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ICNTAD CONFERENCE

4th INTERNATIONAL CONFERENCE ON NEW TRENDS IN ARCHITECTURE AND INTERIOR DESIGN

4th International Conference on New Trends in Architecture and Interior Design

Proceedings Book

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Dear Colleagues,

I am honored to invite and send you this call for papers on behalf of Congress Organization Board of ***"4th International Conference on New Trends in Architecture and Interior Design"***, to be held at Saint Petersburg, Russia between May 11-13, 2018 bringing a new and professional point of view to Academic Conference organizations.

A limited number of Papers with the below mentioned topics will be accepted for our conference:

- Criticism of sustainability / Unsustainability
- Philosophy of architecture / Architecture without philosophy
- Professional settlement of interior architecture
- Spatial organizations by furniture design
- Intangible skin of space: lighting design
- Tangible skin of space: material
- Ideology in architecture / Ideology of architecture
- Spaces without space: 3D virtual spaces
- Math of space: spatial analysis and parametric design
- Artistic value of space
- Architecture without architect
- Cultural codes in architecture
- Flexibility in design
- New trends in spatial design education

One of the successful papers presented at the 4th ICNTAD 2018 will be chosen by the reviewer committee to be published on Beykent University Journal of Science And Engineering BUJSE (ISSN: 1307-3818) after necessary revisions pointed out by the reviewer committee are met. Main but not limited criteria for this selection will be the originality of the paper, academic quality of the study, suitability of the methodology used, presented results' and conclusion's potential to cause an interdisciplinary discussion.

The most distinctive feature of 4th ICNTAD'18 from other conference organizations is that the academicians working interdisciplinary can also attend to presentations performed in different specialty fields and they will also have the opportunity to meet with other academicians coming from various parts of the world. On the same dates, there will also be International Conferences upon the disciplines of Chemistry, Statistics, Econometrics and Physics will be also held in the same venue. While attending 4th ICNTAD'18, participants are most welcome to attend other conferences

We kindly wait for your attendance to our conference to be held on May 11 – 13, 2018, with a hope to realize a satisfactory conference with its social activities as well as the scientific ones and leaving a trace on your memories.

Regards

Prof. Dr. Burçin Cem ARABACIOĞLU

10 MAY 2018 THURSDAY

18:30 – 21:00 : REGISTRATION

11 MAY 2018 FRIDAY

08:30 – 17:00 : REGISTRATION

MAIN HALL

09:00 – 09:30 : GRAND OPENING CEREMONY

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HALL 1

09:40 – 10:40
Welcome Speech : Prof. Dr. Burcin Cem Arabacıoglu / Mimar Sinan Fine Arts University
Conference Chair

KEYNOTE SPEAKER :Prof. Dr. Fedor V. PEROV / St. Petersburg State University
Speech Title : *Trends in the development of historic cities taking into account the identification features of the existing urban environment*

10:40 – 11:00	**C O F F E E / T E A B R E AK**

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11:20 – 11:40	**THE IMPACTS OF THE BUILDING AND STREET INTERFACE RELATIONSHIP ON URBAN SPACE QUALITY**	**Melike Orhan**
11:40 – 12:00	**MODULARITY AS A TOOL FOR FLEXIBILITY IN DESIGN: ANALYSIS ON A POP-UP OFFICE**	**Dilsa Gunaydin** - Ezgi Haliloglu Kahraman
12:00 – 12:20	**THE POWER OF PROPAGANDA: NAZI ARCHITECTURE**	**Fulay Uysal Bilge**

12:20 – 12:40	**PERCEPTIONS ABOUT THE PROFESSION OF INTERIOR ARCHITECTURE BEFORE AND AFTER EDUCATION: A CASE STUDY IN ANTALYA, TURKEY**	**Shirin Izadpanah**

13:00 – 14:00	**LUNCH**

14:10 – 16:00	**TECHNICAL TOUR**

17:00 – 17:45	**LIVE CONCERT by CONFERENCE PARTICIPANTS**

17:45 – 19:30	**HOTEL DEPARTURE FOR BOAT TOUR (Incl into Registration Fee)**

12 MAY 2018 SATURDAY

08:30 – 17:00 : REGISTRATION

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TIME	**PAPER TITLE**	**PRESENTER /** CO AUTHOR
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09:40 – 10:00	**PRE-SCHOOL DESIGN IN THE INTERACTION OF USERS AND DESIGNERS**	**Elif Ozturk -** Sinem Tapki - Aysegul Koc Unlusoy
10:00 – 10:20	**PERCEPTION OF SPACE CHANGING WITH CULTURAL CODES**	**Sinem Tapki** - Elif Ozturk - Aysegul Koc Unlusoy
10:20 – 10:40	**THE EXPERIENCE OF SPACE IN VIRTUAL REALITY AND AUGMENTED REALITY**	**Fatih Us**

10:40 – 11:00	**C O F F E E / T E A B R E AK**

HALL 1 / SESSION C

SESSION CHAIR	**Prof. Dr. Burçin Cem ARABACIOĞLU**	
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11:00 – 11:20	**SHOPPING CENTERS IN THE CONTEXT OF URBAN INTERIORS**	**Didem Erten Bilgic**
11:20 – 11:40	**PREFERENCES AND PLACEMENT ON LIVING ROOM & DINING ROOM FURNITURE: A CASE STUDY AT SAKLI KENT MASS HOUSE FAMAGUSTA, NORTH CYPRUS**	**Ceyhun Uludag - Kamil Guley**
11:40 – 12:00	**BEDROOM AS PUBLIC SPACE: QUESTIONING THE MARKETING STRATEGIES AND THE SOCIAL MEDIA THREATENING THE INDIVIDUAL FREEDOM**	**Naime Esra Akin -** Derya Adiguzel Ozbek
12:00 – 12:20	**CONCEPT DEVELOPMENT IN THE INTERIOR DESIGN STUDIO**	**Begum Ercevik Sonmez**
12:20 – 12:40	**FURNITURE AND INTERIOR STRUCTURES AS SIGNIFIERS OF SPATIAL IDENTITY. CONTEMPORARY INTERPRETATIONS IN STUDENT DESIGN PROJECTS.**	**Anna Efstathiou**

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TIME	**PAPER TITLE**	**PRESENTER /** CO AUTHOR
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14:20 – 14:40	**THE IMPORTANCE OF REHABILITATION IN BALAT**	**Vehbi Tosun** - Rana Kutlu - Arzu Ercetin
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18:00 – 18:20	**AKSARAY AZMI MILLI FLOUR FACTORY: A CASE STUDY OF INDUSTRIAL HERITAGE MUSEUMS**	**Elif Tektas** – Esra Nartkaya – Onder Aydin

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09:40 – 10:00	**COMMUNITY GARDENS**	**Fatma Asilioglu** - Rukiye Duygu Cay
10:00 – 10:20	**PATIENT SATISFACTION AS AN INTERIOR QUALITY INDICATOR IN TWO ONCOLOGY**	**Esra Bayir**

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11:20 – 11:40	**RE-USE AND LIGHTING DESIGN SOLUTIONS OF TRADITIONAL BUILDINGS-KAYSERI SETENONU PUBLIC BATH**	Hale Kozlu **– Ozlem Sumengen –** Seven Gozubuyuk
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13:00 – 14:00	**LUNCH**

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RE-USE AND LIGHTING DESIGN SOLUTIONS OF TRADITIONAL BUILDINGS- KAYSERI SETENONU PUBLIC BATH

Hale KOZLU[1], Özlem SÜMENGEN[2], Seven GÖZÜBÜYÜK[3]

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Abstract
Architectural conservation in the sense of modern apprehension is an important factor not only presenting the building as a monument but also using it with a suitable function and involving it into the urban pattern and urban life. In the restoration and reuse of traditional buildings; is an important issue to restore the building without giving damage to its spatial and structural original as well as lighting solutions according to new function and user requirements.
The most important points that must be considered during interior and exterior lighting design of buildings are; avoiding material damage and enriching the visual effect of the building by reflecting the spatial and formal features correctly. In this sense; first of all apart from the buildings in which the presentation of objects that will be damaged by natural and artificial lighting is the case; utilization of available daylighting opportunities must be preferred at maximum level. However when the current comfort conditions are regarded; it is seen that the daylight illumination in the interior space is not adequate for new functions throughout the occupation time. Therefore a proper artificial lighting system has to be designed and the integration of daylight with artificial light must be enabled for various spaces. Lighting design must be mentioned together with restoration project and a suitable lighting system must be offered with an interdisciplinary study.
Kayseri which is chosen as the study field; most of the traditional buildings have lasted up to now and some of these buildings have a monumental effect as well as their utilization in the city centre. Some other buildings have lost their importance being excluded from the development direction of the city and were sunk into oblivion. Inclusion of such buildings into urban life is only possible with re-use of these buildings. Indoor lighting design is important for the integration of this new function with the building and outdoor lighting design is also essential for its contribution to urban silhouette visually and interaction to city life and the environment through hours of day.
In this sense Setenönü Public Bath chosen as the subject of study was built in 17th century. Today the building is stuck within high-rise commercial buildings and Kayseri Urban Conservation Area. In this study that is supported by Erciyes University Scientific Research Project (No:6066), it is aimed to functionalize this building socially and culturally according to the common needs of different user profiles and to make optimum lighting solutions. In this sense, first of all the current condition of the building will be analyzed and then a lighting solution will be suggested according to the function determined. Lighting levels and visual comfort conditions will be evaluated according to international standards and will be obtained from architectural points of view.
© 2017 Selection and/or peer-review under responsibility of the organization committee
Key Words: *Conservation, Re-Use, Daylight, Visual Comfort, Setenönü Public Bath,*

1.Introduction

The ability of cultural essence to maintain both its physical and social essence within the urban fabric is dependent on many factors. Since, urban life is rapidly changing; the ability of cultural heritage to be included in urban life in this process of change can be achieved together with physical and social sustainability. One of the subjects in this contexts that need to be elaborated upon with care in preservation and restoration work is making decisions of function and the establishment of the relationship of cultural assets with the city by this means is a process necessary to obtain importantly in terms of architecture and space.

Lighting, which is one of the important infrastructural phases of functionalization, is defined as the fourth dimension of architecture, and has become an interdisciplinary field of study in terms of quality and quantity. Along with the characteristics of lighting design like the formation of spatial perception, emphasis, and conspicuousness, the efficient use of energy has a separate importance in terms of renewable energy resources coming into prominence. Lighting design is accepted as an inseparable part of the design process and is a phase that enables the integration of the spaces of building and aesthetic reflections of the provided function, whose detailed acquisition is necessary in functionalization projects, with energy performance by considering the conditions of visual comfort. In historical functionalization projects, primarily in line with the principles of engaging in minimal intervention with the specific spaces and structural elements of buildings, the diversity of actions appropriate for the recommended functions will become the identifier of the conditions of visual comfort that need to be provided, and the recommended lighting design will respond to these requirements. The purposes in this lighting design, in which psychological conditions of comfort are also taken into consideration, are energy efficiency and the optimization of the quantity of lighting.

The purpose of this study is the development of a method recommendation, within the urban texture that the

building known as the Setenönü Public Bath is found, that might enable the evaluation of the building with ideas that could maintain its spatial essence and with products of resolution, the emphasis over lighting design on the multi-layered characteristics of the re-use projects by developing internal and external lighting designs appropriate for the recommended functions, and the ability to acquire other layers.

2.Setenönü Public Bath re-use studies

2.1. Setenönü Public Bath environmental evaluations

Traditional textures that constitute the historical core in city centers and which are generally in protected areas are the spaces that are most affected by the processes of change that cities experience. The main, definite problems that are experienced in these traditional textures in processes of change can be ranked as the destruction of buildings as a result of economic and physical degradation or human activity; unsuitable housing and health conditions in the environment and building; the use of the building in unsuitable conditions or in unsuitable functions or its abandonment; the surrounding not having developed roads and parking spaces sufficient for transportation; infrastructural deficiencies like roads, water, canalization, telephone, and electricity; and the space becoming areas of social and economic collapse in with low-income groups are housed. [1].

In every period, non-Muslims have held an important place within the population in Kayseri, one of the most crowded cities in Anatolia. The area constantly changes hands by its users and was in a position of an area in which individuals come and live from outside of Kayseri to work temporary jobs. As a result of this process, the buildings in the traditional fabric found in the city center of Kayseri have started to lose their specific qualities with the irregular additions and repairs of the new users [2].

Due to the Setenönü Bath, found in the eastern perimeter of the Urban Protected Area, not being used for a long time and its the physical and social position of the area in which it is found, it has been used until recently by the local public as a depressed area and even a garbage dump. With the restoration and urban design work that started in the region, the Setenönü Bath was acquired, the rights of use of the building were transferred to the Kayseri Metropolitan Municipality by the Güpgüpzade Hacı Ebu Bekir Ağa Foundation, and the building, whose implementation was completed in 2010, began to be used as an exhibition hall. Work continues today to convert the public bath, whose use and operation is being transferred to the hotel in the space, into a bath that has a specific function (Figure 1).

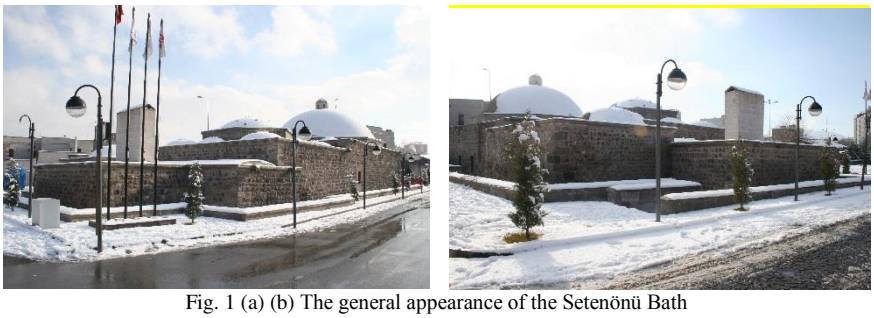


Fig. 1 (a) (b) The general appearance of the Setenönü Bath

Today, the area in which the bath is found is rather socially and culturally developed and changed compared with its state 10 years ago. Its proximity and ease of access to the city center enables the participation in social-cultural activities of the people in the entire region of the city. According to the density analysis that was determined with observations made on site in the scope of the study, differentiations in the nighttime and daytime use of the area are seen. In the daytime, the users in the region are mostly local tourists who visit to tour the historical building and the public who lives in or whose workplaces are in the region. While the daytime intensity of eating-drinking units is low during the week, this use increases in daytime house on the weekends. Nighttime use of the area is quite low in the winter months. Only in eating-drinking units is movement not observed. This situation changes in the summer months. Climate conditions in the summer months being suitable for the use of open spaces and the activities organized by local government and the businesses in the region help the intensive of the region, especially in the evening hours.

2.2. Architecturural features and re-use studies

The Setenönü Bath, among the plan typologies of Turkish bath is a 17th century bath that was constructed based on the “four-domed, four-cornered, private celled heating” plan scheme typology [3]. The building was constructed as a single bath at the eastern perimeter of the urban protected area and is located at the north-south axis. To the west of the newly constructed hotel complex south of the building, there are spaces organized as plazas and historical residences, and to its north are multi-floored concrete structures. The building comprises of dressing space/ frigidarium, tepidarium, caldarium, sudatoriums, water storage, and furnace sections that are spaces in the traditional Turkish baths in Anatolia. The purpose for the construction of the spaces in the northeast corner of water storage is not entirely understood and is to day used as a kitchen and storehouse (Figure 2a)

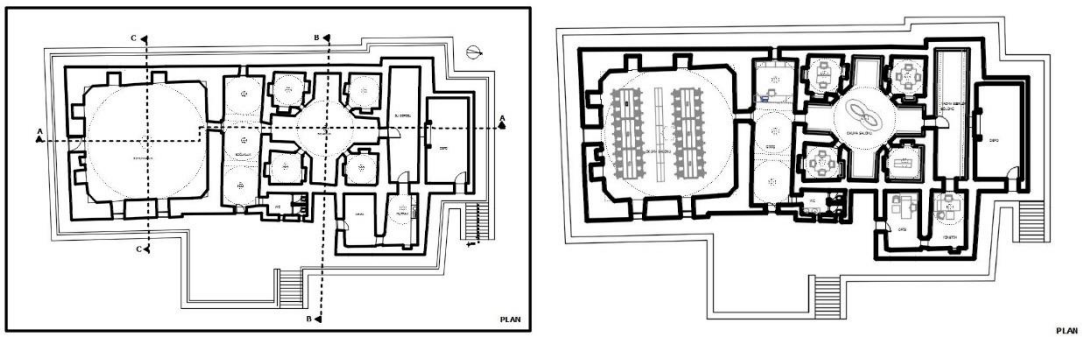


Fig. 2. (a) Plan (b) Re-use Project

Dressing space is accessed by door from the south of the building. The space is illuminated by means of a round lighting lantern on the western side as well as an lighting lantern on the top of the dome. The handiwork found around the dome and on the pendentives was covered during decoration restoration, and the original hand carvings are exhibited only in a small area. The arches that are seen in old photographs and that have brought an aesthetic appearance with colorful stones have been completely plastered over and the visual effect in the internal spaces of the building have largely been lost. A door was opened in the eastern wall to the frigidarium space, which is accessible from dressing and heating in the original, in the process of converting the building into an exhibition hall, and began to be used as an entrance hole. The rectangular frigidarium was covered with 3 domes that are separated by pointed arches. Daylight in space, prevented by the oculies found in the center of the central dome, the round skylights found in the domes on the sides, and the skylights found in the eastern and western walls. Like the other spaces, the walls and domes in frigidarium have been completely plastered. The calderium is passed to from tepidarium with a round, arched door. There are sudatoriums at the intersection points of the four domed spaces of calderium. There are rectangular skylight and oculies in the dome passed by the pendentives. There are, again, oculies on the vaults on the domed spaces. Sudatoriums are illuminated by the windows on the domes. For this reason, the building will undergo construction after the restoration projects, which include converting the building into a mosque, and the completion of the tendered studies.

The building's 3D modelling studies done using the survey drawings of the building as a base and using AutoCAD, DiaLux 4.12 and Sketch Up, and the visuals are provided in Figure 3.

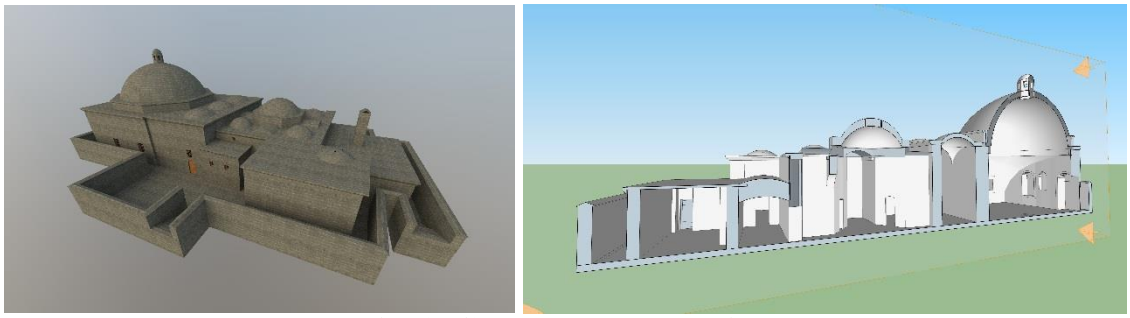


Fig. 3 (a), (b) Setenönü Hamamı 3D Drawings

Re-use of buildings in the name of protecting the unique identities of cities by being correlated with an urban context is important. While providing new functions, the spatial qualities and requirements of the building must be evaluated together with the urban context and the relationship it creates. Although baths are a type of traditional building that continues its function today, it is seen that some baths are being converted with functions other than their original function due to a decrease in the use of baths in the conditions of today. While baths containing wet spaces in their original functions facilitates the adaptation of these spaces into the building, the installation of these spaces limits the functions that that can be provided to the building. When these are, changing functions are examined, it is seen that the Istanbul Tahtakale Bath was converted into a business center and cafeteria, the Beyazid II Bath was converted into a museum, the Gaziantep Keyvanbey Bath was converted into a bath, and the Bursa Ördekli and Safranbolu Gavur Baths were converted into cultural centers [4].

This project plans to develop function of the library for the Setenönü Bath and a lighting design recommendation that is appropriate for this function that is defined with the principles of international preservation, in line with the principles of engaging in minimal intervention with the specific spaces and structural elements of the building in re-use projects. When the spatial and urban contexts are examined for Setenönü Bath in this context, the library function is thought of as a function that brings forth and strengthen these characteristics. When the position of the bath within the city was considered, it was observed that there was a need for libraries, which are one of the most needed public functions of city centers, for the city center of

Kayseri. That the social and cultural activities are a part of the Setenönü neighborhood transformation project necessitates the articulation and cultivation of these functions. Art workshops, accommodation, and eating-drinking spaces have been presented to the use of the city residents, and an installation that works better and is developed as it is used simultaneously with a library may be acquired. When supported with a library function, this space can enable the development of part of the city by locals who come to the area with alternative use recommendations spending a longer period of time. At the same time, long-term vitality and the use of public space can be enabled with nighttime use, which will be considered for the library (Figure 2b)

The development of a re-use project and lighting design project appropriate for these functions by considering that the physical and spatial installation of the bath is in a building that provides possibilities for a diversity of activities like book storage, presentation, reading, exhibition, and working; reaching an interdisciplinary study; and making integrated decisions are projected when spatial decisions are being made. And like this, the spatial decisions necessary for the library function and the measurements that will be taken to be able to make preservation decisions and lighting designs that will enable the study of the building together with its original quality will enable possibilities that studies are done that are integrated with a simultaneous and backfilled working method and specific to the space.

There are 2 main reading halls in the scope of the library function. The frigidarium, which is today an entrance, was designed as the entrance section of the library, and the dressing section/frigidarium, tepidarium, caldarium and sudotariums were used as reading halls. A toilet is accessible from the entrance section. The inclusion of ergonomic and detailed solutions that enable the working styles that developing technology requires for furnishing elements has been primarily acquired.

3.Lighting design criteria for spatial function decisions

Beyond the acquisition of the functionalization project in merely the dimension of the evaluation of the spatial and structural function, the goal is to develop a method for doing the lighting design and including it in the process in all restoration projects by considering the criteria of visual comfort in international standards and the measurement data and general energy preservation with regard to the obtaining illumination in the spaces. Priority has been given to functions in which the compliance of the conditions of visual comfort with international standards can be evaluated clearly. When all environmental and physical data are taken into account, new recommendations and regulations for use that facilitate various possibilities and that are supported with measurements are being focused over the library function by effectively evaluating the daylight in the spatial operation.

3.1. Visual comfort criterias in library spaces

Even if the main task of libraries doesn't change as resource centers for information and thought within history, a quick development and transformation is seen at these institutions in recent years that is expanding their identity and field of activity. Libraries today store digital archives in some situations of periodicals, newspapers, and maps along with CDs, cassettes, information recorded on microfilms. With the influence of technology that affects every aspect of life, libraries today can be used with names that specify that libraries respond to a wider purpose and function, like "multi-media center", "material resource center", and "learning resource center", or names similar to these. [5]. Despite all this change, libraries should be designed as spaces that can be a center of attraction for users as a source of personal education, research resources, and information power resources and that present psychological comfort as a result of visual comfort. Areas that provide opportunities to rest in between work by taking long working hours into account, resting corners, and settings in which daytime can be perceived should also be presented.. The conditions of visual comfort in libraries and lighting system designed accordingly should respond to the certain functions like reading-studying, book storage, lending-reception, resting-free reading, and the protection of special works [6].

3.1.1. International standarts regarding visual comfort criterias in library spaces

İllumination Level, Brightness and Color are the principal factors that constitute the physiological conditions of comfort. By ensuring the conditions of visual comfort with these factors reaching specific values and being held within specific limits, visibility can be obtained at the optimum level. Institutions like CIE (International Commission on İllumination), IESNA (Illuminating Engineering Society Of North America), CIBSE (The Chartered Institution of Building Services Engineers), and EN (European Standarts) have revealed specific values for the conditions of visual comfort with studies that have been done from the past to the present. The reference sources that these institutions published can be obtained as "Code for Lighting: 2009", CIE "Lighting of work places:2011", EN 12464-1 "Light and Lighting -Lighting of work places:2011" ,IESNA"The Lighting Handbook 10'th edition-Reference and Application.

Providing an environment that is suitable for reading and research activities is necessary for both readers and staff at libraries. Employees should be able to carry out visual activities quickly, fluently, and comfortably. Brightness differences and color contrasts are necessary for visual action. The writing in books is seen by the eye due to the brightness differences between white paper and black typeface. Similarly, internal spaces and surfaces can be seen because of their brightness ratio differences. The limits of change of the desired ratios

between the visual task and environment in volumes that have different functions are important. The brightness ratios recommended in horizontal working spaces in libraries and the horizontal working spaces in offices are seen on the same principle. [7]. Recommended brightness ratio in libraries (Fig. 5):

- Brightness ratio between the visual paper surface and the adjacent computer screen 3:1 or 1:3
- Brightness ratio between the visual paper surface and the adjacent dark environment 3:1 or 1:3
  Brigthness ratio between the visual work and distant environment 10:1 or 1:10
- Brigthness ratio every within the visual area 40:1 or 1:40

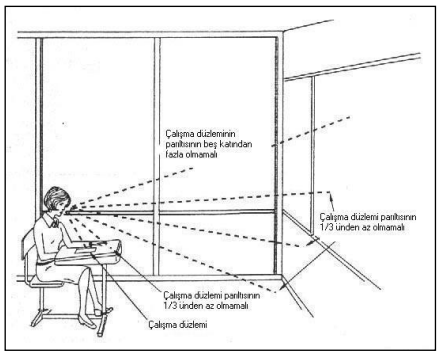


Fig. 5. Recommended b.ratios in working planes [8].

The light reflection coefficients recommended to carry out the provided brightness ratios and for the internal surfaces are as follows [8]. For Schools-Libraries:

- Ceiling 70-90%
- Walls 40-60%
- Flooring 30-50%
- Belongings 35-50%
- On Blackboard 20%

The brightness of ceiling planes in computer-working environments must be held at certain values. Ceiling brightness that can originate from indirect lighting can create discomfort in computer screens. The maximum ceiling brightness not being more than ten times the brightness of the computer screen is recommended in an environment in where standard rates of brightness are ensured [8].

Table 1 gives the visual comfort criteria that changes based on the different activity spaces in the library in the IESNA. [8].

Table 1. Recommended brightness level based on library functions [8].

Functions	Recommended brightness levels (lux)	Glare index limit
Reading rooms	200	19
Reading tables (lending)	400	19
Reading tebles (giving reference)	600	16
Plugs	600	19
Closed book shelves	100	…..
Binding	600	22
Catalogue, sorting, storage rooms	400	22

Table 2 specifies the data related to libraries in the EN 1464-1 standard entitled (European Standarts) Light and lighting - Lighting of work places - Part 1: Indoor work places that covers EU countries [9]., CIE (International Commission on Illumination), “Lighting of work places:2011” that is taken as a reference with the BS -ISO standards [10]. and the Code for lighting CIBSE 2009 standard that was published by CIBSE (The Chartered Institution of Building Services Engineers) [11].

Table 2. Recommended illumination level based on the functions of the library [9-10-11].

Libraries Type of interior, task or activity	E_m lux	UGR_L -	R_a -
Bookshelves	200	19	80
Reading area	500	19	80
Counters	500	19	80

3.1.2. Suggestions for deteriorations and deformations

All paper, parchment, writing and signs can be damaged by the light. Damage does not originate from the UV (ultraviolet) light that white surfaces absorb entirely. The rate of deterioration is dependent on the intensity of the light, the distance of the object, and the duration of the effect. High light intensity and a long period of effect lead to high rates of deterioration. Sensitive materials should not be left for long periods in lighting levels more than 50 lux. Because daylight at this level will be insufficient at a public exhibition, an illumination system should be used that is easily controlled. Handwriting should be covered with materials that can easily be opened by readers wanting to see these. The most effective method that can be implemented to inhibit the deterioration that UV light creates is to put a layer of film that absorbs the UV light between the light source and the object, if the light in question is natural [12]. This glass can be a special glass, or it can be a cheaper, varnished, plated glass. The performance and costs of types of glass should be assessed. While a fluorescent light source found at a height of 3m from an object does not damage the object, direct sunlight is always dangerous. [5]. Table 5 provides the deterioration rates for various light sources as a percentage. [13].

Table 5. Deterioration rates of various light sources as a percentage [13].

Light Source	Color Temperature (K)	Decay rate (%)
Zenith skylight	11.000	100
Cloudy sky	6.400	44
Sunlight , 30° latitude	5.300	27
Fluorescent lights		
Natural white	4.300	34
Hot white	2.900	28
Sunlight	6.500	25
Incandescent lamp	2.850	9

3.2. Current daylight values and measurement results of the Setenönü Bath

Primarily the enabling of the visual comfort conditions, reduction of energy consumption, and realization at the optimal level of the illumination design that will be arranged based on the recommended new function decision is targeted. Within the subject of energy efficiency, primarily the distribution in volume of the daylight found as a parameter becomes important. For this reason, the daylight measurements that contain each month in accordance with the methods specified in the scope of the project should be carried out. Figure 5 shows the grid point planes specified in accordance with the measurements in the volumes that take in daylight of the project spaces. The grid layout is in a 2x2 axis, and it has been arranged in accordance with the output of the measurement points of the Dialux 4.12 program in which the simulation will be done. The measurements were carried out in the working plane (h:80), and their continuation to encompass 12 months is planned. The measurements were taken with the "Assence Lighting Passport" Spectrum Genius device, taken within the scope of the project. Table 6 shows the lighting level values acquired with regard to the month of June from the specified measurement points in the volumes that receive sunlight in the project space

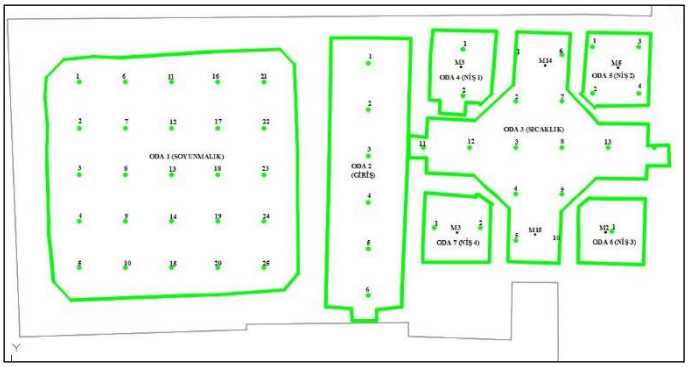


Fig. 5. The measurement points specified in the volumes that receive daylight of the Setenönü Bath

Table 6. The lighting level values specified in the measurement points in the volumes that receive daylight

POINTS	ROOM 1/A	ROOM 2/B	ROOM 3/C	ROOM 4/D	ROOM 5/E	ROOM 6/F	ROOM 7/G
1	18	53	4	78	*	81	12
2	17	86	5	28	*	81	12
3	6	52	15	117	*		88
4	14	45	3		75		
5	14	208	2		75		
6	14	181	5				
7	14		6				
8	16		12				
9	28		5				
10	114		4				
11	14		8				
12	8		23				
13	13		3				
14	15		76				
15	17		36				
16	14						
17	14						
18	13						
19	34						
20	71						
21	15						
22	14						
23	15						
24	16						
25	16						
E ort (lux)	22	104	14	74	7	81	37

Figure 6 shows the wave lengths spectrum and CCT color temperature data acquired from the measurement points specified for the “Dressing” section defined as Room-1. Figure 7 shows the wave lengths spectrum and CCT color temperature data acquired from the measurement points specified for the “Entrance” section defined as Room-2. (Figure 8, Table 7)

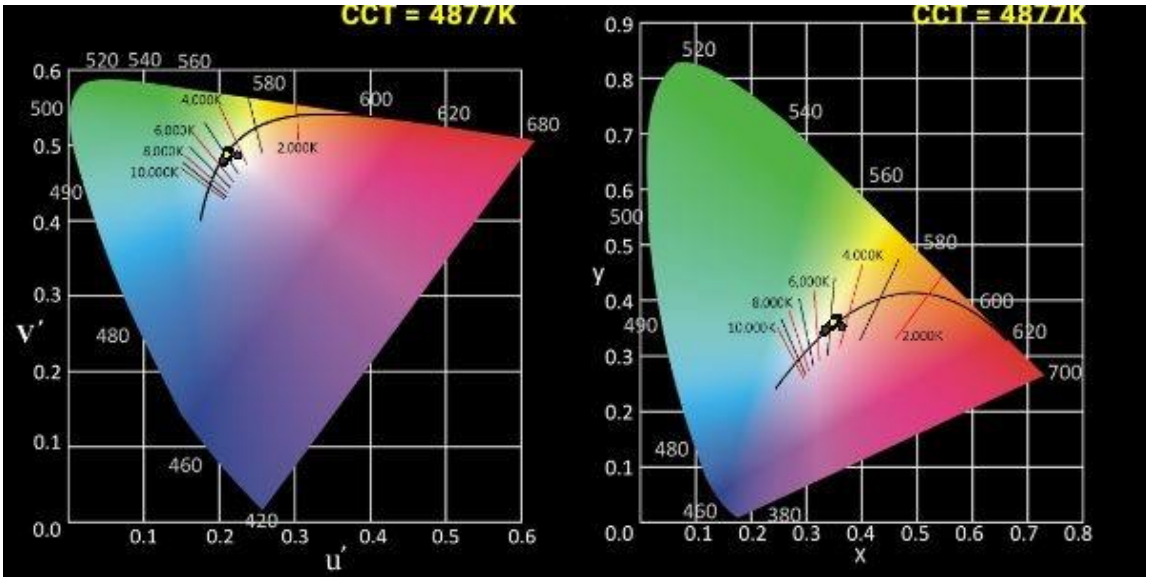


Fig. 6. Lightwave dimensions and CCT (Color Temperature) measured for Room-1

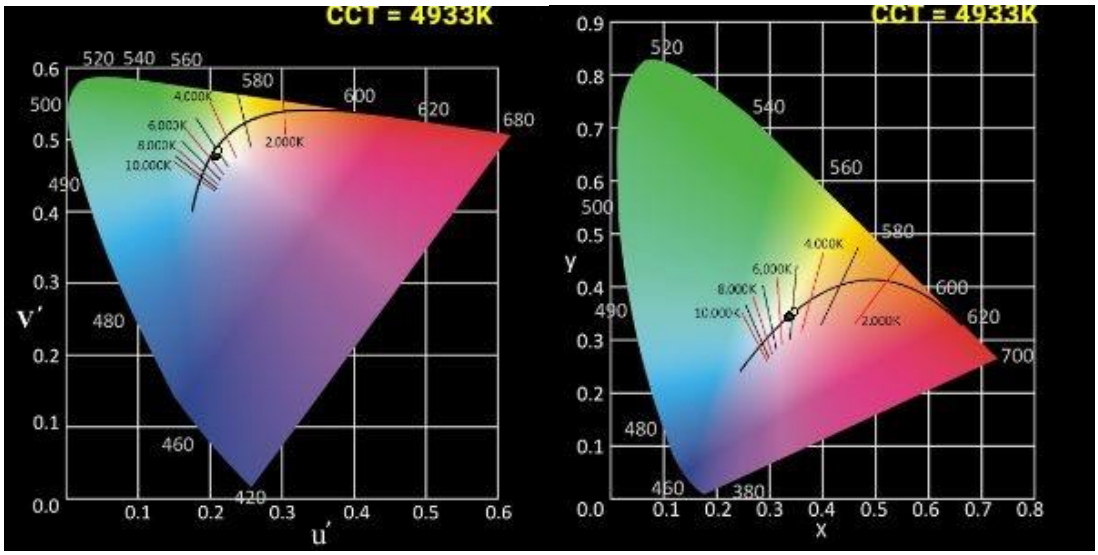


Fig. 7. Lightwave dimensions and CCT (Color Temperature) measured for Room-2

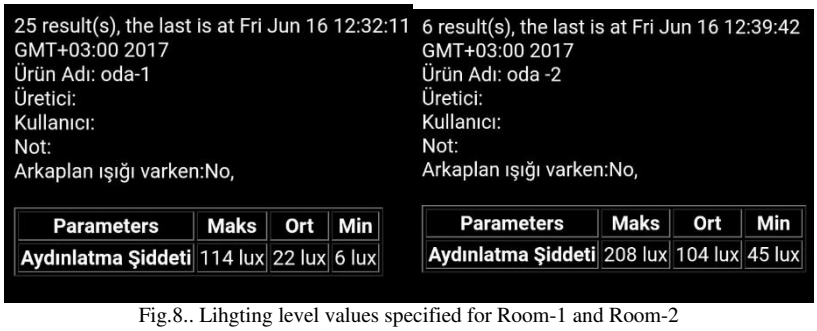


Fig.8.. Lihgting level values specified for Room-1 and Room-2

Table 7. Average lighting level values specified in relation to month in the volumes that take in daylight (*Measurements are from the 15th day of the specified months, the working plane has been taken as h:80

Space name	February E. avg	March E. avg	April E. avg	May E. avg
Roon 1- Dressin	9	12	15	19
Room 2-Entarnce Hall	43	55	73	92
Room 3-Heat	6	8	10	12
Room 4-Niche-1	31	40	51	65
Room 5-Niche-2	7	9	12	15
Room 6-Niche 3	33	43	57	71
Room 7-Niche 4	15	20	26	33

4.Results and evaluations

In the specified function decisions, the visual comfort conditions that need to be ensured with relation to the specified actions have been acquired in the previous sections with the studies of institutions like CIE (International Commission on Illumination), IESNA (Illuminating Engineering Society Of North America), CIBSE (The Chartered Institution of Building Services Engineers), and EN (European Standarts). We see that the references sources that these institutions published and the visual comfort criteria necessary in the library functions evaluated in the CIBSE "Code for Lighting: 2009", CIE "Lighting of work places:2011", EN 12464-1 "Light and Lighting -Lighting of work places:2011", IESNA"The Lighting Handbook 10'th edition-Reference and Application publications are compatible with each other on an international level. Based on these results, it is seen that the illumination level value necessary in the reading and working halls must not fall below 500 lux and that the illumination level needs to be a minimum of 200 lux for the bookshelves and storage areas. There needs to be an illumination level between 100-200 lux for the areas like the entrance-lobby and resting space.

When the measurement values specified until now in the volumes that receive sunlight are examined, it is seen that the acquired max. illumination level value is 208 lux and the average lighting level value is 104 lux. When these values and standard requirements are compared, it is seen that the library function, in which the current situation is thought to be active 24/7, is insufficient.

In the designed lighting system, an arrangement should be made, taking the daylight level into account and minimizing the working planes and the glares on the bookshelves where the shadow effect has been minimized, in order to ensure an average lighting level of 500 lux. Although the automation systems dependent on daylight

are rather effective today, when the daylight values in this space are taken into account, the use of the daylight automation systems are not found to be efficient on the subject of both finances and process management, because a sufficient level is not obtained. Instead of this system, the energy activity factor, whose light level can be adjusted (dimmed), and the choice of high-light resources should be preferred.

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