from the elevating angle and the limited grade of seen space (picture 4).

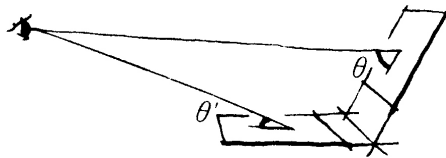
- Deep sight: the indicator to make clear the nature of landscape as the three-dimensional visual world.

- Shade & brightness by sunshine: the indicator to make clear how the landscape change according to beforelight, backlight, and sidelight as the landscape changes by the grade of the light.



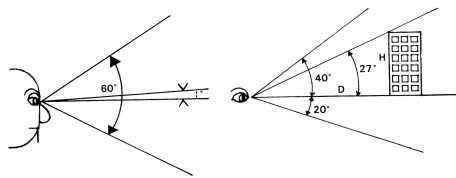
[Picture 2] Concept of the depth of invisibility

(source : Higuchi chyhiko(1993), Structure of landscape, Gihoudo Press)



[Picture 3] Concept of angle of depression

(source : Higuchi chyhiko(1993), Structure of Viewscape, Gihoudo Press)



[Picture 4] Concept of angle of elevation

(source : Yoshinobu Ashihara, Translator Kimjeongdong (1985), Exterior space in architecture, Kimundang)

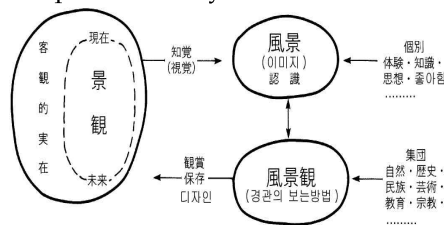
1-2. Meaning of landscape and Perspective to view Jeju -
 landscape · landscape -

1) Landscape & Landscape Perspective, and Meaning of landscape

Human beings sense the object with shape, color, texture that are reflected on eyesight as a scene or a landscape and recognize it as an image focusing on their own life experience, memory, thoughts and knowledge, and preference, which is called "landscape." Thus, even on the same object, each person has each different perspective and their own preference and non-preference, resulting in a big difference of the recognized substance. The image of landscape has been shaped by being memorized and repeatedly combined.

The landscape accepted from the personal view has had the region's own way to look at the landscape through the historical and religious symbolization demanded from groups, peoples and regions, the adoration from paintings, the value development by scientific understanding, and the production by tourism, which is called a "landscape perspective."

This perspective is seen as a existential shape based on the common value, that is, it recognizes as a object the geographical condition or



[Picture 5] Recognition of landscape and scene (source : MImura Hiroshi (1997) Urban Planning for Coexistence in Community, Gakugeisha Publishing)

the historical and cultural environment such as climate, topography, land usage, village, downtown, and lifestyle of people and so on, which is called a "scene" (picture5). It means, the concept of a scene is rather than the substantial one as an environment, an image shaped when an observer views it from a certain distance.

2) Kind of landscape

When a scene or a landscape is divided into natural one and artificial one by whether it has artificial aspects or not, the cityscape belongs to the artificial scene. That is, a city is the external environment or man-made environment to surround us influencing our sense and sensibility during from the morning to even sleeping, and at the same time, the cityscape is the spatial embodiment to permeate lifestyle, custom and common value as well as to reflect the cultural standards and characters of residents in general. These cityscape are categorized into residential site-scape, commercial site-scape, and street-scape according to the regional characteristics (or features) and also divided into townscape and urbanscape according to perspectives.

① Townscape

It means the city's scenery, the traditional concept on cityscape, defining the visually sensed a city as the formal beauty

including all city structures, space arrangement, shape, structure, appearance and atmosphere based on the recognition of a city as the object of human eyesight. The concept defines the city environment as the visual object, the city scenery as the prospect scene, and disregards the process to form the cityscape with the social and cultural background.

② Urbanscape

Amid the human and the environmental development, the urbanscape is the concept developed corresponding to the townscape, that is, the concept to comprehensively grasp the city focusing on the environment rather than the human. The urbanscape is the perspective, beyond simply visual scenes, to understand the relation between human beings and the urbanscape.

That is, the concept of urbanscape contains the visible scenery such as natural materials and artificial counterparts as well as the invisible domains such as the atmosphere reflecting city activities and citizens' activities, and the psychological environment.

3) View of Jeju –landscape and **landscape**–

A city and its architecture are the collaborative embodiment as well as the historical product, reflecting the social change factors in a certain period, all sorts of regional conditions and the contemporary people's life, through their structural and spatial function. It is Jeju that expresses these sense of place and

history well. Due to the limited personnel and goods trade and typical oceanic climate caused by the geographical feature, Jeju people's life itself is too much different from that in the mainland.

Jeju-like life permeates the architectural style. Basically Jeju's traditional architecture has the distant view with the peak of Mt. Halla and the horizontal line (Picture 6), the middle view with a cluster of villages under the Mt. Halla (Picture 7), and the near view in the fence of the house, showing the gentle curve and the tall fence.

The city and its architecture, however, have to change as the times, lifestyle, and the common values of the people in certain generation change. Changed or changing



[Picture 6] Whole view of Jeju City from the sea and the distant view of Mt. Halla (source: Jejusi Promotion Department)



[Picture 7] Unique scenery of a Jeju village with Mt. Halla on its background (source: Jejudo (1996), 'Jeju 100 Years : 50th anniversary picture collection of the provincial elevation₁'))

according to the periodic and political situation, Jeju island and its people has had two contrasting sides: Jeju architecture with the strong sense of history and place; the change in a city (or a village) and the introduction of modern architecture and city space. In particular, when designing the basic urban planning, the Jeju government didn't set up the urban planning to reflect the indigenous scenic assets, but just comply to the guidelines from the central government. As a result, the unique village landscape and scene disappeared, and the places fro cultural assets were gradually lost and replaced with the ordinary buildings smelling commercial capital (Picture 8).



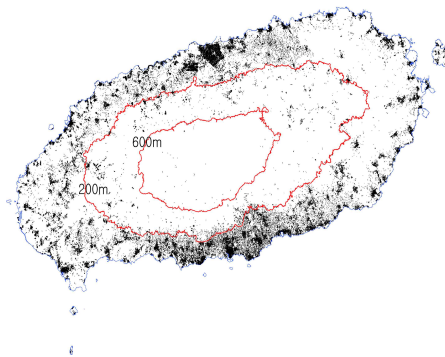
[Picture 8] Change around Samseonghyeol (left:1968, right: 1990s)
(sour:Jeju city (1994),40-year urban planning history')

1-3. Current Situation of Landscape: Development of Hilly and Mountainous Areas & Damage to Landscape

There are a number of unique names of natural features in Jeju

including "Oreum" (hills), "Gokjawaol" (environmentally important bush areas), "Jungsangan" (hilly & mountainous areas) and "Geoncheon" (dried streams). These were named because Jeju is a volcanic island, and they have important meaning along with their unique geographical and geological features. In particular, "Jungsangan" (中山間) that is the hilly and mountainous region ranged from 200 meters to 600 meters above sea level has substantial importance in terms of ecology and landscape (Picture 9). As for its ecological part, the region has controls on the flow of pouring rain because it is located at the midstream of the rivers (Picture 10). In addition, it almost performs a role of lungs of the island providing urban space with a decent environment since it is located between the national park and urban area and relatively well reserved. As for its landscape part, it has its importance by its backdrop scenery or landscape since it is located among Mt. Halla, seas, shores and urban areas.

In spite of its merits, its value have not been evaluated fully, and a number of development have been ongoing in this



[Picture 9] Range of hilly and mountainous areas & distribution of villages

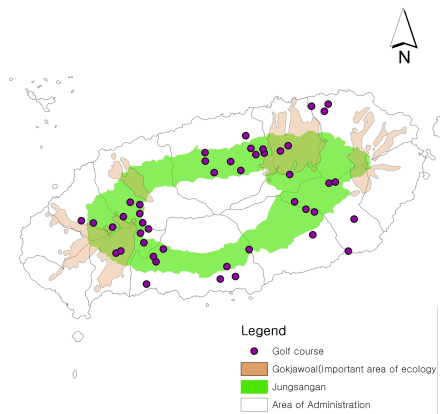
region. Roads have been built across the region; crop and vegetable fields have been cultivated; and golf courses in certain designated areas have been established (Picture 11). In addition, shores and bottoms of dried-up rivers have been rearranged and substantially damaged for a poor excuse for controls on water in the region.

Things that are not ecological friendly are not beautiful in terms of landscape.

Ecological landscape includes "Oreum" that are hills or mountains in the region formed by second volcanic activities of the island giving the panoramic beauty with Mt. Halla and seas to Jeju. Development in the region should be cautiously considered to conserve that beautiful region with oreum.



[Picture 10] Distribution of streams



[Picture 11] "Gokjawaol" ("lung bushes) & golf courses in the hilly & mountainous region

There are three types of oreum by location including the ones working as a landmark in an urban area, ones with various features near main roads in the region, and a number of them located in the same area creating unique 'oreum' landscape.

In order to keep Jeju as itself, it is essential to know the function of 'jungsangan,' the hilly region, as its role of the near and far scenery as well as importance of oreum and streams when urban planning is set up. It is because there are needs for consideration of scenery of Mt. Halla and oreum in the province, and it cannot be left out in development of the province and downtown areas in the case of Jeju. That would be uniquely local characteristics of Jeju. In order to implement that, it is significant to cautiously consider how to build roads and set the height of buildings, where parks will be located, and how to set the relations between roads and building according to the urban planning.

2. Situation of & Reaction to the Ropeway on Mt. Halla

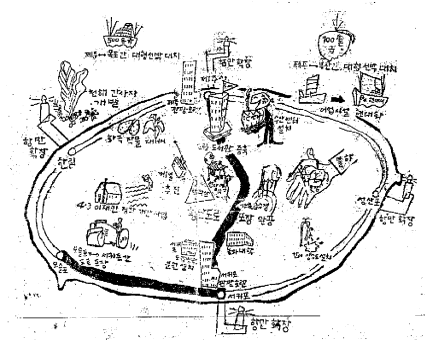
Development in Jeju started in 1960s. Then military government that was formed by it military coup planned the ropeway on Mt. Halla as one of development engines in that period making the island to a favorite tourist destination like Hawaii of the United States (Picture 12). However, the plan was left out because of other priorities and has just existed as a potentially activated plan

for 40 years.

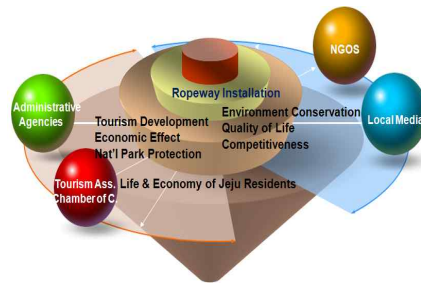
The issue of the ropeway construction became the main controversy, and its situation by year as follows:

Year 1990: The Jeju government considered the ropeway construction to prevent damage to the environment due to the increase of hiking people
 Year 2000: The ropeway construction to revitalize the local economy as tourism resources caused harsh controversy in the local community. In particular, the tourism association and chamber of commerce asserted its necessity. However, NGOs and local media reacted strongly against the plan that would destruct the environment (Picture 13).

Year 2001: The national government formed a review committee composed of 12 members from the environment agency, Buddhist organization, academic



[Picture 12] Draft diagram of development of Jeju in 1960s (source: article on January 4, 1963)



[Picture 13] Positions & problems of the ropeway construction on Mt. Halla

circle, NGOs, economic organization, tourism organization, national park service, and local government(Picture 14). The committee reviewed the issue in relations to needs for protecting the Mt. Halla National Park, and decided to build the ropeway.

Year 2002: The national government referred the feasibility study to the national disaster institute and private company, they submitted a report of the ropeway construction with directions and

methodology to minimize damage to the environment. At that time, only the environment conservation was the main issue, but the scenery and landscape of the environment was not significantly considered. NGOs and movements about the landscape was not strong enough.

Year 2003: The Jeju provincial government decided to construct the ropeway with the permission from the environment agency of the central government.

Year 2004: There were strong protests of NGOs and change of the stand of the central government due to unique geology of



[Picture 14] Review committee established by the national government in order to examine the feasibility of the ropeway construction at a national park in 2001

Jeju and its regulations; thus, the local government paused the discussion on the construction. At the end of year 2004, however, the newly elected governor mentioned the necessity of the ropeway and caused the controversy again. The committee got on it session again, and survey was conducted, but it faced difficulty of enhanced policy of the ropeway construction in a national park in December.

Year 2005: A task force was established to review the construction from scratch and decided not to construct the ropeway. The governor who was reported by the task force agreed to the decision.

Year 2008: A new controversy occurred when the controls of the central government on the ropeway construction were loosened.

Year 2009: Unlike the existing committee, a new review committee was established with 15 members from economic, environment and societal field (Picture 15). The new committee reviewed the issue again and advised not to construct the ropeway due to several reasons including



[Picture 15] Review committee established by the Jeju provincial office to examine the feasibility of the ropeway construction on Mt. Halla

especially the landscape and scenery problem.

Year 2010: In June, a newly elected governor declared not to construct the ropeway.

3. Effect of Damage to Landscape by the Ropeway Construction on Mt. Halla

3-1. Influence on Landscape by Simulation

1) Analysis methodology

It is based on the simulation by using the Arc GIS program and Jeju local data from metrical maps (1/25000) of the national geography service. In addition, the scale modification has been conducted with the consideration of the size of buildings and measured data of the GIS maps.

2) Conditions

The following general application standard was applied for the simulation.

(1) The basic data applied to the landscape data were based on the 'Final Report of the Feasibility for the Ropeway Construction on Mt. Halla' (Jeju Province, 2000), and it focused on the

“Yeongsil” trail of Mt. Halla.

(2) In addition, the data about location of columns and 12 sites were based on the 2000 report, and the size and high of the columns were figured out according to the general standard.

- Size of the bottom of the column: width×width, 5m×5m

- Height of the column: 58m, but the height of the first and last column: 38m

(3) The analysis was conducted based on the columns without cable cars.

(4) Objectivity was given by using the Arc View GIS, Map Source, Google Earth and photographs of the sites with the 3-dimensional comparison and image change analysis. As for the 3D analysis by Google Earth, the number of columns was modified to 10 of them due to the location modification of the final terminal.

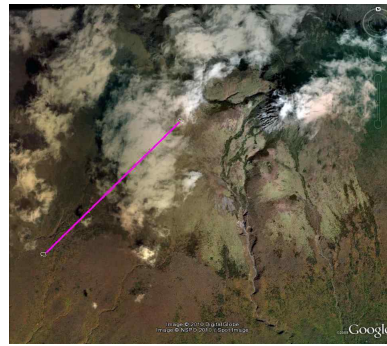
(5) In addition, it was assumed that there was no difference between the image from the Arc View GIS analysis and photographs of the sites although there was a technical limit to modify the sight from the ground to a visual point of a person.

3) Requirements and location of view points

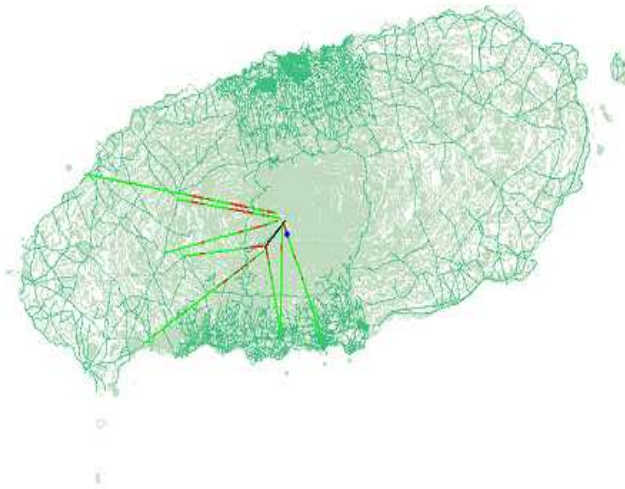
Six view points were designated based on the geographical and geological factor including two near trails to “Witse Oreum,” two in the hilly and mountainous region (“1100 Road,” “Roe Deer Road”), and two in the shore area (“Circulation Road” near new



[Picture 16] Location of view points in a close, middle, distant range



[Picture 17] Location of viewpoints/final terminal & the path of column structures



[Picture 18] Analysis of visual areas from the view points (black line: paths of the ropeway, green line: parts of visible areas, red lines: parts of invisible areas, blue dot: part of the first barrier)

towns of Seogwipo City, “Haye” district) (Picture 16). The first two view points were near; the second two were in the middle of the sites; and the last two were located in the far distance.

Picture 17 reveals the elaborated visual point, final terminal, installment path of column structures. It was assumed that there was no possibility of covers due to geographical barriers according the analysis of visibility from the six view points of the ropeway (Picture 18).

3-2. Effect on the Scenery in a Close Range

1) Effect analysis on the scenery from the close range view point 1 of a trail

The classification of **landscape** and landscape depends on its scenery. The area to be installed with the ropeway has the high value of scenic landscape due to its beautiful scenery.

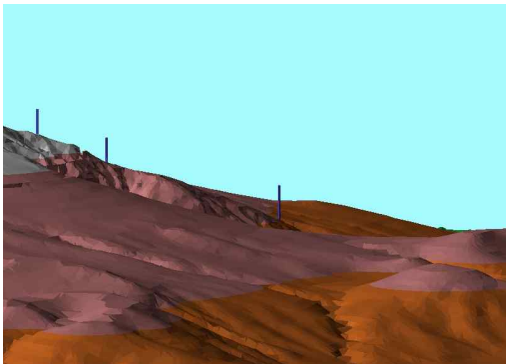
The close range view point 1 of one of the two designated trails is an important view point due to the overflow of hikers. It was almost the same result with the expectation by analyzing site photographs (Picture 19) and geographical images of analysis results (Picture 20 & 21) and comparing them.



[Picture 19] Photograph of the site



[Picture 20] Image of the middle columns at the close-range view point 1 using Google Earth

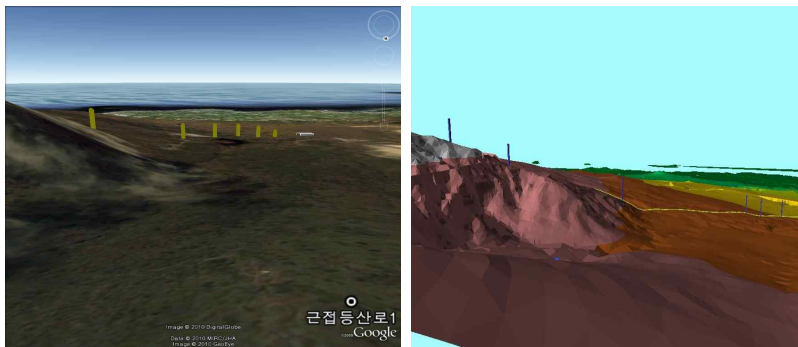


[Picture 21] Image of the middle columns behind the close-range view point 1 using Arc View GIS

In other words, the analysis with Google Earth (Picture 20) and Arc View GIS (Picture 21) revealed that the **view point** would be

seriously obstructed by the construction of the ropeway because it had geographical features that ran through the hilly and mountainous region from the top of Mt. Halla down to the seas.

In particular, columns of the ropeway across “Jungsangan,” the hilly and mountainous region, will create a negative image because they will look like a cluster structure depending on location of view points. When they are seen toward the ocean, they will cause damage to scenic landscape (Picture 22 & 23).



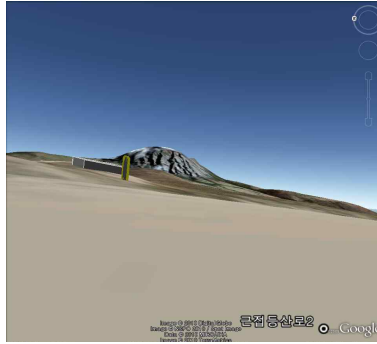
[Picture 22] Analysis result using Google Earth (toward the ocean) [Picture 23] Analysis result using Arc View GIS (toward the ocean)

(2) Effect analysis on the scenery from the close range view point 2 of a trail

As it is seen in Picture 24, “Witse Oreum,” the highest hill, is one of the most beautiful features of Jeju and the trail of a number of hikes.

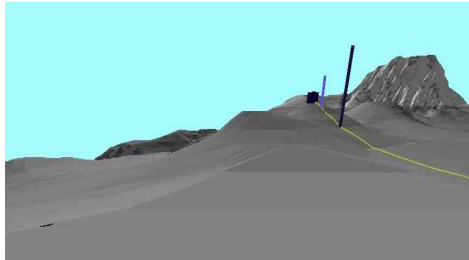


[Picture 24] Photograph of the site



[Picture 25] Analysis result with Google Earth

According to the result of the simulation (Picture 25 & 26) of the site established by the photographs of the site (Picture 24),



[Picture 26] Image of the terminal and column structures little bit behind the close-range view point 2



[Picture 27] Image of a column that is nearest to the view point according to the analysis result using Google Earth

the distance between the ropeway structures and the scenery from the close range view point 2 of the other of the two trails was more shortened, and consequently it was assumed that the ropeway columns looked relatively much larger and caused scenery problems.

In particular, it was assumed (Picture 26) that the final terminal and the first and second column would destruct the magnificent scenic landscape of the “Bangnok” pond on the top of Mt. Halla from the view point of the “Yeongsil” trail; columns near the view point would create visual obstruction (Picture 27), and middle columns across the plain of ‘Senjakjiwat’ would destruct scenery of the plain and the seas of Seogwipo City (Picture 28) because they would look like a cluster structure depending on view points according to the result of the simulation.

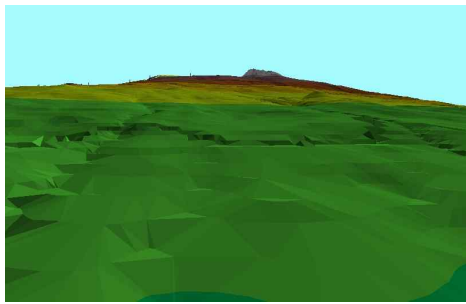


[Picture 28] Change of scenery of the ocean and hilly areas due to the middle column structures (left: Arc View GIS, right: Google Earth)

3-3. Effect on the Scenery in a Middle Range

1) Effect analysis on the scenery from the Roe Deer Road

According to the simulation result of the view point of the "Roe Deer Road" to the south of Mt. Halla, it was assumed that the prominent exposure of some (approximately four) middle columns would create a negative image to the scenic landscape from the middle region to the Bangnok pond on the top of Mt. Halla; however, according to the comprehensive analysis result using Google Earth (Picture 29) and Arc View GIS (Picture 30), the negative image to the scenic landscape was relatively less than the one from the view points in a close range.



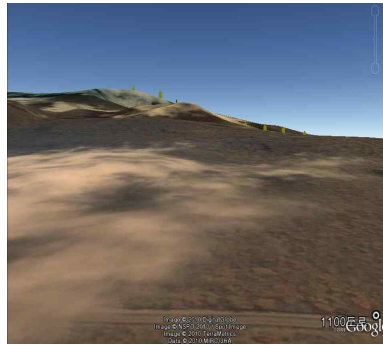
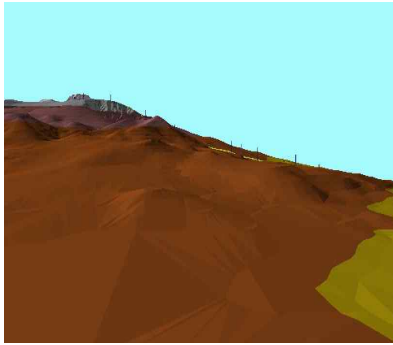
[Picture 29] Analysis result using Google Earth



[Picture 30] Analysis result using Google Earth

(2) Effect analysis on the scenery from the 1100 Road

According to the simulation result (Picture 31 & 32) of the vicinity of the “1100 Road” rest station, the most of the middle column structures would be exposed except for some but more than the ones near the view point of the Roe Deer Road.



[Picture 31] Arc View GIS [Picture 32] Google Earth
analysis of columns from the analysis result
middle-range point (1100 Road)



[Picture 33] Site photograph (with the red-dotted
box for the columns)

Although there was less damage to the scenery comparing to the one in a close range, it is expected that the column structures would cause damage up to certain extent to the landscape near the 1100 Road rest station (where the magnificent scenery could be appreciated) that was valuable tourism resources with many visitors (Picture 33).



[Picture 34] Change of scenery in the hilly region from an extra view point using Arc View GIS

In particular, it is expected that the column structures would make an adverse scenery effect up to certain extent on Mt. Halla and the hilly and mountainous region due to the geographical features from the view points near the roads towards the final terminal (Picture 34).

3-4. Effect on the Scenery in a Distant Range

1) Effect analysis on the scenery from the "Circulation Road"

There is a possibility of exposure of many column structures with consideration of conditions of the site (Picture 35) from the



[Picture 35] Site photograph



[Picture 36] Analysis result using Google Earth.(the rectangle for the column area)

view point near the “Circulation Road” of new towns in Seogwipo City(Picture 36). In particular, damage to the scenic image near the top of Mt. Halla is expected up to certain extent due to the prominent exposure of the column structures; however, there would be less damage than the one in a close range according to the analysis (Picture 37).



[Picture 37] Analysis result using Arc View GIS (Image of columns from the distant-range view point)

III. Conclusion

1. Conversion into the Development Policy with the Esthetics of Slowness

So far, we have discussed the current situation and problems of damage to scenery caused by development of the ropeway construction on Mt. Halla that is World Natural Heritage and essential to scenery factors of Jeju. The cause of the problems was created by development based on the economic logic with its methods with less regards for the local environment. This culture of "Hurry, hurry" might be related to the development policy that started in the 1960s. A series of development had to be conducted to improve the primitive infrastructure of cities, poor living environment of farm villages, and many others in a poor condition those days. Consequently the esthetics of quickness smeared into our daily life, stimulated development of the nation, and supported a plenty of achievement in the society. The international community was surprised by Korea's accomplishment in a short period of time, and the foreign press expressed it as the "Miracle on the Han River."

Jeju was also influenced by the culture of "Hurry, hurry" and developed into the most popular tourist destination in the nation due to the development of tourist sites that started in the 1960s. However, Jeju has lost a plenty of significant features under the

name of development logic during the period such as its beautiful shoreline obstructed by construction of coastal roads, magnificent scenic landscape blocked by commercial buildings and more. There have been attempts to apply the development logic to areas of natural scenic landscape including the recent ropeway construction controversy on Mt Halla. However, the simulation result revealed that artificial structures would cause serious damage to natural scenery, and this could be the loss of scenic resources.

In particular, Jeju Island is the World Bio Sphere, World Natural Heritage and World Geological Park designated by UNESCO. Jeju with these “triple crowns” is the first in the world, and it means that Jeju belongs to not only Korea but also the world. Jeju is also vying for the designation to be one of the World 7 Scenic Regions. Scenery is composed of natural landscape and **landscape** of the daily life, and these two elements in harmony create beautiful scenery. The areas of three crowns of UNESCO are the natural landscape, and the environment of our daily life is the everyday veiwscap.

However, unfortunately, our **landscape** has been severely obstructed by a number of roads and apartment complexes driven by the administration, and these unattractive and large man-made structures caused serious damage to beautiful scenic landscape that was highly evaluated by UNESCO. Furthermore, traditional grass roofs of house were replaced by slate roofs, and traditional alleys, “Olle,” were changed into simply large roads.

Nevertheless, the changes have been converted back into their original state including restoration of the "Sanji" and "Byeongmun" stream.

In advanced countries, they have spent a great of amount of budget to restore the environment and support the civil engineering works for environment conservation. The Jeju province should also apply the philosophy of "Conservation First and Development Afterward" to large-scale development projects of the road construction and civil engineering works. It is now time to start the new paradigm of the policy of civil engineering development to protect and keep the UNESCO-recognized environment and the space of our life by reflecting on the civil engineering works of the past.

2. Directions for "Conservation First & Development Afterward"

Therefore, it is also important to create urban landscape that fits for Jeju as the first stage of success to becoming Jeju Free International City. It is very encouraging that the provincial office has recently formed teams for urban design to keep and maintain its scenery and landscape that fit for Jeju.

However, there are several problems to be solved before the effort to keep Jeju's scenery and landscape makes steady

headway.

First, the problem of the overlap of administrative regulations should be solved. There should be the main system with a new law on scenery to keep the environment within the range of the existing law on construction, national land planning and Jeju Free International City. The base for the establishment of urban scenery and landscape should be formed by those existing laws, and it should be supplemented by ordinances on urban scenery and landscape.

Second, there should be the consistency of the administrative performance. In the past, there was the inconsistency caused by different governors and officials of cities and countries of the province regarding policies and projects of architectural beauty and urban landscape. The uniform directions of administration should be established through the creation of scenery ordinances and review of them with guidelines.

Third, the establishment of a objective standard for the creation of urban scenery based on culture. The urban scenery should contain not only its physical environment but also culture and history.

Accordingly it is necessary to establish the standard for the urban scenery with elements that contain its Mt. Halla, ocean, dry streams, green space and cultural assets of Jeju.

Fourth, a mature sense of citizenship is needed because there is a limit to administrative efforts to keep the urban scenery and landscape. Its citizens should shed their old way of thinking

about new administrative regulations for the urban landscape. They should understand that those new regulations are the least means to raise the level of urban culture and quality of our life.

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