Montana State College

Architectural Thesis

"Water and Architecture"

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INTRODUCTION

We seem to have lost, in our preoccupation with technology, the visual, sensual delights that water has historically added to architecture. Lying in a still pool, coursing rapidly in a stream, cascading in a fall or bursting skyward in a jet, water is part of the environment of building. Whether it is the art we have lost or the notion, today when water is used as an architectural element it is usually done tentatively, even apologetically. But architecture seems trending toward more interest in site development. Perhaps with some encouragement, such as written work of this type, water may again add pleasure to our contemporary architecture.
There is no known date or actual beginning of the use of water as an architectural element. The Egyptians employed water in pools, used for bathing, as far back in history as 2321 B.C.¹ From one period to another, these pools evolved into beautiful architectural masterpieces. As the different styles tried to adopt the pool to their buildings it came closer to their architecture. Water was also found in outdoor areas around dwellings in the form of water wells, irrigation ditches and basins or pools. People came to rely on their architecture to make the water more available to their buildings. The architectural contrivances that the people designed to take water from its natural source were much the same as our present plumbing facilities but in more of an architectural representation. Slowly water became a part of architecture but it was still in a utilitarian form performing some service to the people and not to their architecture. In fact it was quite on the contrary, architecture was affording water a service and it continued to do so for many years until the people became concerned about the beauty and form of these gaudy inventions.

Sculptured forms became a method of making the water more enhancing. The Ancient Greeks with their lion-head roof spouts gave birth to the idea of water spewing from human or animal form. It then became the norm to adorn architecture with a sculptural treatment to handle the water. Slowly the emphasis was turning upon the water instead of the architecture and each designer of his period tried to conceive new forms, new sculptural representations for water flowing downward, spewing outward or shooting upward to pierce the sky. Water became the dynamic force behind sculpture and its relationship to architecture as well as nature. The inhabitants of this architecture were influenced by the psychological properties of water. The sounds offered comfort, relaxation and people wanted more of the spectacle of water under pressure being thrown at the world.

In Europe it was the Italians who were first and last masters of the art of fountain, particularly in the seventeenth century, when Baroque architects met the challenge with characteristic vigor. Water was a sympathetic medium for the Baroque spirit, the natural embodiment of effects which they sought in painting and sculpture and architecture: dynamic movement, subtle shifting response to light, indefinable dimensions. So they married their sculpture to the water. The Moslems let the water pursue the natural law of gravity to add sound and movement to the three conventional dimensions of architecture.

3Ibid., p. 150.
They believed that it was surely the living water, the water of life, ancient symbol of divine knowledge and immortality. Not all was left to the medieval period for the Renaissance, Post-Renaissance and Neo-Renaissance had their spewing dogs, gargling dolphins, nursing mermothers and piddling putti to adorn their architecture. Most all of the historic periods have received benefit of the influence of water upon their architecture but not all periods have creditably contributed anything to the practice. Because of this one factor the use of water as a design element has been deemed a lost art. Many reproductions of early uses of water have reappeared in world fairs and expositions but they are tentative situations with no lasting affects to speak of.

4 Ibid., p. 152
III
TRANSITION PERIOD

Water and sculpture had reached its majestic peak in the eighteenth century and the designers were becoming more concerned with the architecture and its related functions. The sculpture subsided and finally disappeared and with it the water that had been so important to architecture. This is not to say that it is altogether a thing of the past. Many architects still use water and sculpture as a design element but the end product is not always a successful one.

With the changing of historical periods came the advancement of new architectural products, new concepts in design, a push toward simplicity and a concern for function within the architecture. Because of the ornate characteristic of the Renaissance and other older styles of sculpture, the new design era had little to do with water as it had been used earlier. Some of the more bold designers of the nineteenth and twentieth centuries have continued with the use of water but, for the most part, they have realized the change and have, in some instances, successfully compensated for it. Some architects use sheets of water in the same manner that they use sheets of glass in their design.

The Orientals have maintained the use of water in their design through the transition period because water plays an important role in their lives. The water is evident everywhere and not just in their architecture. There is evidence that the Japanese attempt to capture the very essence of nature; also an ordering, but antithetical to the geometric approach.² The Europeans developed their own way with water; the frankly artificial, multi-level cascade either adjacent to architecture or human traffic courses.

The American architects have, for the most part, eliminated water in their design either because the climate does not warrant its use or because of an economic problem. Most architectural commissions are set up on a strict budget and due to the arising problems of successfully handling water it has been purposely omitted. Climate also hampers the use of water as a design element in most regions in North America.

Through the years these factors have taken their toll of the use of water in our design of buildings. However, let us not cross it from our repertoire of design elements, for water remains the same through all of the changing styles of life and architecture. The affects of water on the human being and his architecture are still the same as they were centuries ago. Only the application must fluctuate to conform with the present period of design. There are many successful ways to handle this treatment of water in our progressive architecture of today.

²Kassler, op. cit., p. 141
DESIGN PROPERTIES

The character of water is determined by its container and by the rate and direction of its movement. It always seeks a level, plane surface. It expresses in its motion the force of gravity and when the water is at rest it is the scene of perfectly balanced stability. The color of water is achieved by its reflection of surroundings or of the matter contained within the water itself. To humanly obtain what nature has endowed to us is not an impossibility but it is certainly a measurable task.

Of the most important attributes, water's influence of the human mind is outstanding. The people who picnic every year seek the peace of nature with the restful benefit of water. There are many reasons why this is so. Water emits peaceful sounds to relax the mind and if the water is not moving it has a freshness about it that draws the human being to its side. Water, at any depth, has an air of mystery about it that acts as a magnet to the mind. Moving water, whether fast or slow, is an excitement provoking site; one which has compelled humans to follow its course only to see where it leads. All of this is true in nature and can be realized in our architecture if handled properly. People like to linger by water even if their business is elsewhere.
By this same token, the architects should bring the water to the people so that all may enjoy the relaxation and comfort that is essential to a well-rounded life.

Water can affect the climate to such a degree that in some areas it is essential to the design. It adds sparkle and movement to surroundings, sound to enchant the ear and lends refreshment to the air. Water is of no apparent use if it cannot be seen or heard. If a pool is an amulet against weariness of the mind, then we should locate seats near it as an invitation to rest near architecture as well as water. These are some of the human factors that have been forgotten of late. If we are to design for the people then we should include the feelings and reactions of those who will be near our architecture. Water is a part of nature and nature would not be complete without it. Since we are always striving to bring architecture closer to nature then water should be of prime interest to our designers.

There are many methods of achieving the ultimate in design using water with the human influence factor in mind. All of the methods can be placed in four categories each depicting a different use of water. The categories are still water, stream, falling water and the water jet.¹

Still water, whether inside or outside of a building, can multiply simple facades into dizziness and prove far less peaceful in practice if it is not treated correctly.²

¹Kassler, op. cit., p. 138-152.
²Ibid., p. 139.
A well designed pool adds the natural note to our architecture. The lucid surface of a still pool is a pleasing contrast to the building texture of structural material. If the architecture can describe the boundaries of the water then a certain degree of design simplicity has been achieved. If one were to view Frank Lloyd Wright's College of Southern Florida he would see the perfect reflections. Mr. Wright has planted his buildings in the water, letting the water do what the turf and pavement cannot do. It reflects the sky and gives added depth to his structure. Because still water has neither a beginning nor an end, but precisely stated boundaries which make it finite, it is then the boundaries which the designers must be concerned with. In order to achieve an infinite boundary some designers have cantilevered their architecture over the water's edge, letting the water seemingly carry through or under the structure. Mirror pools are best when filled to overflowing. In this manner there can be no abrupt, small transition from one material to another. The primary function of still water is to reflect. Whether the reflection be of light and dark surfaces, structure, colors or nature the pool is as important in its setting as an interior polished marble slab.

A stream or falling water has many of the dominant traits that are found in still pools. However, moving water creates excitement and is a pleasant contrast to a smooth texture of the

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3 Ibid., p. 139.

of the surrounding architecture. Moving water should be designed to create an effect on the passerby. The Japanese are noted for their concepts of moving water. They have established moving water in three categories which best exemplify its characteristics. First is 'nuno-ochi', which is water that, as it falls or flows, it creates an impression of a continuous white sheet. Next is 'ito-ochi', the moving water that resembles a screen of white threads. Last is 'sayu-ochi', which is a playful treatment of water that falls first to the right and then to the left, but always changing the direction of its course. The effect that these types of moving water have on the passing viewer can be readily understood. It tends to create in the mind a strange personal experience which is exactly what the designers are striving for in their architectural design. Aside from the dramatic visual effect, moving water is also an air conditioner in its own right. In hot arid or humid climates coursing water causes the air to change and shift, continually moving and cooling as it moves. Moving water picks up the sun's rays and reflects them in many directions creating bold excitement against the simplicity of our architectural design.

The size of stream or falling water should be comparatively smaller than the size of a pool for the same situation. In this manner the movement compensates for the size of stillness. Moving water also creates age in the bounding materials at a faster rate than still water. This is best exemplified by viewing the reaction

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5 Kassler, op. cit., p. 142.
6 Eckbo, op. cit., p. 92.
created in wood that has been in a river. The wood deteriorates and decomposes to such an extent that it should never purposely be designed in conjunction with moving water and certainly never as a structural element. Another trait of moving water is the pleasant sounds that are produced. These sounds tell of water even in the darkness when the human mind does its greatest share of relaxing. To use this coursing water with architecture is creating another comfort and actually a luxury for the inhabitants.

The water jet is the least used treatment of water today. It has only two of the attributes that the other forms of water have. The jet is defiant of gravity, lancing the sky to merge with light until it falls back to the earth exhausted. The jet is a play on light and space. It is a pleasant contrast to architecture, sky and nature. The jet or spray is used more in residential situations or where a great number of people are to collect such as the world's fair in Brussels. Water jets are inconvenient to handle because they cannot be walked near if they are of any size. If they cannot be included in our architecture then the designer should be more concerned about handling them. However, since the jet is to be viewed and not touched then this is the prime consideration in planning for its use. The size of the jet is very important. As it has been pointed out that still water can be larger than moving water, so moving water should

be comparatively larger than the jet.

The uses of water today, in whatever form the designer selects, should be kept in correct scale with the architecture. The designer would not think of putting a small house in the middle of a large body of water for design purposes, nor would he plan for a tree that would engulf the building and tower over it. In this same manner water should be handled with the scale comparison foremost in mind.
CONCLUSION

We seem to have lost some of the art and delights of water in our present architectural design. Because our architecture today basically stresses simplicity we should not flaunt our use of water or make a gaudy presentation of it. Architecturally speaking, water should be incorporated with the human being and his reactions in all ways possible. Water offers a fine natural opportunity to bring the building and the site closer together as a part of a single organism. Water is also an essential element in landscape design, basic to the different classifications of climates. Since we cannot survive without water we should incorporate it boldly and unashamedly in our architecture of today. There is no reason why it cannot be a pleasing element in our balanced design which in turn will achieve both dignity and serenity through a harmony of the elements. Someday the flatness of still water will be its dominant trait, and its flat plane will join on equal footing with other planes of masonry or glass to become the basic formal element of our architectural composition.
VI

ILLUSTRATIVE EXAMPLES

The following are a pictorial collection of illustrative examples that are related to the reading matter in content. They are arranged in no special sequence. They were chosen to best depict the four basic design forms of water: still water, stream, falling water and the water jet.
This hotel addition has balconies that cantilever over the water giving the pool no finite boundaries.
The Seagram Building
The psychological effect of falling water...
F. L. Wright's falling water house at Bear Run, Wisconsin...
Interior atmosphere created by water reflection in a Brazilian shopping center
Still water creates peace with reflection of artificial light.
A restaurant reflection by Felix Candella, Mexico...
An Italian designer plays with free form, still water, falling water and the water jet...
Repetition of the waves in the exterior treatment of this house.

Continuous moving water deteriorates and decomposes the building material.
At first glance this picture would appear to be right side up...

U. S. Pavilion, 1959 worlds fair, Brussels

A chapel at a Lutheran college
The spray seems to cool the air even in this picture.

The architect has taken advantage of nature's contribution...
CITED REFERENCES

Clarke, Lewis, "Gardens for the East," Progressive Architecture, (October, 1957), 106-120


Goldsmith, Margaret, Designs for Outdoor Living, New York: George Stewart, publisher, 1941.


OTHER REFERENCES


