

# UNDERWATER RESTAURANT BUILDING (TYPICAL STUDY: UNDER RESTAURANT BUILDING, SOUTHERN NORWAY)

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## ABSTRACT

*The underwater building is a building that has its uniqueness where this building in terms of its location is below the surface of the water, besides that this building has its uniqueness from the shape of the building, for example in a typical study of an underwater restaurant located in Southern Norway called restaurant Under This building was chosen because it is an underwater building and has its uniqueness in the building. Research on underwater buildings is carried out to find out what applications are used and what concepts are used in underwater buildings. For the data processing method using a comparative method where this research method is an analytical variable from the results of the combination between data from the theory of architectural elements and the principles of water. And produce a variable to analyze underwater buildings such as shape, space, color, and texture or material.*

**Keywords:** shape, space, color, and texture or material

## INTRODUCTION

The restaurant is one of the businesses that can be said to have very good potential because the restaurant is a place to provide food which is one of the basic human needs. Restaurant design can be a trendsetter for the community and can affect people's lives [6]. However, in practice, restaurants are more focused on the commercial value generated. This business development has the impact of intense competition. In addition to the quality of the food that must be considered, there is also something that is no less important, namely the design of the restaurant itself [1]. In the European region in the southern part of Norway, there is a restaurant that has a quite unique location and design, where this restaurant is the work of Snohetta Architects in Norway, which is named the Under restaurant which is built below sea level. The underwater restaurant under was chosen as a case study because it has its characteristics and uniqueness, among others, this underwater restaurant displays a view of life under the sea through large enough windows that can display the beauty of the underwater world, and this underwater restaurant features an exterior design that has characteristics such as at sea level [8].

Underwater architecture or commonly called is a very interesting architecture to study, because underwater architecture not only places buildings in unusual positions, but besides that, we can also see the underwater beauty and what kind of underwater ecosystem [10]. The purpose of this research is to: (1) how to understand underwater architecture and what concepts are used in underwater architecture

## METHOD

The research method used uses a quantitative approach with the comparative method [9], the comparative method used as a material to combine the theories concerned aims to produce new theories and is used to analyze underwater buildings. The stages in the research begin with formulating problems, finding theories, finding theoretical answers, collecting data, managing data, and drawing conclusions . This research was conducted at the Under restaurant building in Southern Norway [8].

The data collection used in this research is the documentation method [2]. The documentation method is "looking for data about things or variables in the form of notes, transcripts, books,

newspapers, magazines, inscriptions, minutes, meetings, agendas, and so on [4].

In this study, the data will be analyzed by combining the two theories between the theory of architectural elements[7] and the principles of water[3][5], where these two theories are used as new theories to analyze what is meant by sub-architecture. water and the result of combining the two This theory creates applications for analyzing underwater structures. The explanation of the two theories is as follows:

The theory of architectural elements [7]:

- Point

The point is the start and end of a line, which shows the position in space and is the center of attention in the room. A point has no length, breadth, and area.

- Lines

The line is an extended point. A line only has length but no width and height.

- Field

A plane is a line that continues in a different direction from the original line. A field is long and wide but has no height.

- Room

Space is a collection of the arrangement of several fields.

- Form

The shape is the main identifying characteristic of volume. The shape is also the main feature that shows a volume, this is determined by the volume, shape, and the relationship between the fields that describe the boundaries, [7].

- Texture

The texture is a description of the surface of an object that can give rise to certain impressions such as shiny, blurry, smooth, slippery, and rough, [7].

- Color

Color is the intensity and value of a shaped surface, quoted from the book [7].

Principle theory affecting water [3][5] :

- Form

Water will always follow a container or place, where if we put water in a container then the water will form and follow the container. The shape of water always follows the container or place, where if we

- Sound or Sound,

Where when listening to the fountain, you can hear the sound of gurgling water, the gurgling water gives an atmosphere that feels at one with nature.

- Move

Where water will always fall from the highest place to the lowest place.

- Transplant

When we put water in a transparent glass container, and we put a spoon in it, then the water will show the shape of the spoon in a transparent glass cup, this shows that water has transparent properties.

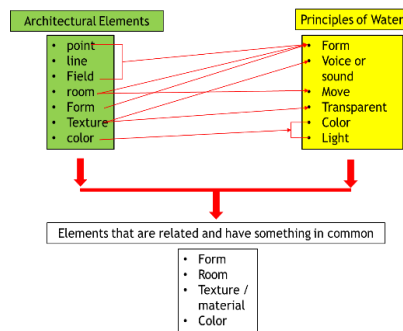
- Color

Water will be colored when placed on a motivated or colored floor or bottom. The depth of the water can also be determined by color. By looking at the color of the water, we can determine the depth and depth of the water.

- Lighting

Water will reflect all objects around it, so that water can emit light effects, water will follow the color of the light.

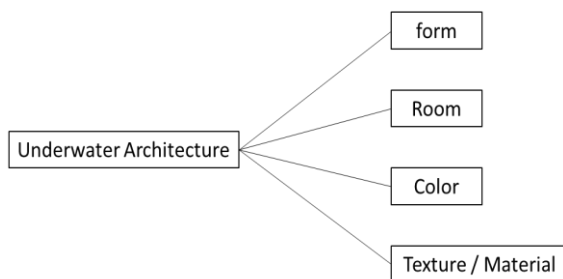
The theory of architectural elements and the theory of the principle of water will be linked into a variable, which will be made a theoretical framework that will then be used for the analysis of underwater buildings. **Diagram 1** lists the resulting relationships between architectural elements [7] and water principles [3][5]. It is concluded that related and similar elements will be used as analysis material, for example, there are several elements related to shape, room, texture, and color.



**Diagram 1.** the relationship between the two elements as a variable for analysis.

(Source: Personal data, 2020)

The results of combining the theory between architectural elements [7] and the principle of water [3][5] are listed in **diagram 2**, the discussion that will be carried out on underwater buildings includes form, space, color, and texture.



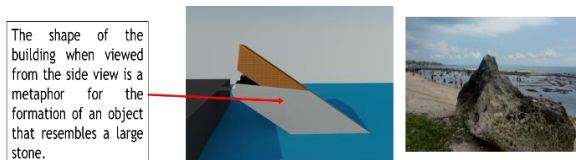
**Diagram 2.** Data analysis diagram

Source: Personal data, 2020

## RESULTS AND DISCUSSION

### Shape Analysis

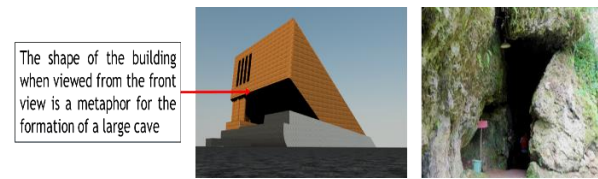
In the second case study, the Under buildings, when viewed from the side view, have a slightly tilted box shape, the shape of this building has a metaphor like a large rock on the coast. The side view of the building under is shown below:



**Figure 1.** Building form Under  
Source: Personal data (2020)

The Under building when viewed from the front view, this building is likened to a large cave because the building looks like there is no ornament whatsoever, it is only a dark and very

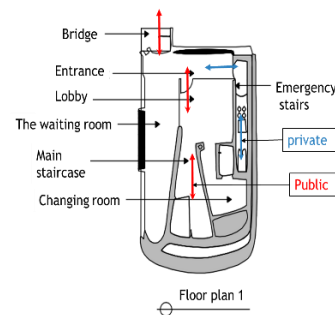
large entrance. The front view of the Under the building is shown below.



**Figure 2.** Building form Under  
Source: Personal data (2020)

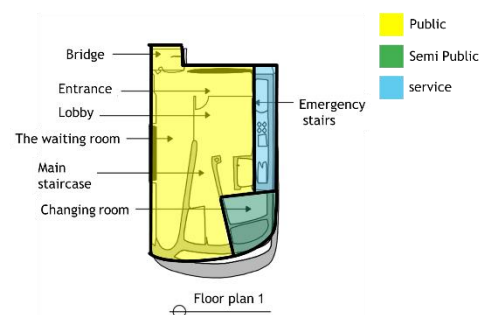
### Space Analysis

On the first floor plan, there are several rooms including the lobby, waiting room, and changing rooms for restaurant staff. The building Under has several vertical circulation paths, the first in the form of an elevator that penetrates from the first floor to the 3rd floor, there are two stairs, the first is the main staircase which is intended for the public, and the stairs are colored green and there is a blue color which is a private staircase circulation path.



**Figure 3.** Building circulation plan Under

Source: Personal data (2020)

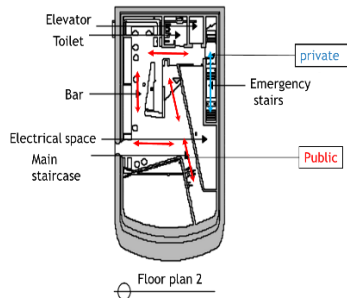


**Figure 4.** Building zone plan Under

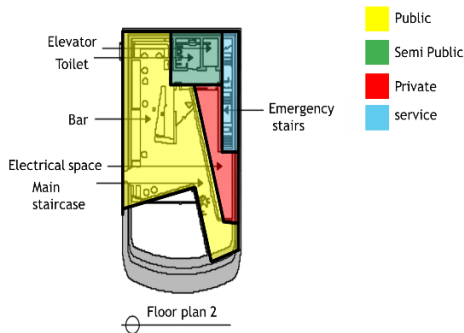
Source: Personal data (2020)

On the second floor plan, there are several rooms including a restaurant, bar, toilet, and a mechanical room. For the circular path, the second-floor plan has a slightly rotating pattern, the second-floor plan is almost the same as the

first-floor plan, which has several of the same circulation paths, there are stairs for the public or the main stairs, there are private stairs intended for restaurant employees and there is an elevator. The zoning pattern on the second floor is divided into three zones, including the public zone, which is a restaurant and bar, this zone is colored yellow. The semi-public zone, which is a toilet, is colored green in this zone and the private zone, which is a mechanical space, is colored red, and there is a blue color on the floor plan which is the private stairway circulation route.



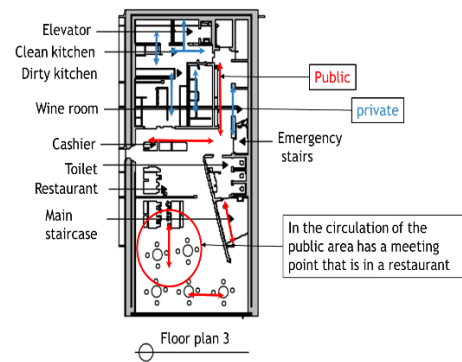
**Figure 5.** Plan of circulation of the building Under  
Source: Personal data (2020)



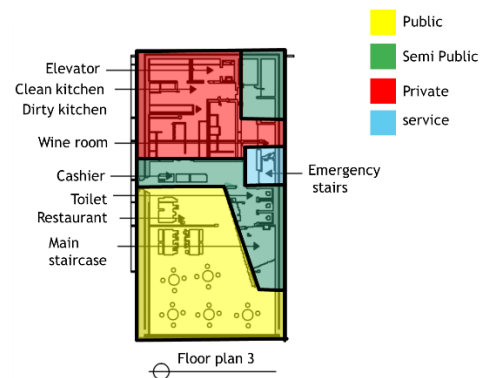
**Figure 6.** Building zone plan Under  
Source: Personal data (2020)

On the third floor plan, there are several rooms including a large kitchen, a small kitchen, a wine storage room, a serving counter, a restaurant, a toilet. The circulation path pattern on the 3rd floor has a rotating pattern, on the third floor it has several circulation path accesses including the main staircase devoted to hotel visitors, a private staircase devoted to hotel employees, and the last vertical circulation path is an elevator. The zoning pattern on this floor is divided into three zones, the public zone is colored yellow, the semi-public zone is colored green, and the private zone is colored red and there is a blue color on the plan which is the private stairway circulation path. In the public zone, there is a restaurant, in the semi-

public zone, there is a toilet, in the private zone there is a kitchen and a wine storage room.



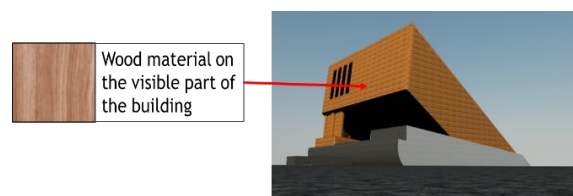
**Figure 7.** Building circulation plan Under  
Source: Personal data (2020)



**Figure 8.** Building zone plan Under  
Source: Personal data (2020)

## Texture / Material Analysis

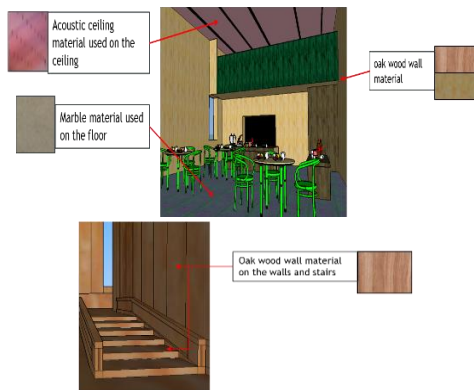
The front view of the building uses material oak wood with a fibrous texture, on the side view of the building uses concrete material in the submerged part.



**Figure 9.** Textures and materials on the front view of the building Under (Source: Personal data, 2020)

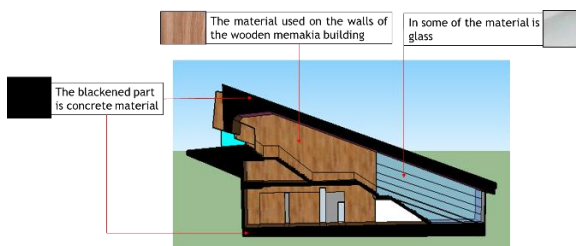
In building materials for indoor space, almost all materials are dominated by wood material in the dining room, wall material uses wood material, floors using marble material, and for ceiling using acoustic material. On the main staircase,

the wood material is more dominant than the walls and the stairs use oak, a combination of these materials was chosen because besides being environmentally friendly it also creates an impression like being in the sea.



**Figure 10.** Building interiors Under  
Source: Personal data (2020)

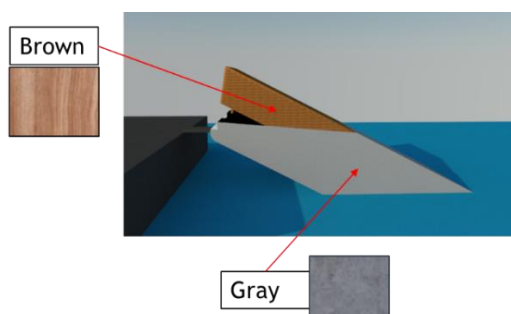
In the cut part of the material used, including the black part, is a concrete material as well as a structure, half of the wall is dominated by wood material, and the half uses glass material.



**Figure 11.** The building piece Under  
Source: Personal data (2020)

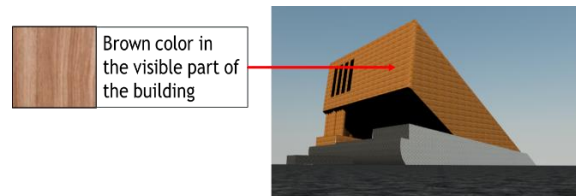
### Color Analysis

On the side of the building site, the color used is shown using gray. This color is taken from the color of a stone and combined with brown which is the color of the wood.



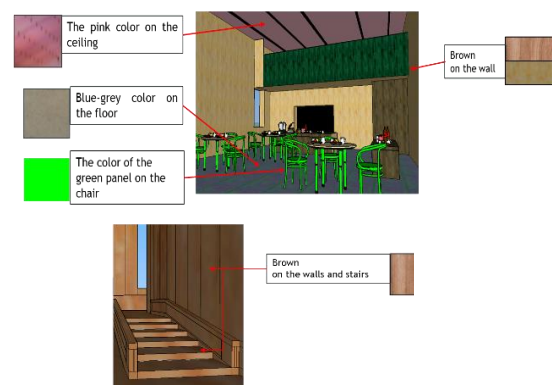
**Figure 12.** Building Colors Under  
Source: Personal data (2020)

In the visible part of the building, the front part of the color displayed is brown, almost all colors use cola color.



**Figure 13.** Building Colors Under  
Source: Personal data (2020)

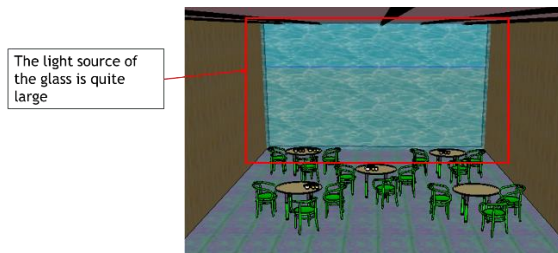
In the interior, the color use in the building is quite diverse, in the Under restaurant the floor color is dominated by gray, and green panel chairs are inspired by the seabed. While the champagne bar at the top uses a pink color inspired by the color of the coral reefs on the seafloor, the combination of dark blue, green, and pink panels gives a colorful effect that creates a warm nuance to the lighting.



**Figure 14.** Building interior colors Under  
Source: Personal data (2020)

At the front of the restaurant, under the lighting, sunlight passes through the glass that penetrates the building. The lighting effect is generated from the sun during the day for this room, in this front building the color produced is the color of seawater, aiming to create the impression like you are really inside sea level.





**Figure 15.** Building interior lighting Under  
Source: Personal data (2020)

## CONCLUSION

The Under the building is the first underwater restaurant in Europe. In the Underbuilding, an analysis has been carried out on how the application and concept of the underwater building used in the Ander building look like through an analysis of the analysis variables between the theory of architectural elements, and the theory of water principles, from the shape of the building. under uses a formation or concept that characterizes nature, because the Under-building has a shape like a cave from the front and from the side it looks like a big rock. The spaces in the under building have circular circulation patterns for the zoning pattern of the under building having 4 zonings. The colors in the Under building use colors that characterize as if they are under the surface of the water. It can be concluded that underwater buildings always take or use concepts that are close to the natural surroundings, both from the interior and exterior.

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