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OLD BUILDING, NEW USAGE: CASE STUDY OF A CREATIVE PRACTICE FOR AN ART STUDIO DESIGN BASED ON USERS' MENTAL NEEDS

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Abstract: This study is aimed at building a creative practice for old building renewal considering an art studio space designed from the perspective of users' needs. The adaptive reuse of a 90-year-old dining hall served as a prototype for exploring the feasibility of such a practice. First, semi-structured interviews were conducted with the employees of the workspace to uncover problems within the existing office space, and then, a questionnaire was used to capture the specific elements that affected user needs. Second, a set of thinking models were created to express users' needs during the design processes. Finally, applying semantic differential method, the art studio space was evaluated after the work was completed to clarify the progress with regard to users' satisfaction. Thus, we made a practical contribution that brought new life to an old building and built a creative space for users by employing a sustainable environmental design.

Keywords: *Old building renewal, Creative practice, Users' mental needs.*

1. Introduction

In the field of architectural design, renewing old buildings has always been a hot topic. Some people argue for restoration of old buildings, which simply means rehabilitation, that is, taking a building back to its original condition. It may also mean removal or replacement, but never addition (Williams, 2013). According to some others, it involves repair, which is necessary when structural or weatherproofing elements need mending to ensure their on-going structural integrity (Collings, 2016). Yet others insist that restoration implies remodelling and may call for modifications in shape, style, accommodations, or design (Williams, 2013).

We easily see that in most cases renewing an old building involves restoration, repairing, or remodelling. Because of their durability and reparability, old buildings have almost unlimited potential for renewability. The practice of renewing old buildings has profound implications for sustainable development (Carroon, 2011). However, most renewals are focused on the building itself, that is, the objective dimension of aesthetics, which is carried out for aesthetic reasons. They focus on reusing old buildings by transforming in different ways the texture, colour, and other aspects related to elements of aesthetics (Linlin, 2011). Aesthetics includes shape and form evoke desired perceptions are of interest to designers and customers (Mata et al., 2017). Few studies have examined these renewals from the perspective of the users of the space, that is, the subjective dimension of aesthetics.

In design, the result must be meaningful for people (Nagai & Taura, 2006). Hence, we explored this aspect, the users' point of view, in remodelling an old building with new usage.
The chosen art studio, named 'Between', is located near a rest centre on Bayi Road, Dalian, China. Among the few historic buildings in this region, this building, named Number 20, is the only one that has retained its original façade, with full of vertical green plants. There are only pillar and wall structure kept, and windows and doors are shabby. It had been used as a dining hall since 1927 and was discarded a few years ago. The life cycle of this building is 90 years. It possesses unique regional characteristics and has witnessed the development of the city from the colonial period to the present era of urban civilisation. It can be considered a material transporter of the history and culture of Dalian and, hence, is precious, and deserves to be treasured.
Therefore, when the original function of the old building could no longer meet the requirements of the owners, they decided to transform the old dining hall into an office space for art designers to adapt new usage. Whatever its size or type, the most important role of an office space is to serve as a home for the people who work in it, and its design greatly affects their performance (Kohn & Katz, 2002). Our belief is that people's workplaces can not only influence their productivity but also shape their attitudes and beliefs. This demonstrates that the workplace can be part of a holistic strategy to increase engagement (Jim, 2016).
In short, transforming a space into an office space and establishing a truly creative design with no boundaries between designers and clients are the main aims of this case study. This paper intends to explore the process of renewing an old building from the users' perspective and discussing what specific elements of space affect user needs. In this way, an old building can be revitalised using a scientific method rather than by using a traditional form.

2. Research Methods

In conducting this creative practice, we used two methods with a **semi-structure interviews and a questionnaire survey** emphasising on users' viewpoints. Space relates strongly to people's mental well-being (Kristensen, 2004). We should respect the value of users' during the design process (Siu, 2003).

2.1. Semi-structured interviews

The first set of semi-structured interviews was intended to uncover problems within the existing office space where the interviewers' offices located in, and draw up the outline of an ideal creative office environment. These interviews were conducted in the early stages of the design process.

- Participants

The target population was 26 people with 15 of professional background and 11of non-professional background who worked in the ordinary office 8 hours a day. Each people has the different situation.

- Procedure

In order to understand the current state of the office environment, we interviewed different people about the space's disadvantages. We prepared the survey outline in advance; it took the form of a free conversation on sensory, material, and economic aspects such as spatial functions, feelings, etc. Through this, we acquired information on the ideal creative office space as imagined by users.

2.2. Questionnaire survey

The second questionnaire was designed to capture the specific elements of space that affected users' mental needs. It was conducted in the early stages of the design process.

- Participants

The survey was conducted between two groups of people. One group consisted of 48 designers who provided services, and the other included 26 prospective clients (total = 74).

- Procedure

Participants were instructed to fill out the questionnaire, which covered aesthetics, indoor physical conditions, space layout, and so on which elements were chosen through the discussion by designers;

each participant selected the main affective elements from among four options from their mental needs.

3. Discussion and Analysis

3.1. Analysis of the semi-structured interviews

From the conversation of the semi-structured interviews, we realised that people were not satisfied with the existing office space, the questions are focused on the following mentioned:

- Lack of emotional communication

We gathered from the interviews that most traditional layout was single function. The design of the office space, fails to consider human physiological and psychological needs. The design of office spaces is often not related to the needs of the organisations that use them (Worthington, 2006). Actually, office spaces, in addition to meeting the basic functional requirements of the related division, need to emphasise freedom of design and human mental appeal.

- Lack of creativity

Based on division of labour, nowadays most interior office spaces are segregated such that workers 'sit in rows', with the office partition layout forming a single-space model to which a machine-like adherence is expected. There has been increase in office density, but little attention has been paid to ensuring that people can work in comfort in a creative space environment. The lack of creativity in spaces makes users reluctant to work more effectively. Originality is a core element in creative study (Runco & Jaeger, 2012). To ensure that employees produce effective work, it is essential to create original space that stimulate people's creativity in various ways.

- Lack of cultural connotations

Because most interior spaces were designed by architects in the early period, attention was more on the relationship between interior modelling and structure based on feasibility and technical breakthroughs, while the cultural connotations of space received very little attention. Therefore, interior spaces were often used to display company logos or other text with relatively simple and superficial expression. Hence, deep-level cultural connotations came to be pursued by interior designers through various design languages to express the values of spaces. This not only enhanced the companies' cultural connotations, but also deepened employees' sense of ownership and belonging.

3.2. Analysis of the questionnaire

The questionnaire revealed that users more pay attention to the influence of space on their feelings. Although this includes aesthetic and physical factors, the specific performances of different groups produced their own related factors (Figure 1).

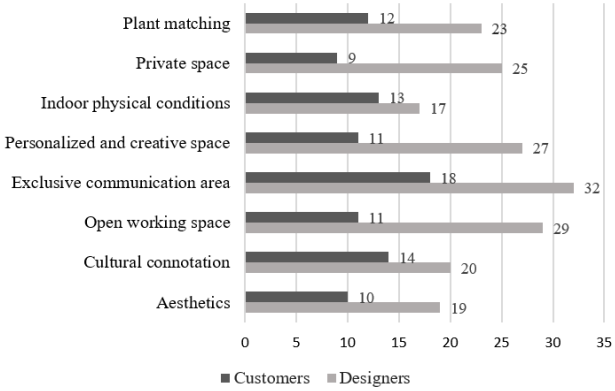

Figure 1. Mental need elements affecting two groups

The designer group preferred a public communication space to acquire fresh information (32 people),

an open working space to benefit team cooperation (29 people), a space for exclusive personalised and creative performance (27 people), and a relaxation area that can soothe people's moods (25 people). In their opinion, only these kinds of spaces can serve clients effectively.
The customer group wanted an exclusive discussion area for negotiations (18 people), a space that evokes certain memories and meets emotional or cultural needs (14 people), a healthy and comfortable interior space (13 people), and a natural environment with green plants (12 people). They believed that such spaces would be ideal creative space for an art studio.
In short, the main factors of concern related to space for the two groups include the following: Fifty people (67.6%) preferred an open and spacious communication area; 40 (54.1%) preferred an office space conducive to discussion and cooperation; 38 people (51.4%) wanted an innovative space with personality; 35 (47.3%) felt that space should have a touch of nature; 34 people (45.9%) wanted a relaxation area that can soothe one's mood; and the same number of people required space to have cultural connotations. The top four elements are open and spacious communication area, space suit for discussion and cooperation, innovative space with personality, and spacious touch of nature.

3.3. Data results

From the **semi-structure interviews and a questionnaire survey,** all the above-mentioned results can be summarised as follows:

- Psychological demand for openness and privacy

Openness is a concept corresponding to privacy. Research has indicated that work efficiency can be multiplied in a group; open offices improve production efficiency, which is essential in the present era (Marquardt et al., 2002). Privacy, however, emphasises choice and control over people's interactions with each other, that is, individuals or groups choose to be close to others and decide when, in what way, and to what extent information exchange should happen with others. Therefore, an office space should maintain an effective transition or a flexible balance between open and private spaces, with separate spaces are flexible and colourful areas to meet the functional requirements of different users' needs for privacy and publicity.

- Psychological need for personalisation and creativity

As most users were part of the designer group, they had a certain artistic background, and hence, their requirements for space included personality and innovation. Personalities is different (Haoming, 2011), and therefore injecting more personalised elements through function and shape is important. Creativity is often defined simply as a new idea. Most methods to evaluate creative ideas were based on comparing the present ones with past ideas (Eckert, & Earl, 2005). Making an office more creative however involves abandoning old ideas of space analysis and allocation. New approaches to space planning need to break away from the efficiency of rectangular grids in favour of more innovative and unusual solutions that create unexpected environments within buildings. Creating memorable workplaces can support and enrich the lives of the people who work there (Worthington, 2006).

- Psychological demand for cultural connotations and nature

As mentioned earlier, an old building itself is a carrier of a special cultural complex. Since the basic principle of transforming old buildings is 'Repair the old as old', certain materials and old objects can be used in the renovation to kindle the psychological need for nostalgia among people. This awareness can help in the selection of an office space's form, materials, and furnishings. Meanwhile, from the results of the questionnaire, it was obvious that people had a yearning for natural environments. It has been said that a green visual field exceeding 25% makes people comfortable, both physically and psychologically. It can add a sense of taste, eliminate fatigue, and stimulate people in a positive and dynamic fashion by meeting their psychological need to be close to nature.
In summary, the three kinds of psychological needs mentioned above are the important elements extracted from the questionnaire. Next, we discuss how these needs were met during the design process.

4. Design process

The design process was aimed at creative practice to transform the project into a real space. In this case, it involved the following steps: program, schematic design, preliminary design, final design plan, shop drawings, and construction (Figure 2). In each step, the designers took effective measures to meet the specific requirements that were set. We described them by a four-step model during the preliminary design.

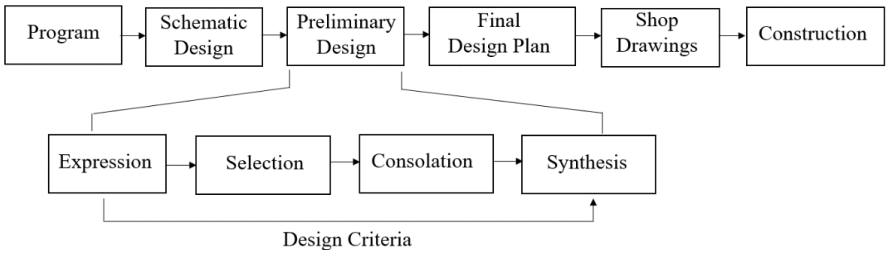

Figure 2. Design process

4.1. Expression

To achieve the design goals of creating a creative space that meets users' mental needs and to develop the preliminary design, the following needs were considered.

- Psychological need for openness and privacy

Our method optimised public spaces such as large open areas for communication in the central space, a space for designer cooperation and discussion in a common area, and a public negotiation space for customers. The method also optimised private spaces such as a private relaxation area for tired designers to enhance or lighten their mood, a private space or exclusive design area for design directors on the second floor, and a greenhouse space for customers (Figure 3).

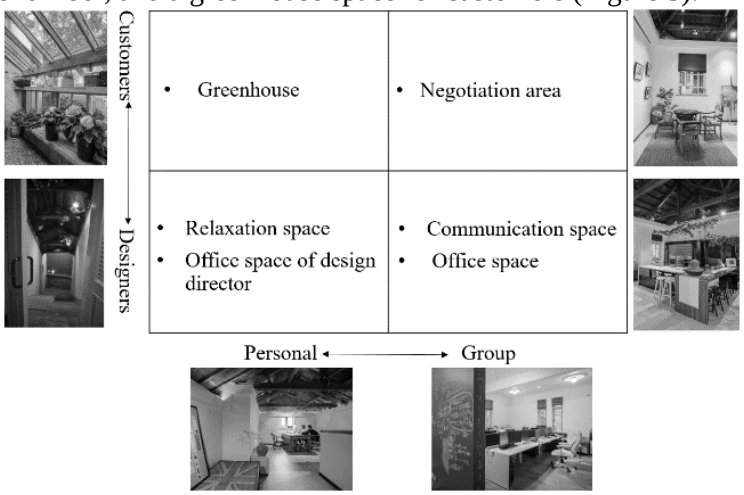

Figure 3. Optimisation method for openness and private area

- Psychological need for personalisation and innovation

Bearing in mind users' psychological needs, we employed a new Chinese style art space to add personality to the spaces. A special type of 'brainwave' music is played in the relaxation area and technological innovations were used to ensure an emotional communication experience for indoor users as well as for space interactions.

- Psychological need for cultural connotations and nature

In order to preserve its architectural values, we must understand a building's ties to the past (Ministry of Housing Agency, 1992). In particular, special old material can be chosen to create a nostalgic effect and remind users of the past. For example, some representative objects used to invoke an older time were used, such as wooden beams, wooden windows, red bricks, and an old glass table. Meanwhile,

an old-fashioned greenhouse and used plants were placed to bring in an element of nature into the space.

4.2. Selection

Based on the design goals, we selected appropriate methods to develop the overall program, especially when it came to ‘brainwave’ music in the relaxation area, which is meant to soothe the listeners. ‘Brainwave’ music helps designers relax, and it enhances their creativity. According to a music specialist who graduated from the Music Department at the University of Melbourne, ‘brainwave’ music is related to improving learning efficiency. It also awakens people’s creativity, inspires creative thinking, and helps people feel relaxed and comfortable (Zhuang et al., 2009).

4.3. Consolidation

This step involved optimising the various design elements to meet users’ psychological needs and make the design program relatively complete.

4.4. Synthesis

Synthesising all other subsidiary elements related to this case, such as electricity, plumbing, air conditioning, etc., and then finishing the whole design plan was the next step. We completed the preliminary design in terms of design criteria.

5. Evaluation

After the shop drawings, construction began in early 2016. Three months later, the old building had a new look. To verify whether the space satisfied users’ requirements, a questionnaire survey was conducted among 26 users after a month of using the space. To obtain their evaluation of the new space, we measured three properties (sensory, material, and economic) in proportion by the Semantic Differential method.

SD method is a rating scale designed for measuring the connotative meaning of objects, events, and concepts. It mainly investigates human cognitive activities related to observation of objects in order to analyse the inner relationship between human’s perceptual knowledge and the object evaluated. Using the method of two polar adjectives to indicate the degree of preference of users, we compared two types of office space: the existing office space from the semi-structured interviews mentioned earlier and the art studio space, on a seven-point scale; the final score was the average evaluation (see Table 1).

Table 1: Emotional indicators Evaluation

Evaluation attributes	Evaluation of emotional indicators	Existing office space	Art studio space
Sensory properties	Space feel: stiff ~ modern	3.63	6.25
	Space layout: dull ~ lively	3.25	6.38
	Work pace: ordinary ~ creative	4.13	5.25
	Private space: inadequate ~ exclusive	3.63	5.00
	Communication space: narrow ~ open	4.13	5.75
	Relaxation space: incomplete ~ perfect	3.63	5.75
	Plant accessories: mimic ~natural	2.88	5.63
	Cultural connotation: poor ~ unique	3.00	5.63
	Mean	3.54	5.71
Weighted score（52.69%）		1.87	3.01
Material properties	Space function: decorative ~ practical	3.38	5.88
	Space structure: perishable ~ durable	5.25	4.70
	Mean	4.32	5.29
Weighted score（40.54%）		1.75	2.14
Economic property	Space grade: cheap ~ expensive	3.38	5.50
Weighted score（6.77%）		0.23	0.37
Final score		3.85	5.52

As the data and the comprehensive evaluation of the weighted calculation show, except for the structural elements, all elements in the art studio space received higher scores than those of the existing office space. The final score for the art studio space was 5.52, which is obviously higher than 3.85. Hence, we may conclude that the art studio space had make a substantial progress in creative design and construction.

6. Conclusion

Based on the whole process from initial design through post occupancy evaluation, this study made a practical contribution from the perspective of users' mental needs. As Figure 4 reveals, the original building was old and shabby; after investigating the status quo, analysing the problem areas, improving the design plan, constructing, and developing the final evaluation, the whole building has taken on an entirely new look. New Chinese-style interior space combining the original wooden structure with modern decorations was the final look designed for the creative office space and the evaluation of this space was 5.52. The implementation in this case not only extended the life cycle of the old building, which was a sustainable environmental design strategy, but also considered users' mental needs focusing on their priorities to create an innovative space. In the future, we plan to carry out old building renewal based on the perspective of users' physiological needs.

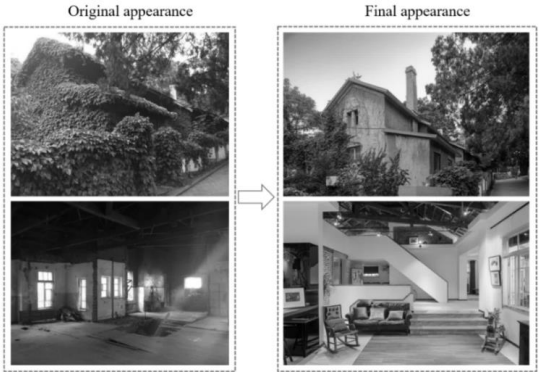

Figure 4. Before and after

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