



Composition of the Multi-Purposed Emotional Space for Activating Idle Offices in Original Urban Block

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ABSTRACT

This study focuses on the human-centered diversity that is one of the important value in modern society, and the method to apply various demands for architectural space. Human begins pursue new contents and leisurely life all the time and live toward the period of high emotion with personal characteristics. With those social trends, people aggressively request subjects to satisfy their emotional attractiveness as well as comforts and pleasures beyond the functional basic requirements in space. Many studies and projects about emotion have been progressed in the fields of architectural planning and design these days. **Purpose:** The purpose of this study is to suggest the Multi-Purposed Emotional Space as a new alternative of space renewal that satisfy both functional programs and users emotional demands. **Method:** For this research, the pervious researches were investigated first to determine essential methodology and terminology to estimate and construct the multi-purposed emotional space. **Result:** According to survey, the multi-purposed emotional space could finally be classified by emotional words, and the results of experiment were applied for building spaces. By the above process, types of the multi-purposed emotional space and design guidelines could be suggested.

KEYWORD

도심재생
다목적 감성공간
유희공간

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1. Introduction

1.1. Research Background

In the modern society, architecture is more than about economical efficiency and functionality, which were the values of existing industrial society. And it is now thought that users' emotional and psychological satisfaction more importantly and people pursue to be individual and for emotional space. Therefore, while previous space was formed to simply meet the needs of use, architectural space in the modern times changes to the needs of users. That is, architectural space interacts with social and environment changes, enabling users to have a variety of sensory experiences.

Despite these social changes and the demands of users for it, however, few studies have been comprehensively conducted on the impact of architectural space upon users' emotion and evaluation standard. In this respect, the present study is aimed to examine the correlation between emotional changes of people using the space and the physical elements of space that causes such changes. In addition, this study attempts to propose a guideline to a space plan to change and come in future.

Original urban blocks in large cities, which are the subjects for this research, used to play pivotal roles and functioned well in the past, but turned into old and idle towns as new downtowns have recently been built. These idle spaces are causing a serious urban problems. With a perspective of developing these idle spaces into multi-purposed emotional spaces, this study was conducted as part of research and analysis to attain the objective of activating and regenerating original urban blocks. To meet the goal, this study attempted to examine how various emotional desires and needs are reflected on space.

Ultimately, the purpose of this study lies in finding a way and studying a standard to help a building react to the fast-changing needs of society and environment, and maximizing consumers' experiences. To attain the objective, this study conceived some types of multi-purposed spaces and conducted a survey with questionnaires to derive multi-purposed emotional space, which can be applicable to actual architectural space.

1.2. Research Scope

As a way to tackle old and idle downtown in the central part of a large city, this study chose representative types of idle space in original urban blocks. More specifically, it selected

the idle spaces of the original urban blocks within the radius of 1km from Asian Culture Complex, which was constructed on the site of old Jeollanamdo Provincial Office, the former central administration of Kwangju Metropolitan, to resolve the issues of old and idle downtown and provide a new type of culture. And the subjects were averaged by program and size, and classified by experimental space group. And the users' emotional changes by height, length, and width of space were examined.

Accordingly, the experimental space consists of 'Type 1' (currently with 2-story high) and 'Type 2' (with standard building height). The inside of the space was given some changes in division and elevation. A survey was conducted on the participants in the experiment who could be consumers, able to recognize space and interpret changes in space.

Evaluation used emotional vocabularies with which space is described in various ways and a standard was attempted to be classified for esthetic evaluation. Therefore, this study addresses space both with physical concept and esthetic (emotional) concept. Since there are not many precedent studies to look into for help, it is expected that the findings from this study will be basic data helpful for future study on multi-purposed and emotional space.

2. Research Method

2.1. Theoretical Review

2.1.1. Multi-Purposed Space

As modern industry developed in the past, buildings in a city were used for fixed purposes and functions at stationary location. However, as the modern society is more characterized with economic richness, changes in the lifestyle of users of space, and expanded opportunity to contact various cultures, they pursue space that can provide them chance to experience various types of leisure and rest.

Multi-purposed space means space designed to meet these needs. Literally, it is space designed to serve multiple purposes. As a building includes various facilities, its size gets bigger and cost increases accordingly. Therefore, one multi-purposed space is designed to play multiple functions and programs in a single building. In the modern society, multi-purposed space is space for communication and space for everyone to use on daily base without burden, and thus cultural and educational facilities are usually dominant in a multi-purposed space. [1]

Particularly, as life became stable, users more wanted to have space for pleasure, accordingly, cultural industry gradually came into spotlight. This shift was not passive for one-faceted

cultural media, but active and voluntary for various media. Along with this change, multi-purposed space was born with the keyword 'culture' in the field of architecture.

Such multi-purposed space is characterized with some distinctions, mainly including 'Flexibility' and 'Complexity'. Flexibility is essential property to use a single space for multi purposes or better efficiency. Its function agreed with user's intention by changing spatial position and size of physical elements. Complexity means a function to provide users with a wide range of fields, for example, convention assembly, exhibition, and play, and includes a facility that performs multi-functions. In addition, the types of multi-purposed space can be divided by various factors such as program, size, and spatial characteristic. In particular, exhibition space, which needs multi-purpose most and in fact is using most multi-purposed space, is also divided by the type, function, location, and size of exhibition. Likewise, it is hard to summarize the types and shapes of multi-purpose space into certain number of factors. [2]

When trying to categorize multi-purposed space in relation with composition of emotional space, it can be divided by size and program. Classification by size is physical categorization. That is, they can be divided into such physical components of space as floor, wall and ceiling in the scale of construction scale. Multi-purposed space can vary depending on the programs it contains in it. Therefore, it can change in various ways and forms according to users' needs and the programs can also be complicate. More than two programs can be performed in a single space. [3]

For example, 30% to 40% of the latest multi-purposed spaces are used as exhibition space. Therefore, the space can be divided by such standard as the kind and size of exhibits, moving line of users, and period of exhibition. Eventually, the fundamental element of multi-purposed space is flexibility in size (expansion and contraction) and level or elevation according to users' emotional changes.

Here, expansion and contraction doesn't mean actual physical enlargement or reduction, but artificial spatial composition to make users feel the space expanded or contracted. [4] This stimulates users' dramatic experience not only visually, but also emotionally. When space is artificially and purposefully changed and re-composed, the basic spatial components of architecture such as vertical elements (e.g. column and wall) and horizontal elements (e.g. ceiling and floor) can be used.

The composition of ceiling and floor can divide space by change of level. Floor is a space that confines human activity directly. It can segment indoor space by raising or lowering the surface of space to meet functional or decorative purpose.

That is, difference of elevation is used for horizontal surface of floor and ceiling in dividing space or adding other programs to the space for multi-purposed functions. Different depth of ceiling plane in a single space can provide a different sense of space. [2]

2.1.2. Emotional Space

The concept ‘emotion’ originated from the western philosophers Aristotle and Descartes who distinguished between rationality and emotion, and studies regarding the area have been continued so far.

Emotion affects all the aspects of human life. It is an ability that has overall or intuitional impact on the process of sensing stimuli through 5 senses and judging them psychologically. That is, it is intuitional and sequential occurrence regarding sensory information from the outside world. It is also psychological reaction that occurs internally. When human communicates with something, emotion is what he or she takes. Here, communication is made of contact with environment surrounding humans and it means emotion itself includes communication in it. [5]

Conventional design process mainly took a behavioral and cognitive approach, ignoring subjective sides of feelings. However, as emotion stood out as an important theme in the 21st century, emotional needs was actively unfolded in the field of design and even engineering industry started accepting emotion as an essential element for the concept of emotional engineering.

Emotional engineering was defined and established by Japanese professor Nakamachi Mizuou in Hiroshima University in 1970s as an element of physical design. [6]

Also in architectural industry, where both engineering and design aspects should be considered compositely, it was recognized that the design focusing on functions and theories

could not satisfy human needs, which are diverse, anymore and thus emotional design started to be pursued after. As a result, attempts to realize the new concept into physical space have been actively made.

This study defines emotional space as engineering space as mentioned above in the field of architecture and sets both physical space and visual factors that convey emotion as a standard concept. Vision is one of the most important methods to attain information from space surrounding users – 70% or 80% of information from the outside is acquired through vision -. When admitting that we recognize substantial objects through vision in architectural space, visual elements that come in through eyes are the most and major emotional factors that are worth studying. Visual elements in space can be recognized into two categories: elements of spatial composition and formative elements. Space composition is the combination of several parts or elements to be a whole or the outcome from the combination. [7]

Likewise, the compositional elements of emotional space is the combination of width, length, and height, which comprise space itself, or their relative proportion – In a broad sense, it can be referred to as ‘volume’-. Therefore, these are the elements that psychologically induce humans to interact with these elements and experience emotional space while they associate the meanings and symbolism of environment with their own emotional satisfaction. In physical dimension, emotional space is recognized with sides of 3 dimension coming into vision after all and is to understand the overall shape of space and systemize its order. [8] At this point, path and wall are important visual elements that present a sense of space. Particularly, length, width, and height of such scale elements as wall, floor, and ceiling, which compose pace, characterize a space and work as esthetic elements. Furthermore, they affect users categorizing their impressions on spatial scale

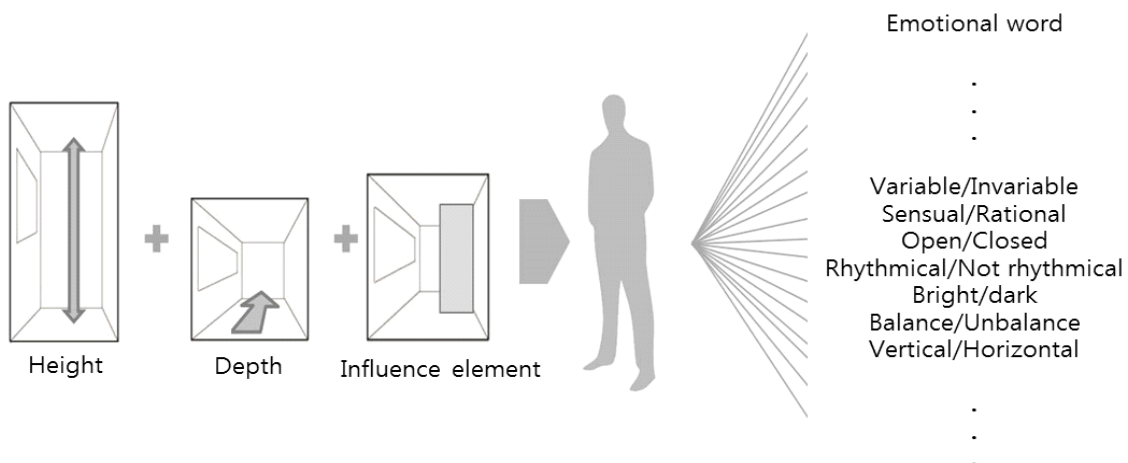


Fig. 1. Emotional Change in the Configuration of the Space

into emotional vocabularies.[9]

Besides, these days, emotional design has ever been more segmented and specified. The objects and domains for emotional design have also expanded and extended. Especially, the irregular spatial patterns, and dramatic transfer and fusion of space give users various impressions and stimulate them to experience each of spatial distinctions, keeping on changing courses. That is why emotional design elements are a psychological inducer. That is, emotional experience through architecture can be integrated environment of synaesthetic elements and human experiences, rather than human logics. [2]

Therefore, architects should base their space design on human composite emotions, rather than economic and function elements of design when designing space in future and use the formative principles of space itself to transform physical space into emotional space, so that users can have unusual experiences.

2.2. Evaluation Method of Multi-Purposed Emotional Space

Human emotion is subjective and ambiguous. Therefore, it is very difficult to quantify it. Each of them has different preference of space depending on individuality, age, cultural background, and lifestyle, and use different, vague and complicate vocabularies to express his/her own feelings. To make 'emotional space' substantial while understanding a physical object (space) with emotions, vocabularies should be able to express subjective and non-linear characteristics of emotion toward space and again space should be evaluated with some of those vocabularies (objective and universal) that a majority of users commonly share in expressing space. [2]

For this purpose, this study summarized the words that represent the emotional elements felt when they use space. Examining the semantic classification system of Korean objectives, which was established by the scholars of Korean literature, it was found that the term 'emotion' is not used often in expressing space, but 'attributive and stative (性狀)' is mainly used. [10] Attributive and stative adjectives can be more divided into sensory, emotional, evaluative, and existent adjectives. To screen out the emotional vocabularies that can be used for architecture, this study focused on 'visual' adjectives and words related to spatiality and shapeliness. The adjectives screened out through the selection process were sorted out again for ones to evaluate multi-purposed emotional space.

The concept of multi-purposed emotional space is a combined concept of multi-purposed exhibition in terms of program, and emotional elements in psychological terms. The

key words regarding emotion were extracted from the definitions drawn in many and various studies. And the test vocabularies for multi-purposed emotional space were divided into ones related to formative diversity of space, psychological experience of space, and a sense of esthetic scene, respectively.

Formative diversity of space means the change of compositional elements such as wall, ceiling, and floor in form. To express it, the adjectives of describing physical property and characteristics were used. Meanwhile, psychological experience of space means to have both physical and qualitative characteristics of space at the same time. It also means to experience space psychologically through spatial composition. In other words, it is emotion felt when enjoying it (space) in an single space. It is expressed with the vocabularies related to spatial change. [11]

A sense of esthetic scene of space is more qualitative element by visual perception than the previous two concepts. It means emotion instantly felt when stepping into a space and reaction to the stimulation from the configuration of the space. Each of the above-mentioned key words was recomposed with 6 to 8 pairs that evaluate multi-purposed emotional space. And conceptual evaluation was conducted on emotional space with those vocabularies. Figure 2 shows the semantic classification system of Korean words.

3. Proposition of Multi-Purposed Emotional Space Type

3.1. Types of Experimental Space

Currently, large-scaled cultural facilities have been built in Seoul, Incheon, Pusan or other large cities in an effort to regenerate old urban regions and refresh their images. Kwangju Metropolitan City is also expecting to activate old downtowns through Asian Culture Complex (ACC, Asia Culture Complex) Project, which are located in the center of the original urban blocks.

However, only with the single element (Asian Culture Complex), it is not easy to activate the surroundings of the original urban blocks when most of the buildings around the area are left idle. Therefore, action is being taken toward building a multi-purposed emotional space in the idle space around the original urban blocks, focusing on 'culture' as a key word to recuperate the old downtown areas. [12]

In this study, an academic attempt was made to examine if a multi-purposed emotional space (Kwangju Metropolitan City) can give emotional diversity to users and the idle space

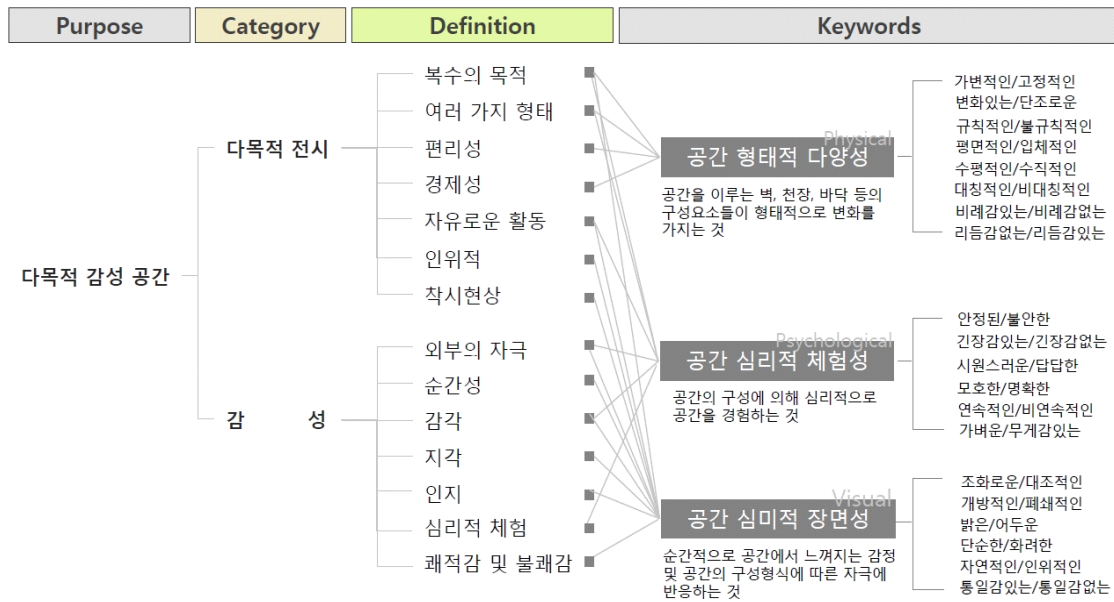


Fig. 2. Keywords for Evaluating Multi-Purposed Emotional Space

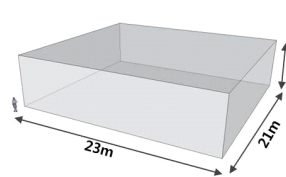
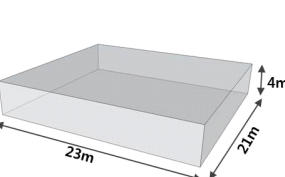
around the original urban blocks. To do so, the present study carried out spatial typology. First, the usage of the buildings around the target area were examined. Especially, it turned out that most of office facilities, once ever active, are left idle now. Therefore, this study assumed that the target buildings are characterized with office composition. And this study examined the area (size), width and length of rooms in office space located around the original urban blocks to standardize the size of office.

Of 61 buildings located within the radius of 1km from Kwangju Asian Culture Complex, which is the base of the original urban blocks, about 2.41% are used for office facility and as big as 574.53m² on average (building area), 22.99m (longitudinal width), and 20.60m (vertical length). Here, the main entrance was set as a reference for the width and length of a room.

The height of an office facility is normally from 3m (minimum) to 6m (maximum), but the height of indoor space was determined by construction plans and precedent studies because measurement scope and standards weren't clearly defined.

Looking into the average area, width, length, height of room in the office space, this study determined that the office space for analysis should be 23m for floor (width), 21m (length), 6m (height) for the 1st floor and 4m (height) for standard floors. Table 1 shows the standardized space specifications of the research target space.

Table 1. Space Types for Experiment

Type 1 (1st Floor)	Type 2 (Standard Floor)
	
W 23m × L 21m × H 6m	W 23m × L 21m × H 4m

3.2. Experiment Plan

Some types of space were made and experimented to propose the types of multi-purposed emotional space and know the affect of spatial change on users' emotion.

For experimental subjects, two types of office space around the original urban blocks in Kwangju City, which was analyzed earlier, were reinvented for the convenience of application to actual space. In the experiment, the height, width, length, and/or fake wall of the sample space were altered to identify the change of users' emotions felt on the multi-purposed exhibit space.

To evaluate their emotions, 'emotional' adjectives and evaluation methods, which were mentioned earlier, were re-composed to fit to a multi-purposed emotional space: eventually, 20 pairs of adjectives were recomposed using the key words of formative diversity, psychological experience, and a sense of esthetic scene. To evaluate space, it is more appropriate to ask participants to directly express their feelings on an actual space or to observe their emotions with

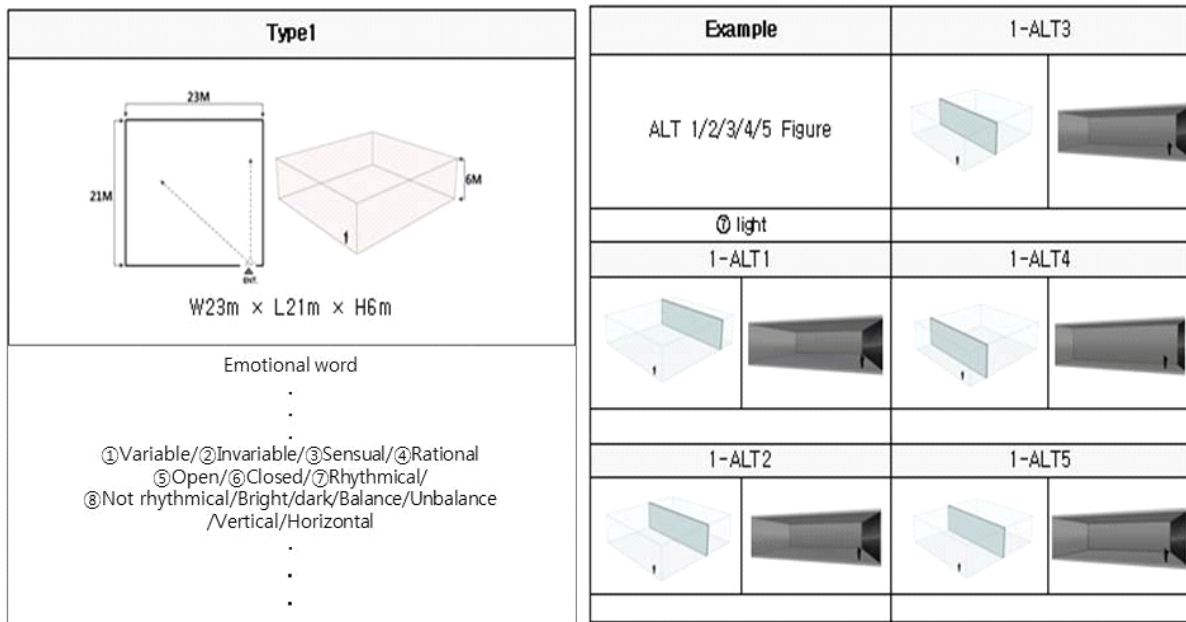


Fig. 3. Survey Configuration

an experimental device. However, this study used a 3D modeling tool to make a virtual space, of which conditions changed and surveyed the user’s emotional change with questionnaire before mock-up test.

The survey was conducted on 70 participants (architectural researchers and students majoring in architecture) who are consumers of space and able to recognize space, and interpret spatial changes. Based on the earlier results, the types of emotional space were divided by height into two for this experiment and each type was more divided into single space, space divided by vertical elements and space divided by horizontal elements. And the participants’ emotional changes by change of height could be measured when they entered the space, of which horizontal elements were arranged at the interval of 4m, 3m, and 2m, respectively. In addition, their emotional changes to the main space, which is mainly used for an exhibit space, could be measured when they entered the space whose vertical element (width) changed in proportion of 1:1, 1:2, 1:3, and 1:4 within the standard space.

Type 1 and Type 2 were asked about separately because it was assumed that they are different by 2 meters in the height of the space used for lobby on the first and the middle floor for general use, – that is, the height between the first floor and standard floor–, and thus the method of composing space could be different, so could be emotional evaluation and standard for users’ evaluation of it. Besides, the inner space of each space type was applied with vertical and horizontal elements for change. The participants in the experiment were allowed to watch the alternatives through a perspective plan

(3D images) for better recognition and evaluation of the space. The participants were fully informed of the experimental procedure before participation. After explained, they were asked to watch the space in the questionnaire and mark (up to 5 words at maximum/can choose the same word more than once) on the adjectives of the multi-purposed emotional space, which are most fit to the description of their feeling(s) they had first at seeing it. Figure 3 shows the composition of the questionnaire and examples.

3.3. Results

The collected data were statistically analyzed for frequency, percentage, and mean. Analysis methods are as follows.

First, descriptive statistics were run on the collected data for frequency and mean. And preference for space was examined and emotional factors by the change of elements were found and displayed in graph. Based on the results, it was known that the program that should be multi-purposed for the idle space turned out to be cultural facility (32%), which was the highest. And it was found that the participants want the idle space to turn into a new space, which is emotionally open, stable, and harmonious.

Second, The results (by space type) of their emotional changes by the change in height, width, and length and the reference points of the spatial composition that stirred their emotions were summarized. In Type 1, is located on the first floor, the participants commonly felt such emotions as ‘light’, ‘variable’, ‘simple’, ‘uneasy’, and ‘vague’, regardless of the variables of dividing elements, when vertical and horizontal

elements were applied to the space. In the meantime, the participants that experienced Type 2, which is located on the middle (standard) floor of the building, felt stronger emotions such as 'tense' and 'variable' than in Type 1 when vertical and horizontal elements were applied to the space. In addition, their emotions changed more dramatically by horizontal elements than vertical elements in Type 2. It indicates that main space and additional facility space can be more diversified by changing horizontal elements when turning the standard floor of an office building into a multi-purposed emotional space.

Third, this study looked into the elements that most affect users through the vocabularies of formative diversity, psychological experience, and a sense of esthetic scene, which represent the characteristics of emotional space evaluation, and the frequency of the 'emotional' vocabularies. It turned out by multi-purposed emotional space evaluation that esthetic experience was 38%; formative diversity was 34%; a sense of esthetic scene was 28% in the order of importance.

The reason why psychological experience of space was most frequently chosen is that external emotional stimulation work compositely on multi-purposed exhibit program and spatial composition, which are physical elements. That means users psychologically interpret and experience space by spatial form when they enter space. This emotions can be described with such adjectives as 'stable/uneasy', 'light/heavy', and such. The spatial composition of this space type was more affected by horizontal elements than vertical elements.

As for formative diversity of space, it tends to be more affected by physical elements that compose multi-purposed space. It means that users' emotions can change in a variety of

ways by changing such compositional elements as wall, ceiling, and floor.

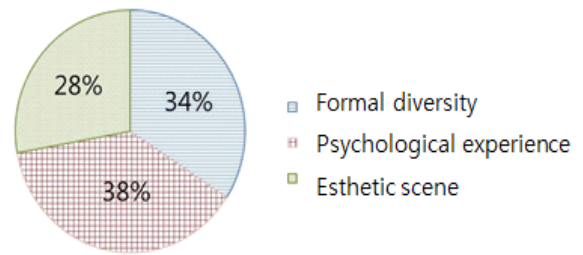


Fig. 4. Evaluation for Multi-Purposed Emotional Space

A sense of esthetic scene of space is most affected by visual perception. Opposite to formative diversity of space, a sense of esthetic scene of space is more emotionally characterized than physically. Particularly, as a sense of esthetic scene of space is user's instant feeling that they have at the moment they enter space and reaction to the style of spatial composition, stimuli to vision is enough to give users emotion; whether the space is harmonious or contrast, or bright or dark.

In this experiment, a sense of esthetic scene of space turned out to have similar tendency to psychological experience of space. Upon a sense of esthetic scene of space, the participants looked more sensitive to the vocabularies such as 'open' and 'close' than 'bright' or 'dark', 'natural' or 'artificial', or 'harmonious' or 'contrast'.

The experiment of classifying spatial composition (formative diversity of space, psychological experience of space, and a sense of esthetic scene of space) for multi-purposed emotional space demonstrated that users' emotion can change

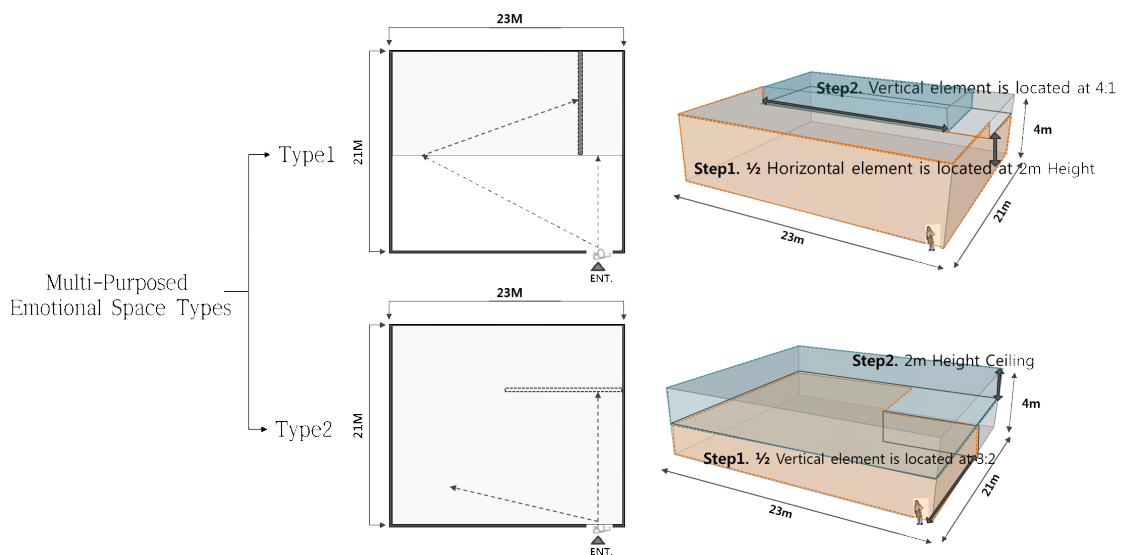


Fig. 5. Multi-Purposed Emotional Space Types

by change between space and spatial elements.

3.4. Proposition of Multi-Purposed Emotional Space

Of the experiments with multi-purposed emotional space, the most real-life space experiment was one with the space classified by height into two types (Type 1 for office space and Type 2 for standard floor). And it was known that spatial composition should be interpreted and applied differently depending on the results. Therefore, the proposition for the types of multi-purposed emotional space and guidelines should also be presented and applied differently by the height of space. For example, when composing the standard space of Type 1 into a multi-purposed emotional space, formative diversity of space should be considered as primary type and thus horizontal elements should be used to give both variable and static emotions to users. For Type 1, since its height is 6m, it can produce more diverse spatial compositions than Type 2, of which height is 4m. Therefore, Type 2 can be regarded as an excellent candidate for a multi-purposed space.

Like Type 1, when Type 2 is composed of the elements of variable emotions and static emotions, focusing on formative diversity of space, it is recommended that vertical elements and horizontal elements be applied separately. In addition, Type 2, unlike Type 1, can increase emotional diversity by applying vertical elements to the main space and additional facility space, separately. Therefore, Type 2 can be used for the space where exhibit programs that need a lot of additional space should be placed.

4. Conclusion

People living in the modern times do not lead repetitive and constant life. But their life is very complicated with different lifestyle, various tastes and preferences and emotional diversity, which are hard to predict. Particularly, they expect something more than physical offerings from architectural space. They want emotional pleasure in space.

With this in mind, the present study proposed multi-purposed emotional space as a way to satisfy ever-changing users' demand for architectural space and to invigorate old and idle space in a city again. Furthermore, this study presented the typology of emotional space and a guideline.

This research was conducted as follows. Multi-purposed space was classified into types. Some changes were given to the architectural elements of space to measure the changes of human's subjective emotions toward space, and to evaluate them objectively. This attempt revealed that architectural

elements have impact on human's psychological characteristics (emotions) to space. When they are combined with other elements, it can give a variety of personality to a space. In addition, it was known that change in architectural elements can alter human's emotions even in a small space. Therefore, it is possible to change old and idle space abandoned in the center of a city into new space of various types. This let us know that multi-purposed emotional space can be used as an easy alternative of existing space and as a way to resolve the issues of old downtown.

In this study, psychological reaction to the changes in architectural space by vertical and horizontal elements, which are the basic architectural elements that affect human emotions, could be quantified through experiments and emotional evaluation. Furthermore, this study finds its significance in that it succeeded in classifying emotional vocabularies that evaluate emotional changes to spatial change and paved a ground for basic research of emotional evaluation for space.

However, the concept 'emotion' is too broad a theme to summarize with one word. Therefore, those 'emotional' vocabularies used in this study can't cover all the possible vocabularies to express or describe space. Therefore, following studies need to establish more reasonable framework for the analysis and evaluation of emotional space in concert with experts and professionals in other academic fields.

In addition, this study used the most basic variables (vertical and horizontal elements of architecture) to measure and evaluate emotional space. However, other elements that compose space should be included and analyzed in a study for correlation or deeper relations among them. These are the limitations of the present study. And the tools used in the experimental stage are questionnaires and computer simulation, which are preliminary measures. When a mock-up experiment is carried out with a real space later, more objective and realistic data can be acquired.

Last, this researcher expects that the findings in this study will be basic data for those who actually need to change old and idle space into a multi-purposed space to diversify spatial emotions.

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