

# A study about Features based on Ecological Perception in Signscape

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**Abstract:** On this paper, I extend 'Street Signboard' category more widely to Scape category. It is defined as the concept of 'Signscape' on this paper and discussed about the informational, aesthetic value of commercial signboards community working in street scape. The commercial signboards are composed as street scape and it gives the aesthetic preference rather than information facts. So, I would like to propose that the commercial signboard should be considered as not 'environmental information', but 'aesthetic information'. This study is intended to find the relationships between visual preference and aesthetic variables of perceptual-cognitive dimension and affective dimension in Signscape. Features in Signscape are trying to maintain the Homeostasis, Complexity in the relationship of the visual aspect, Mutual dependency. Signscape increases also aesthetic value through the place-ness of street, connection of surroundings historicity and the physical formation of street.

**Key words:** *Cityscape, Signscape, ecology, Redundancy, preference.*

## 1. Introduction

Recently, the 'Visual information' area in street is reinterpreted as the aspect of 'Visual Communication Design' area which is considered as the existing and responding information on the 'Real space' So, the holistic impression of the street including the Visual information media is formed by the 'Scenery' because Scenery has many structures to interpret information.

The street scenery as street environment reveals a various information by the pedestrians' searching and exploring. At this moment, pedestrians consider the street environment as the 'visual information' rather than street scenery because pedestrians get information about way finding, shopping and resting while they are walking. So, Street scenery should be considered as the holistic environmental information based on the perceiver's needs.

This paper is studied about the relationship between environmental information elements like Commercial Signboard and the street scenery including signboard, so it is concerned with 'Information Theory' based on environment preference of the street scenery. Commercial signboards must have clear information and good appearance. But the scenery with signboard shows very chaotic. So, I try to find the reason why the street scenery with signboards is dynamic and chaotic based on Scape in Information Ecology system because the Commercial signboards of the street are not individual information materials but holistic phenomenon to be seen such as 'Street Information'.

On this paper, I insist that 'Signscape' is considered of not informational value but aesthetic value and aesthetic value gives the highly perceptive information. I also insist that aesthetic experience of Signscape has been maximized by receiver's preference when Signscape is composed by the character of coherence, complexity, legibility and mystery based on 'Kaplan's environment preference model' and it is ecologically controlled by 'System Theory'.

So, I suggest the ecological approach about the Visual Information Design.

## 2. Background

### 2.1 Signboard as Usability

In street, the public signage and commercial signboards work generally as information media. The street scape which is filled with a various kinds of sign is the place to recognize 'Cityscape' and it connects with pedestrian, user of Sign information and its scenery.

Because the scenery has the environmental meaning beyond the scape, the pedestrian perceives the street as the 'Environmental information'. So, the street scenery with much environmental information is more meaningful than the scenery with less environmental information.

Pedestrians have visible and informational experience that they are walking, resting and meeting together on street. At that time, Public Signage works as movement, action/operation and advertisement. Public Signage mostly connects with pedestrians' cognition and derives their behavior. It is functionally related to the Usability through information classification.

Below table is public signage features according to action type. According to this table, all of the signage features deal with a point of 'Usability'.

Action Type	Items	Features
Movement	Identification sign	To recognize the destination or special place. To inform the place name.
	Directional sign	To guide the destination. Display with arrow.
	Oriental sign	Located at the entrance of the special place, direction spot. To show the relevance between the spot and whole area. Display with the map.
behavior/operation	Interpretive sign	The sign to show the history and configuration of the special place.
	Operation sign	It is located at the entrance for showing where to go. To show how to use and the procedure to use.

Figure.1 The classification of wayfinding signage\_Cris Calori, [Signage and Wayfinding Design], 2007

According to this table, the information element of signage is categorized as information in the visual elements based on action type and information induces behavior through recognition. So, the street signage features based on action type are related to the sign with the visual elements for cognition. But this table can't explain enough visual elements.

## 2.2. Cognition and Response of Environment

In relation with cognition of signboard, pedestrians recognize generally the street as holistic environment and they response to the environment with signboard. This process is concerned with Nasar's 'Model of Evaluative Response to the Environment'. Emotional reaction in Nasar's model based on environment perception-cognition is affected in the process of pedestrian's perceiving environment with Emotional Reactions and Affective Appraisals and it affects Aesthetic Response.

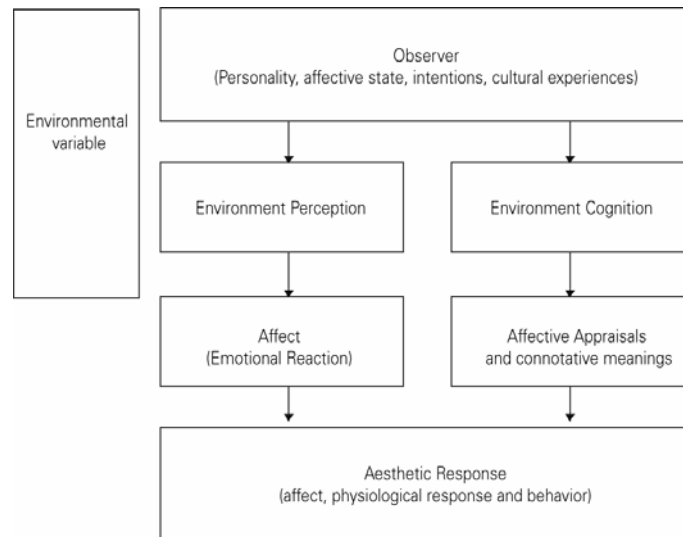


Figure.2 A model of Evaluative Response to the Environment

(Ref: J. L. Nasar, Urban Design Aesthetics: Environmental and Behavior, vol.26, 1994)

This model is also connected to 'Signboard community' because it is recognized as the part of the scenery on the street environment. So, pedestrian as observer gets Aesthetic Response through scenery with signboard on the street according to the above process.

## 2.3. Definition of 'Signscape'

In Korea, the street on the metropolitan and its nearby commercial area are normally covered the sign boards. The reason why the street of the city is seen as complicated and condensed one is that there is highly condensed street information.

The street signboards as the shape include visual meaning like Cityscape and Ecosystem. High density of Sign community is the visual phenomenon which shows the multiple combinations of the building and its sign on the street. So, in a broad sense to see the signboard is to see the Sign community.

It is easily found in Asia's congested commercial areas such as Hong Kong, Tokyo and Seoul. I define this visual phenomenon as 'Signscape'. It also makes the 'Primacy Effect'<sup>1</sup> on the street and is related to the identity of visual impression on the street.

On this paper, I extend Street signboard category more widely to Scape category. It is defined as the concept of 'Signscape' which is the informational, aesthetic value of commercial signboards community working in street.

Based on interrelation with stores, infrastructure of the street and social meaning, placeness, historicity in the street, Signscape should be understood. Compare to the signboard community of Europe, Signscape of Korea as the cultural object should be studied about the difference of historical and material infrastructure.

It has a premise of co-relationship between environment and subject aspect which is considered the information materials coming from the connections of several elements.

The cognition of Signscape is related to perception of 'Visual Form' because the signboard as material forms scenery. Signscape reveals the aesthetic value for the placeless and it has the possibilities for pedestrian to get the aesthetic experience. So, Signscape is the holistic visual objects and the variable system which has the information as the visual objects

#### **2.4. The Features of Signscape and its preference**

According to Ecological Perception Theory, Affordance has 'Environmental information. The environment to surround perceiver composes the environmental information in street and the scenery is the environment and it makes the information factors for interaction with perceiver.

According to Ecological Psychologist James J. Gibson, this perception process is 'Ecosystem' that life of the human and their environment is united with the principle of 'Reciprocity'. In here, Reciprocity means the important feature of ecosystem and it is also related to the behavior.

Generally, Affordance has a basis showing the creation of information in environment. James J. Gibson's ecological approach to perception is a new concept different from the conventional approach. It emphasizes that the environmental information is available.<sup>2</sup> Gibson made a broad interpretation of Affordance from the cognitive psychology. The main idea of Ecological Perception what he strongly insisted is the Affordance with the co-relationship between the human and their environment. He explains the idea that the perception is related to environment and the process from street environment information to pedestrian. So, Affordance related to the street is discovered from the movement of pedestrians. He proposed the features of visual perception in Ecosystem.

The understanding about the perception and recognition is a very important in the process of the visual information and the perceiver's visual experience. Especially, the visual perception is considered as the adjustment of visual system's interaction about the ecological interaction between human and their environment. According to Gibson's ecological approaches, the visual perception emphasizes the moving visual perception rather than unmoving one. He insisted that the perceiving system can ensure the existence of organism because it has feature to support behavioral adaptation for the environment.

On street, the ambient optic array is involved in the movement and has features of space perception such as followings;

First, the space perception has strong relationship with the environment and it has the co-determination that human and environment form each other. Secondly, the space perception grasps the whole environment perceptually by managing the information mechanically. Third, the perceiver observes the whole relationship rather than the partial elements through the immediate continual process of the perception. Fourth, the perceiver tries to find the continuity.

Human accept the preference with visual information. The meaning of preference is reaction for satisfaction of their desire rather than aesthetic judgment based on aesthetic quality of environment.

Stephen Kaplan & Rachel Kaplan expanded the concept of 'Perceptual Preference' in relation with perceptive scape. They explained that the informational function of environment to give the perceiver is relevant to the purpose and he gains the information through this process.

Kaplan explained that the informational contents to have an effect on preference of Scape are Coherence, Complexity, Legibility and Mystery<sup>3</sup> as followings.

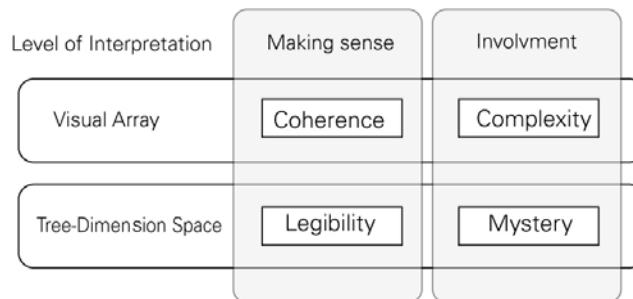


Figure.3 Preference Matrix(ref: R. Kaplan & S. Kaplan, "The experience of nature: a psychological perspective", Cambridge University Press, 1989, p.53)

I, the researcher, propose that the ability to understand and response information in environment is Coherence, Complexity, Legibility and Mystery based on Kaplan's model. According to the Kaplan's model, aesthetic variables to give a positive effect on the preference factors of Signscape are 'coherence' and 'legibility' based on unity and clarity in perceptual-cognitive dimension, 'complexity' and 'mystery' in affective dimensions. On the other side, aesthetic preference that give a sub positive effect in perceptual-cognitive dimension are 'complexity' and 'mystery' and the other sub positive effect in affective dimensions are 'coherence' and 'legibility' based on contrast and ambiguity of Signscape.

The preference reaction is generated by judgement of aesthetic experience and information experience of Signscape. Aesthetic experience is more than the sensory enjoyment and it includes relationship between Signscape and pedestrian's cognition. Kaplan's model is very useful for studying the reciprocity of Signscape and its ecological features. In my judgement, Kaplan's Environmental Preference Model is the optimal methodology for formation of space structure on organic system and structure.

Coherence and Legibility is related to perception-cognition dimension in Signscape. So, it proposes information experience.

It is based on relationship with space experience and perceiver.

So, when the environmental clue of Signscape is connected each other based on space structure, variables linked with position of clues decrease and the perceiver understands the Signscape correctly.

Complexity and Mystery is related to Affective dimension in Signscape. So, it proposes aesthetic experience.

In street, pedestrian seeks much information for measurement of space through constancy movement

Perceiver has higher preference by more information for Complexity and Mystery and it draws interest and attention, then it let pedestrian participate in space.

Visual phenomenon as Signscape is explained by the relationship of the 'Figure and Ground<sup>4</sup>'. When signboards function as the Ground, those have the weak discrimination and noticeability of informations with a

mixture each of information. Each signboard uses more stimulative color or chooses exclusive size in order to get the noticeability of information.



Figure.5 ‘ Figure and Ground’ appearance in Signscape

Also, when signboards have a right density and noticeability in the street and buildings, they are shown not as the Ground but as the Figure of a signboard. This phenomenon shows the function of signboards as information usability.

In concerned with Kaplan's cognitive model, Signscape as Ground is the level of Visual Array - Coherence, Complexity. And Signscape as Figure is the level of Tree-Dimension Space - Legibility, Mystery.

Signscape is revealed through not individual visual information but ‘Perceptual Grouping’. This concept can be supported through ‘Gestalt Theory’. ‘Perceptual Grouping’ is composed as intervention of ‘Correlation Redundancy’. Generally, when the supported information is surplus, the perceiver is in a chaotic condition. On the contrary, the lack of information can not bring the perceiver’s interest.

So, optimizing ‘Redundancy’ is the important character for environment preference. The surplus of Redundancy has the clarity of information, the lack of Redundancy has the ambiguity of information.

So that, ‘Legibility’ and ‘Mystery’ is concerned about information’s redundancy. In other words, in the high degree of Legibility, the redundancy is abundant and in the high degree of Mystery, the redundancy is insufficient.

On this paper, I explain that information system about the scenery as visual objects and the scenery has information in environment. So, Signscape has complexity with environmental sign and material sign.

### 3. Informational features of Signscape based on System Theory

The feature of Signscape is very close to organism one. So, signboard community can be analogized by ‘System Theory<sup>5)</sup>’ in Ecology system. Signscape works as aesthetic evaluation, or place identity information forming value of the street. The aesthetics of Signscape is related to meaning of factor such as the history context, place identity and material infrastructure.

In order to understand the relationship between ecological objects and method on the process of systematizing, the System Theory explains the relationship, mutual influence and working of organism objects.

The system theory shows the 'interaction' or 'mutual dependency' of the ecology. The system has composition elements of hierarchy, voluntary restraint and control, environment and interaction, balance, variation and

adaptation and these are related to features of the ecology. In here, I am going to introduce five ecological characteristics, **Homeostasis**, **Holism**, **Complexity**, **Mutual Dependence** and **Circulation** for Signscape.

The **Homeostasis** is tending to maintain a stable environment within an organism against the variation of an organism for its external environment and it has a property that an organism maintains the regularity and Individuality of the form. To maintain a homeostasis on the ecology, the organism should be kept up the balance for preservation of the species. So, when it is deserted from the right position, the organism is to correct that, otherwise it is weed out. Signscape responses to the organism as an environment. Homeostasis must be maintained for the scenery to function ecologically.

The **Holism** is the relationship between the whole and a part, each organism has the valuable meaning on the function, role, control, relation etc. That is, the sum of a part is not simply considered as the whole, but it is established by relationship of the unified whole. The whole is not determined by the sum of a part, it is going to be the whole and to be changed as a system to share the information at the same time.

The **Complexity** is general properties of organism organization and the ecosystem has a complexity system. While various elements adapt itself to environment, the ecosystem is not simply changed to the next step, but it is a continuous dynamic and open process with a complex relation. This dynamics and openness form the complexity.

**Mutual Dependence** is basic idea of system theory. Because the organism consists of many parts which interact each other within ecosystem, it has properties of complex and mutual dependence. Mutual Dependence has each elements to form system, it has a property that the function and process to interact and depend on between each elements are shown.

**Circulation** is most basic property of the ecosystem. The creation and change through circulation are a important property of organism, it is determined by ecosystem on organism as well as inanimate or physical factor.

#### 4. The examples of ecological features in Signscape

Signscape on this street, 'old city street', has been transformed continuously by decades of physical and social change, and because the whole signboard change and arrangement of building has not planned, there are shown with mixture of the natural change aspect of signboards according to time passed.

I am going to show the properties of Signscape within historical, social context of the street by analysing visual factors of it and analogize the organic ecological characteristics. It is figured out and explained the co-relationship, mutual dependency of organism by the system theory, so that it can be a basis to show the ecological properties on the Signscape.

##### 4.1 The selection of places

In this paper, I chose Itaewon Street and foreigner's village at Ansan in Korea in order to analyze examples for the features of Signscape. These are foreigner's place of residence or place to conduct an active commercial business for foreigners compared to general aggregated commercial area, the language type is gradually changed but each circumstances is different from its signboard. Therefore the ecological changing process of the signboard scenery can be visually grasped. These street are old city one and there have been transformed

continuously by decades of physical and social change and also, because the whole signboard change and arrangement of building has not planned, there are shown with mixture of the natural change aspect of signboards according to time passed. Signscape examples of that places are chosen by my judgement and I clarify that this is preliminary analysis for further study which will analyze deeply a variable relevance to Ground and Figure by visual density, a visual of the signboard scenery, a formative harmony of the signboard, history and place context of the signboard

**4.2 The analysis of ecological features in Signscape**

**1) The Itaewon Street**

The aggregated commercial area of Itaewon in Seoul is the street of old city developed relatively long ago and each signboard has been made and changed continuously by commercial basis and pedestrian's characteristics of this place, these aspects has been settled as a inimitable visual identity.



Figure.7 Signscape of Itaewon street

There are many stores such as clothes, bags and restaurants and there are many foreign pedestrians and it has the signboard scenery with a mixture of many foreign language signboards. The following table shows to analyze the properties of Itaewon Signscape with properties factors of system theory forming ecosystem and ecological informational features. The table contains the context features for Historicity and Placeness because Signscape is composed of individual variable for recognition.

Properties	contents
Homeostasis	The various formative factors are mixed with several languages, typeface, color and materials. Signscape has a main role as 'Ground' of the street. High density of signboards Highly balanced harmony with each signboard. There are less collision with Korean signboards
Holism	Street identity is formed by Signscape
Complexity	There are several foreign signboards with Korean and English. There is weak consecutive information readability caused by complexity of information.
Mutual Dependence	There is signboard classification according to business category and language, this affects information difference.
Circulation	There are coexistence with Korean and foreign (English, Japanese, Arabic) signboards.
Historicity, Placeness	There is around U.S. troops and It has formed foreign commercial area long time ago. Arabic signboards are increasing according to increasement of Arabic residence and pedestrian around the Islam mosque.



Figure. 9 The properties of Itaewon Signscape

According to this table, Signscape of Itaewon has high tendency of complexity and mutual dependence caused by its historical factor and visual context.

Specially, the reason why the arabic signboards set up recently around the inner blocks and commercial areas of Itaewon street are in concord with the existing korean signboards in spite of text heterogeneity is that the recent Arabic signboards have been in succession to dimensions and signboard size of existing stores, they have kept up the visual context to other signboard scenery.

## 2) The foreigner's village street at Ansan

Because of the extreme mixture caused by noticeability competition of the signboard and the stereotyped signboard arrangement plan, existing signboard scenery and newly formed signboard scenery are extremely put in disorder on Signscape of the foreigner's village at Ansan.



Figure. 10 Signscape of Ansan Street

Signscape of foreigner's village at Ansan that the signboard arrangement plan has been not formed has extremely put in disorder with the extreme interferences of the typeface caused by the mixture of a stimulative color, big size and various languages. But, the central street of a foreigner's village has the consistency of signboard size, color and material with the signboard arrangement by the recent street reformation plan. Nevertheless, the extreme contrast is formed on this street by the artificial intervention of it, so the informational ecological characteristic in the features of Signscape has a remarkable difference.

Ecological characteristics	contents
Homeostasis	The various formative factors are mixed with several languages, typeface, color and materials. There is juxtaposition of low information legibility as Ground and high information legibility as Figure. The signboard scenery has been changed as foreign language signboard scenery rapidly. High density of signboards
Holism	Because of the extreme mixture caused by noticeability competition of the signboard and the stereotyped signboard arrangement plan, an existing signboard scenery and a newly formed signboard scenery are extremely put in disorder.
Complexity	There is extreme mixture caused by visibility competition of sign.
Mutual Dependence	It has been formed by foreign worker's village, so that it is mixed up with foreign language signboards.
Circulation	There is coexistence with korean and foreign (Chinese, Russian, Indonesian)

	signboards.
Historicity, Placeness	<p>The density of written foreign signboards is increasing.</p> <p>The density and area of foreign language signboards are enlarging gradually.</p> <p>Recently, Foreign village has been formed in a short time.</p> <p>The street has been formed by foreign workers and inhabitants.</p> <p>The signboard has been hanged at the same time.</p>

Figure.11 the properties of foreigner's village in Ansan Signscape

Signscape of foreigner's village at Ansan has been a deep visual disorder and has formed various signboard scenery of a high density with the natural mixture of Chinese, South-East Asian language and entertainment facilities signboard forming the foreign worker's street. This shows the ecological characteristics of Mutual Dependence and Circulation, but Homeostasis and Holism to maintain the visual context of the street have been lacked by the visually disordered signboard scenery.

The central street of a foreigner's village which has arranged the disordered signboards and given the visual consistency by the signboard arrangement plan is formed the visual unity and Holism, but the activity and diversity on the street scenery caused by very rapidly increased foreign language signboards has been decreased. That is, the visual activity on the signboard scenery of foreigner's village has been decreased because of intending to exclude Mutual dependence and Circulation.

## 5. Results

The results about the examples of ecological features in Signscape are the followings;

- (1) Signscape is trying to maintain the Homeostasis in order to control the amount of street information keeping up the ecological system especially on Old Street.
- (2) In Signscape there is diversity of the individual signboard on Old Street, but eventually Signscape harmonizes individual signboard with holistic one.
- (3) Signscape is composed of individual signboard with its information and there is Complexity in the relationship of the visual aspect. Especially, when Signscape has aspect of high density, the complexity is increasing more and more but, when the information of individual signboard has high density, the Legibility of information is decreasing less and less.
- (4) Signscape has Mutual dependency when the similar information is placed on same street and the similar information makes the holistic identity of street and increase the value of information.
- (5) Signscape has the Context Features such as Historicity, Placeness, Material infrastructure and these ones increases the diverse of perception and value of place identity information.

## 6. Discussion

In here, I stress that "the signboard scenery plays important roles in environmental information of Signscape". The street signboard community should be considered ecological character rather than usability value as information and it finally enriches the information value. But because the signboard community is a visual object recognized as Signscape, I suggest that the aesthetic optimized signboard community is connected to the ecological feature as the environment information, so it gives the signboard scenery the high activity through ecological value of information.

The Ecosystem of Sign community is not management objects but, it is managed by Mutual dependence and organic circulation system. So, the management by large scaled design program is considered carefully for active balance of the Sign community's ecosystem. Signscape must keep up healthy for the long lasting of ecosystem of street information.

Before considering the informational usability, Signscape should be approached to how aesthetic preference it is, so it enriches informational value with ecological exposure by the aesthetic value. And, it enriches ecological activity of the signboard community.

On this paper, I stress that Signscape plays an important role in street environment and that signboard with the healthy organic body has aesthetic optimized scenery.

Signscape increases also aesthetic value through the placeness of street, connection of surroundings historicity and the physical formation of street. So, I make my point that Signscape works with the holistic ecological features based on placeness.

Through working with ecological circulation system on Signscape, the stereotyped signboard arrangement plan is not an ecological and it ignores the fundamental circulation ecosystem of information. Therefore, the active balance of Signscape ecosystem should be considered seriously and it should be continued. Otherwise large scaled design management program may miss its organic properties. And Signscape should be managed by signboard regulations and Cityscape project.

Signscape is the objects of cognitive experience and aesthetic appreciation. I suggest that the commercial signboard community as Signscape is considered 'aesthetic value' rather than 'information value'. So, an aesthetic approaching the scenery as the 'Street information' is needed, and Signscape enriches the dynamic experience of the holistic scenery and makes street more active.

On this paper, there are some limitations to analyze Signscape.

First, there are not enough to show the relevance between aesthetic approach about Signscape and their modeling for information factor to make Signscape. On the further research, I am going to study about the aesthetic recognition of Signscape based on 'aesthetic Affordance'.

Secondly, it is depended on researcher's view that I have shown ecosystem examples, such as Signscape of Itaewon (street name), and in order to make analysis highly trusted, It is needed to apply more deep research by the FGI.

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<sup>1</sup> . The phenomenon is said to be due to the fact that the short term memory at the beginning of whatever sequence of events is being presented, is far less 'crowded' and that since there are far fewer items being processed in the brain at the time when presented than later, there is more time for rehearsal or pondering of the stimuli which can cause them to be 'transferred' to the long term memory for longer storage, [http://en.wikipedia.org/wiki/Recency\\_effect](http://en.wikipedia.org/wiki/Recency_effect)

<sup>2</sup> Zhang, J., & Patel, V. L. . Distributed cognition, Representation, and Affordance. Cognition & Pragmatics

<sup>3</sup> R. Kaplan & S. Kaplan, The experience of nature: a psychological perspective, Cambridge University Press, 1989, p.53

<sup>4</sup> In visual perception, figure-ground is a type of perceptual organization in vision that involves assignment of edges to regions for purposes of shape determination, determination of depth across an edge, and the allocation of visual attention [Palmer, S.E. (1999).

<sup>5</sup> Kingsland, S. "Conveying the intellectual challenge of ecology: an historical perspective". Front Ecol. Environ. 2(7), 2004, pp.367-374.