1. Texture in Architecture
   a. Types of texture

Another device that adds variety to architecture is texture. Texture has various meanings:

   a. The **optical texture** of the building refers to its visual *pattern* at the large scale, whereas,
   b. Its **tactile texture** refers to what can be physically felt with the human hand.

Optical texture could be given by the organization of architectural elements, such as windows, doors, solids or voids. The repetition of elements creates a *pattern* that is observed as an optical texture. Tactile texture on the other hand could be given by building materials, such as concrete, brick, stone, glass, steel etc. Smooth materials, such as glass, create a smooth and soft texture, whereas rough materials such as stone, brick or concrete, create a rough and hard texture.

Secretariat Building, Chandigarh by Le Corbusier, shows us an example of optical texture in architecture by way of variation between the uniform, small office cells and the more irregular texture of the large meeting rooms.

In Unite d’Habitation by Le Corbusier, we again see a bold optical texture, but we also observe a tactile texture, because of the use of materials. Here, Corbusier has emphasized texture by the roughness of the concrete surfaces of the building. He has used rough timber molding form (béton kalibi) for concrete to be poured in and when the molding form was removed the bold pattern of the timber was left on the concrete.
In Baker House, in addition to a visual rhythm, Alvar Alto has used rough clinker brick to be able to give the building a tactile texture. Moreover, he had the bricks laid in a random pattern to add visual texture.
Concrete has very much potential to create a tactile and optical texture, because it takes shape of the molding form to which it was poured into and it also takes the texture of the material of that molding form. In addition to that, between the successive pours of concrete, there appears joints that mark different pours of concrete. Architects can give special attention to those joints and use them to create a texture. In Salk Institute (at La Jolla) by Louis Kahn for example, the joints of concrete are used to create texture.

Salk Institute (at La Jolla) by Louis Kahn: The joints of concrete are used to create texture

Salk Institute by Louis Kahn

Another attempt of creating texture by the joints of concrete led to an even rougher texture than planned. In Art and Architecture Building at Yale University, the architect Paul Rudolph tried to give texture to concrete by making a special molding form. However the molding form was stuck to the concrete when it was dry and the architect had to order the workers to hammer of the small concrete juts that were stuck to the timber molding form. The end result occurred as a very rough, abrasive yet impressive surface.
Art and Architecture Building at Yale University, by Paul Rudolph

Architects might also make strong contrasts between very different textures. In Palazzo Medici in Florence, the architect has used three different materials with three different textures in the façade that goes from the roughest to the smoothest. By using these texture differences he has created a visual variation in the façade.

Palazzo Medici in Florence

Another example of the use of different textured materials to create contrast is Frank Lloyd Wright’s Falling Water House. Wright has used here two very contrasting materials, which are the rough stones of the vertical masonry piers and the smooth concrete of the floor slabs. The stone of the vertical masonry piers was attained from the site of the house and was laid in a very rough and random fashion, but the concrete of the cantilevering balconies and floors
were made especially smooth to create that contrast. There appeared a contrast between the
dark and rough vertical piers and light and smooth horizontal floors.

Frank Lloyd Wright’s Falling Water House

Perhaps the most sensitive interplay of textures is to be found in the traditional Japanese house and in its surrounding garden. In these houses, the natural landscape and the buildings themselves are fused to each other. There is a play of different textures from rough to smooth, created by the careful use of plants, rocks, gravel, water and wood.

Ryoanji Temple, rock garden, Kyoto
Kyoto Palace demonstrates the best example of this use of texture. In it, we observe a careful play of textures, created by the pebble walkway, fieldstone threshold, bamboo timber gate, smooth plaster surfaces and dark wood members. The garden is especially important in this sense. Every part of the garden is a study of the interplay of plants, rock and water.

One of the entrance gates to Kyōto-palace

b. Materials and texture:

Therefore there are three tendencies in architecture in terms of the use of tactile texture: the use of rough textures, the use of smooth textures and the use of both of these textures to create contrast. In all of them however, the texture appears as the outcome of different materials.

It must be noted that every material should be used in accordance with its character. You cannot use steel as brick or stone as steel. You should produce the form that the material is naturally fit to. Steel and glass have sharp and smooth surfaces for example and architects have emphasized this character by using them. Mies van der Rohe’s S.R. Crown Hall is an example to it. Brick naturally has modular texture when laid, therefore and architects have made use of this character by using brick. A good example to it is Alvar Aalto’s Saynatsalo Town Hall. He has used brick as it is and exposed it in the facade honestly. Covering up materials to make them look like something else or using the materials against their own character is not an honest thing to do and such a behavior is rejected by good architects.

Steel and glass: Mies van der Rohe’s S.R. Crown Hall
Steel and glass: Mies van der Rohe’s S.R. Crown Hall

Brick: Alvar Aalto, Saynatsalo Town Hall, Finland

Concrete: Salk Institute by Louis Kahn
2. Light in Architecture

The most powerful element in our perception of architecture is light. We perceive architectural spaces by way of light, we perceive textures by way of light and we are psychologically effected by the use of light in spaces. Therefore light is of decisive importance in experiencing architecture. The same spaces can be made to give very different spatial impressions just by the change of the size and location of its openings. Moving a window from the middle of a wall to a corner would totally transform the character of the room.

We can exemplify three main methods of using day light in architectural spaces to explain the effect of light: the bright open hall, the room with a skylight and the room with light entering from the side.

a. Open hall:

The open hall consists of just a roof supported on columns. The light comes in to the hall from all sides. But nevertheless, the light inside the hall is very different from that of the outdoors. In cloudy days, the hall is much brighter than most enclosed rooms.
At various times, architects have tried to achieve the same lighting idea in enclosed rooms:

One example where the similar light conditions were achieved is the house of the architect Philip Johnson, in Connecticut. Johnson house is a fully transparent rectangular prism, with a closed circular cell inside that contains the bathroom and the toilet. Although it is hard to imagine that an indoor feeling can be created in such a glass box, the house still has an indoor feeling because of the ceiling and ground planes that reflect the light as in an interior space.
b. Skylight:

The exact opposite of such a space (which is open on all sides and closed at the top), is the space that is closed on all sides and open at the top. The former offers a variety of lighting effects in different parts of the room while the latter can be planned so that the light is equally good in all parts of the room. But if the entire ceiling is made as a skylight the free influx of daylight creates a shadowless interior, in which the textural effects are poor.
One of the most famous and dramatic uses of skylight in architecture is the famous Pantheon in Rome. Originally made as a pagan temple (which is dedicated to all the gods of Ancient Rome, in 126 AD), Pantheon uses the dramatic effect of light that comes inside from the oculus above. The ray of light that comes from the ceiling moves over the dome and the rotunda (the space under the dome) along with the movement of the sun throughout the day. If the sky is cloudy or overcast and the sun light is diffuse at the outside, the light inside looks also diffused.
Another example to the use of skylight for symbolic purposes is seen in Santa Maria della Vittoria Church in Rome. Here a hidden skylight was used to fell light on the sculptures and the light was also enhanced by the golden colored elements that represent the rays of sunlight.

Santa Maria della Vittoria Church in Rome, the chapel of Cardinal Federico Cornaro

Here are some other examples to the use of skylight in architecture:

Alvar Aalto, Central City Alvar Aalto Library, Vyborg, Russia

Alvar Aalto, Central City Alvar Aalto Library, Vyborg, Russia
Alvar Aalto, Riola Parrish Church

Louis Kahn, Yale Center for British Art (left), Louis Kahn, Exeter Library (right; Reflective light on fixtures within the ceiling can cast shadows that will embrace the room.)

Louis Kahn, Exeter Library (left); Louis Kahn (right; An opening in the roof can ignite the ceiling)

Louis Kahn, The auditorium of the First Unitarian Church and School, Rochester (New York and Salk Institute for Biological Studies La Jolla (California) 1959-1965)
c. Side lighting:
The most common way of getting light inside is from the sides. Probably the most important examples of this kind of lighting are found in Dutch houses. Since land was very precious and limited in Holland, the houses had to be made narrow, high rise and adjacent to each other. For this reason, the only way of getting light for these houses was from their front and back sides. To get enough light to all the interior spaces on the back, the houses were made high ceilinged with large, tall window openings. To regulate the light that comes from these windows, shutters were used on these windows. Therefore light amount and the quality of light was very important for Dutch people, and this also shows itself in the paintings of Dutch artists such as Rembrandt or Vermeer.
A very important example to the use of side light was given by Le Corbusier at Ronchamp Chapel. Corbusier took light in the chapel by way of randomly placed slanted windows and by light towers that fell off light over the altars. This is a great example to the use of light for spiritual reasons.
Ronchamp Chapel by Le Corbusier
Here are some other examples to the use of sidelight in architecture:

Louis Kahn, Capital Building, Bangladesh, Light beaming through the room can emphasize the ambiance of the room.

L'Institut du Monde Arabe - Jean Nouvel
Louis Kahn, The power an opening has on a pitch black wall (left)

Tadao Ando, Church of Light