Japanese cultural center

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Japanese Cultural Center

by

Pritesh Navin Jasapara

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF ARCHITECTURE

Major: Architecture

Program of Study Committee:
Paul Shao, Major Professor
Calvin Lewis
Joern Langhorst

Iowa State University
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Graduate College
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This is to certify that the master's thesis of

Pritesh Navin Jasapara

has met the thesis requirements of Iowa State University

Signatures have been redacted for privacy
# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgements</td>
<td>iv</td>
</tr>
<tr>
<td>Chapter 1: Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 2: Historical Background</td>
<td>3</td>
</tr>
<tr>
<td>Chapter 3: Design principles of Japanese architecture</td>
<td>18</td>
</tr>
<tr>
<td>Chapter 4: Japanese influence on modern architecture</td>
<td>28</td>
</tr>
<tr>
<td>Chapter 5: Design proposal</td>
<td>34</td>
</tr>
<tr>
<td>Chapter 6: Design interpretation</td>
<td>42</td>
</tr>
<tr>
<td>Chapter 7: Conclusion</td>
<td>59</td>
</tr>
<tr>
<td>References</td>
<td>61</td>
</tr>
</tbody>
</table>
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Thanks also to all my friends in the department and studio particularly for their encouragement and help.
When observed calmly, all things have their fulfillment.

-- Basho

Chapter 1

Introduction

The objective of this research is to study the principles and elements of traditional Japanese architecture and landscape design and to propose a cultural center, which incorporates these basic principles.

Mies van der Rohe rightly said, “Architecture is the will of an era transformed into form.” But the transformation of this will into form requires certain principles, which will be the basis of design. Principles which will act as tools in the hands of a designer and allow him to express his architectural vocabulary more succinctly and clearly. As architects we are constantly in search of such principles.

The quest for these principles bought me closer to traditional Japanese architecture. Looking at the architecture prevailing in Japan, one finds that the Japanese had very finely developed sense of aesthetics and form. They developed gardens and shrines which are the epitome of beauty.

This thesis focuses on the principles the Japanese designers used to create masterpieces like the Imperial palace (Katsura villa) and the gardens at Ryoanji. The purpose is the application of these principles in a modern context.

To give an overview, the thesis is divided into seven chapters. The first chapter is introduces the research topic and the second chapter gives a brief historical background of Japanese culture, religion and traditional architecture. It covers chronologically the development of architecture in Japan; right from the Shinto shrines, which were developed in Japan before the
The reason why the river and the sea are able to be king of the hundred valleys is that they excel in taking the lower position. — Lao-tzu

The advent of Buddhism to the Katsura palace, which is a culmination of the Sukiya style of architecture. The third chapter analyzes the principles underlying traditional Japanese architecture. It talks about the way Japanese perceive space and basic principles adopted in the design of gardens and shrines. Case studies of contemporary architects who have used these principles in their design are included in the fourth chapter. Examples of works done by Frank Lloyd Wright and Tadao Ando are analyzed to understand the way they express principles of traditional Japanese architecture in their design. Having done the literature review, the fifth chapter gives information about the author's own proposal for a Japanese cultural center in Virginia. The sixth chapter is about design interpretation and discusses the way the principles of traditional Japanese architecture have been incorporated in the design of the cultural center.

The final chapter summarizes, explains and concludes all the chapters in this research with some ideas for future study.
Chapter 2
Historical Background

Japan

Japan or Nippon (as referred to by the local Japanese which means “Land of the rising sun”) has a rich and diverse culture; a culture, which is rooted deep into tradition stretching back more than two millenniums. The Japanese mainland opened its doors to the western world just recently a century back. And all this time it was isolated and growing within itself.

Japanese history and culture has been profoundly influenced by its geography, topography, location and climate. Japan is a long thin island, slightly smaller than the state of California, in the Pacific Ocean. Nature has been extremely bountiful in providing Japan with rich natural resources.

Figure 1.1: Map of Japan
The landscape of Japan harbors a rich concentration of steep mountain islands, steaming volcanic slopes, torrential streams and waterfalls and wild rock formations along slopes. In spite of the high risk of continual volcanic eruptions and typhoons, the Japanese people have adjusted themselves to these geological faults - around the mountains and along the streams - considering themselves an intrinsic part of the total environment. An air of mystery surrounds the inaccessible mountains, which is similar to the old sansui ink and pen paintings from China, and this has led to... *a meditative approach that contrasts with the more practical Western approach to the more accessible, rolling and usable hills of Europe and much of America.* (Davidson, A. K. The Art of Zen Gardens, P-13)

**Japan: Its culture and religion**

Successive waves of culture that have washed across Japan from the mainland of Asia have strongly influenced but never significantly changed the basic Japanese racial character which seems to have crystallized some three thousand years ago. Shintoism, a nature worshipping religious faith, which was prevalent in Japan before the advent of Buddhism in the 6th century, molded the character of Japanese culture. Shintoism assigned spirits (called as kami) to all natural phenomenons and claimed that everything in the universe (including man) was related and hence was equally divine. The intense love and reverence, which the Japanese show towards nature, is a rich legacy of Shintoism.

Buddhism, which was imported into Japan in the sixth century, maintained that the deepest truths of life were not susceptible to logic. These teachings were quite consonant to the teachings of Shintoism and hence were readily accepted by the people. Buddhism bought its own influence on Japanese art and culture, primarily through its daughter faith ‘Zen’
Zen Buddhism

Any research on Japanese art form and culture is not complete without understanding basics of Zen. The origin of Zen can be traced back to India. Some of the followers of Buddha maintained that the key to realization of truth was Dhyana (meditation). This dhyana school grew in India and was eventually brought to China by the monk Bodhidharma during the sixth century A.D, where it became known as the Ch'an sect.

After getting totally assimilated within the Chinese culture and concepts of philosophical thought, Chan (pronounced as Zen in Japanese) spread first to Korea and then, during the twelfth century to Japan. The meditative approach, which Zen advocated, had an immediate and profound effect on the life and culture of Japan.

Figure 1.2: Ink painting of Bodhidharma
http://www.uwec.edu/academic/curric/greidebe/Buddha/Buddhism.Course/student.culturetexts.'01/wells.calligraphy/paintings.html
When you hear the splash of the water drops that fall into the stone bowl, you will feel that all the dust of your mind is washed away.
Rikkyu

Bodhidharma strongly believed that the way towards enlightenment was not through the study of scriptures and the Pali canon. Buddha hood was a state which was to be attained and it could be achieved only through meditation whereby a person emancipates himself of all desires and bondage's, all dualities of the mind and sees the reality of things or experiences the truth.

"... Zen can be defined as a process by which man recognizes what he actually is. Most important for us is that this idea of transmitting the truth relied not on teachings and written scriptures, but on the sudden flashes of insight that can be triggered in a state of meditation, by a single word, an action, a noise or even an arrangement of rocks. It is the job therefore, of the Zen master to provide suitable stimulation to individual students at appropriate moments during training, to help them guide toward understanding, rather than by conventional methods of teaching. Whether he does this by a word, an action or the choice of a particular place for meditation depends on the particular student." (Davidson, A. K. The Art of Zen Gardens. P.14)

But the emphasis is always on attaining to the state, which Buddha attained, the state of ultimate knowledge or consciousness, known in Zen vocabulary as 'satori'. The philosophies of Confucianism and Taoism had a large effect in molding the character of Zen. The intense practicality found within Zen was an outcome of influence of Confucianism, while conveying the ideas through the use of paradox is of Taoist origin. Zen does not support withdrawal from the world rather it preaches intense participation in it. This was one of the reasons for the far-reaching influence of Zen in Japan. The influence has been so profound that it has permeated the entire cultural fabric of Japan. Qualities like simplicity, naturalness, stillness, tranquility, asymmetry, emptiness (which are in fact the basic tenets of Zen) have been given expression for centuries in the Japanese architecture, in ways of designing interiors and gardens, as well as in writing plays, poetry, and music, serving ceremonial tea, arranging flowers, calligraphy and painting. The precise disciplines of judo, archery and ceremonial swordsmanship are also rooted in Zen principles.
The perfect man uses his mind as a mirror. It grasps nothing, it refuses nothing. It receives but does not keep.
Chuang Tzu

Japan: Its Architecture

Architectural development in Japan dates back a couple of centuries before the advent of Buddhism in 6th century A.D. The initial development, which took place in Japan, was influenced by Shintoism. Between the third and fifth century there was development of imperial tombs, coastal fishing villages, district centers and shrine complexes near unusual concentrations of nature such as water falls, caves, rock formations, mountain tops or forests etc. These places with an air of grandeur or mystery were considered to be the natural abodes of the gods. Shintoism was a pantheistic religion regarding man and all form of nature and life as direct manifestation of divinity. The Japanese penchant for use of “natural materials” in architecture and landscape design is a product of this very thought.

The shrines of Ise and Izumu are examples of the oldest prevailing religious buildings of the Shinto era.

Figure 1.3: View of Ise Shrine
http://instruct1.cit.cornell.edu/courses/arch339/images/Ancient.html
It (Zen) is a way of contemplation that can be just as well enjoyed while walking, working, and otherwise moving about in the world... It is a way of participation... Its influence can be felt to this day in the arts of gardening, flower arrangement, cooking, even wrapping a parcel and offering a present, this is Buddhism in operation. Joseph Campbell

Built nearly two thousand years ago, they are of the greatest spiritual and historical significance to the Japanese people. The shrine at Ise is built amid a dense forest of giant cypress trees next to the Isuzu River. Ise shrine is actually divided into two large shrine compounds, containing over one hundred and twenty smaller shrines in addition to the two major shrines: Naiku (Inner Shrine) and Geku (Outer Shrine). Both the shrines are made of wood and they are rebuilt every twenty years, in the same style as they were earlier. The chambers of the shrines are raised on timber piles. The roof is not supported by the walls (although the rafters do rest on purlins), but the ridge beam is carried instead by two large columns at either end, which is embedded directly into the ground without any foundation.

Figure 1.4: View of Todaiji temple
http://cobalt.ele.eng.osaka-u.ac.jp/acsin7/todaiji.jpg

Prince Shotoku Taishi (572-621) who can be considered as the founder of Buddhism in Japan developed many shrines in Japan, which were strongly influenced by Chinese
architecture. The golden age of Buddhism reached its climax with the building of Todaiji monastery in 745 A.D. It is the largest, most powerful monastery in Japan, in fact larger than anything the Chinese had built. Daibutsuden, Hall of the Great Buddha is at the center of a 2-sq.mile enclosure housing a 53'6" high statue of Buddha. The architectural style used for the construction of the shrine i.e. Tenjikoyu was based on Sung Chinese construction methods.

Right from the early Heian (794A.D-1185A.D) period to the Kamakura period (1185-1392) one sees the development of Japanese domestic and temple architecture. Most of the shrines of this period were laid on a central axis and strict symmetry. The domestic architecture shows a compact, echelon type arrangement. There was an increasing use of sliding partitions rather than physical distances to differentiate living areas. The round columns of moya (central living space) became square to accord visually with the other interior columns designed to receive sliding partitions or lighter fusuma panels. The tatamai, which covered the entire floor, was used as a unit for spacing of the columns and division of the partitions.

Figure 1.5: View of Tatami and fusuma
http://www.yayoikensetsu.co.jp/shizensozai/fusuma.jpg
With the growing dominance of military feudalism the power eventually shifted from Kyoto to Kamakura—which was considered as the base of vast feudal estates and the wealthy who could support the formidable army. The disciplined military of Kamakura found the principles of Zen Buddhism quite consonant with their own philosophies and were strongly influenced by it. Some of the formative elements of domestic architecture were a result of the direct Zen influence.

The three basic elements derived from Zen Buddhist chapel-dwellings were the tokonoma, the shoin and the tana. The tokonoma developed from the private altar in a priest's house where a low, narrow wood table with an incense burner, votive candles, and flower vessels was placed before a Buddhist scroll painting hung on the wall. Later an alcove was devoted to this arrangement. Still later it was used for the display of paintings and art objects. The shoin was a windowed desk
The reason why the River and Sea are able to be king of the hundred valleys is that they excel in taking the lower position.

Lao-Tzu

alcove for study built out onto the wood veranda of a priestly dwelling. Latter this element too found its way into the domestic architecture lending a scholarly air to what became the main guestroom. The tana originally used for sacred scrolls and other Buddhist relics became built in wall storage shelves in the case of Japanese dwellings. The combination of all these elements, the shoin, the tokonoma, and the tana in the main room of a dwelling characterizes the Shonin style of domestic architecture. Frequently the importance of this room was emphasized by raising part of its floor one step above the main floor: this platform was called jodan, the room then called odanoma.

One more important element of Japanese domestic architecture is the floor. It has the intimate qualities of warmth and texture and is as important as any other surface plane in establishing the interior space. Fusuma and Shoji (the interior and exterior sliding partitions) are proportionate to the size of the tatami. Decorative effects, placement of furniture and objects, design of gardens - all these are considered from the eye level of the person sitting on the tatami.

Katsura Palace

The shoin style architecture was further followed by the sukiya style, which is considered as the essence of the Japanese style. The Katsura Palace, which is located in Kyoto City, is a beautiful example of this style and it is known for its architecture and unique gardens. The source of its beauty lies in the perfect harmony of the simple, sophisticated appearance of the buildings and the beautiful scenery of the garden. The 70,000-square meter (17-acre) site is on the west bank of Katsura River and surrounded by thickets of bamboo and other trees. The garden in the center of the site has a pond with three isles of different sizes, and major buildings are located on the west side of the pond. A walking path goes around the pond, along which there are tea houses. The pond has rugged contours so the scenery changes from place to place. The whole garden is so
In everything, no matter what it may be, uniformity is desirable. Leaving something incomplete makes it interesting, and gives one the feeling that there is room for growth.

Kenko

exquisitely laid out that many different natural landscapes can be seen while walking through the hills and trees.

Figure 1.7A: Plan of Katsura palace
http://perso.wanadoo.fr/laurent.buchard/Japonisme/Diplo90.jpg

Figure 1.7B: Views of Katsura palace
http://www.yasuimoku.co.jp/sukijya_kentiku.html
http://arch.hannam.ac.kr/~hpw/garden/garden-j/katu3-1.jpg
The Palace built in the 1620s acquires its beauty from its elegant proportions and the way it fits into the surroundings environment. The palace was designed as a summer retreat for the emperor. The tea houses with their moon viewing gallery have been arranged so well that it gives a perfect view of the moon during the retreat hours. Paper and bamboo were used largely as the materials. The flooring was made high so as not to transmit ground heat to the interior, wide windows were provided, and the partitions between rooms were simplified to obtain maximum ventilation. In this way, the rooms were made open and measures were adopted for fully taking in the cool breeze blowing from the spacious grounds. Then again, in order to avoid the direct rays of the strong summer and to prevent ground heat from being reflected, the eaves were made long, the veranda was as wide as possible, and water surface (a pond, for example) was set up in the garden.

**Tea Ceremony:**

The tea ceremony was one more significant element, which changed or rather added flavor to Japanese architecture and life. Tea drinking, originally from China, was first practiced by the Zen monks to keep awake during meditation in their study halls. Later it became an active part of Zen rituals honoring Bodhidharma, their first patriarch. Developing from this, the tea ceremony later became a gathering of friends in an isolated atmosphere to partake of tea and discuss the artistic things like gardening, calligraphy, flower arrangement etc. Sen-no-Rikyu (1521-91) was the first Zen monk to build a separate *chashitsu* or teahouse, which was a separate physical entity instead of being a specially decorated room of the house. This Chashitsu was accessed through a small garden called roji, the first step in breaking the connection with the world. It was a small thatched roof structure with plain plaster walls and lattice worked partitions, which allowed light to diffuse into
The night is brief, 
On the river shallows remains a 
place of the moon. 
Buson

the teahouse. The small 'kneeling-in' entrance was meant to induce the idea of humility into the person's mind that entered.

In subtle affinity with a process in which the spirit alone is to prevail, the chashitsu is completely bare, materials are plain and undecorated, color and texture the natural result of materials used. Absent are balance and symmetry, with their resulting sense of completeness which, according to Chanoyu, inhibits the imagination and allows for no further growth. Suggestive presence and tacit absences are translated into an atmosphere of austere tranquility, the felicitous setting for the Zen "art of being in the world. (Alex, William Japanese architecture, P-41)

Figure 1.8: Interior of tea house
http://instruct1.cit.cornell.edu/courses/arch339/images/ceremonteashokin.jpeg

Japanese Gardens
The building and surrounding nature are inseparable elements for the Japanese people.
all who have achieved real excellence in any art possess one thing in common; that is, a mind to obey nature, to be one with nature, throughout the four seasons of the year. Basho

The environment adjoining the building or landscape design is as much a matter of aesthetic concern for the Japanese as is the design of the building. Though the design of gardens in Japan was similar to the Chinese gardens, the design was always in response to the geological conditions prevailing in Japan and there was a trace of underlying Zen philosophy.

Teeming up of social and administrative structures in the towns and cities disallowed the Japanese to create large gardens. So they started developing gardens in small areas and yards around the houses. This gardens based on the meditative approach of Zen Buddhism with "small scenes" offered the people some relief and peace of mind to counter the effects of high density living and bring into the urban surroundings something of the mountains and their spaces and serenity.

Gardens were symbolic of this outside world; people could contemplate and regain some perspective on life. They could enter a different mood for a while, depending on the kind of miniaturized scene they chose to construct. They were to be used specifically as aids to deeper understanding of Zen concepts. Gardens were not an end in themselves, but were to initiate contemplation and meditation; they were not seen as gardens as such but rather as spaces filled in a certain way.

Zen gardens basically utilized abstract compositions relying on understatement, simplicity, suggestion and implication were laid out, leaving room for imagination but providing a starting point in the appreciation of everyday things. In this there was a return to naturalness and a celebration of nature itself. They were trying to present the truths and confusions and problems and joys that man encounters. (The Art Of Zen Gardens - Davidson. P.23).

These ideas were presented not in the form of large gardens but on a small scale by reducing the size of the gardens and concentrating the ideas no small spaces and gardens around their rooms and temples. There are two principal ways in which the Japanese people attempted to do this. One-way was to present these things in abstract form. For example; the Saiho-ji gardens where rocks were presented in form of hills. The other was to present these things in a more direct way.
the Ryoan-ji garden is the product of a philosophical system— that of Zen Buddhism— as serious as that which inspired the ceiling of the Sistine chapel... The Sistine chapel is magnificent, but it asks our admiration rather than our participation. The stones of Ryoan-ji, irregular in shape and position, by allowing us to participate in the creation of the garden may move us even more.

Donald Keene

---

Figure 1.9: Dry and Wet gardens
http://academic.bowdoin.edu/zen/intro_template.shtml?ryoan

were spread over a flat area of small white stones raked out in lines. The second method was inspired by the Sansui paintings of China where they tried to present the vastness of nature and life in a limited space. They incorporated the stream falling from the high mountains and passing through narrow gorges and opening up into wider space.

In the other method the water was replaced by sand and stones, which were arranged in a fashion to convey the impression of flowing water. These were called the karesansui style gardens. (Kare-dry, Sansui-mountain and water)

The increasing significance of the tea ceremony in the Japanese life style influenced the gardens. Almost as important as the tea was the teahouse in which it was served and the garden, which surrounded the teahouse. The gardens surrounding these structures were designed in fashion so as to allow the people to shake off their daily duties and to settle their minds and prepare them before entering the house. These ideas brought in the elements of water bowls (which are
them before entering the house. These ideas bought in the elements of water bowls (which are used for washing of hands before entering the house) and lanterns (which were used to light the way in the evening), which have become an integral part of Japanese garden design. The design principles underlying the Japanese gardens were no different than the ones, which they used in architecture. Simplicity, balance, harmony, asymmetry, changing axis, hierarchy were some of the most common features, which they tried to incorporate in garden design. The paths would meander around the garden giving the person different sets of views from different angles. The whole intent was to make the garden a dynamic place with layers of spaces, time and materials.
Chapter 3
Principles of Design

Introduction

This chapter focuses on understanding the fine principles underlying traditional Japanese architecture and landscape design. As already discussed in the previous chapter, religion has played a very significant role in defining the characteristics of Japanese architecture. For the Japanese, religious philosophy does not have a cut and dried existence separate from the simple daily activities of life. It is an intrinsic part of our day-to-day life and its purpose is served only when it is applied to our most common needs and activities. Thus architecture and garden design are not barred from religious philosophy. The shrines, houses and gardens are designed so that they are symbolic representation of the religious thought prevailing in Japan. The teahouses designed by the Zen monk Rikyu are personification of the simplicity and austerity, which was a part of his life. And it goes without saying that there is a subtle beauty in these apparently austere houses too. If religious symbolism was important, a sense of aesthetic was equally important for the Japanese. And this fine sense of aesthetics manifests itself in the places they designed. An analysis of the buildings and gardens designed from the early Nara period (646 A.D.-794 A.D.) to the Edo period (1603-1867) clearly shows certain aesthetic principles, which form the basis of Japanese architecture and landscape design. This chapter tries to summarize these principles of design. The design proposal for Japanese cultural center primarily uses these principles as the basis for design.
Space

The unique molding of space and the exquisite fusion of nature and built form are the two characteristic features, which distinguish Japanese architecture and landscape design from its western counterparts.

The Utility of Not-Being

Thirty spokes unite around the nave;
From their not-being (loss of their individuality)
Arises the utility of the wheel.
Mold clay into a vessel;
From its not-being (in the vessel’s hollow)
Arises the utility of the vessel.
Cut out doors and windows in the house (wall),
From their not-being (empty space) arises the utility of the house.
Therefore by the existence of things we profit.
And by the non-existence of things we are served.
Lao Tzu

This paraphrase from the Tao te ching is closer in explaining the Japanese conception of space than any treatise on architecture. The ancient Taoist scholar espoused that true beauty of a room lay in the vacant space enclosed by the roof and walls, rather than the roof and walls themselves. He aspired to an aesthetic ideal of emptiness. True beauty could only be realized in the material world, he held, when it was stripped almost bare, with only the merest suggestion of color, pattern or texture. This is the essence of the Japanese house and hence it shuns the decorative, the obvious, the extravagantly showy, in favor of restraint, of emptiness or what contemporary architects and designers would refer to as minimalism.
Impermanent space

The next thing that becomes apparent is the impermanence expressed in the design of dwellings and temples. The sense of vacancy and the apparently temporary nature of the tearoom were also interpreted as expressing the Buddhist belief that reality lay in the transcendent spirit rather than in its transient material forms. As Okakura explained:

...Zen, with the Buddhist theory of evanescence and its demands for the mastery of spirit over matter, recognized the house only as a temporary refuge for the body. The body itself was but as a hut in the wilderness.... in the tearoom fugitiveness is suggested in the thatched roof, frailty in the slender pillars, lightness in the bamboo support, apparent carelessness in the use of commonplace materials. The eternal is to be found only in the spirit which, embodied in these simple surroundings, beautifies them with the subtle light of its refinement. (Nute, Kevin. Frank Lloyd Wright and Japan, P-91)

![Figure 3.1: Impermanence depicted in the interiors of teahouse](http://www.swifty.com/apase/charlotte/@gif/@A16b.gif)

Linking Nature and architecture

The intense passion that the Japanese have for nature can be attributed to Shintoism.
The entire universe is an abode for the divine spirits. As William Alex describes it in his book Japanese architecture, places where Shintoism was worshipped...

...were places of adoration and identification, not of fear, for in Shinto the universe and all existence, including man, were related and therefore partook of divinity. Unconcerned with conjectural or analytical religious philosophies, it was a dynamic religion, dominating and unifying the national subconscious and concerned directly with nature as divinity manifest everywhere - in trees, organic life, the earth, and in the natural phenomena of birth, growth, and decay. (P-17)

The importance of nature in Japanese ideology manifests in Japanese architecture as well. Japanese use the examples of life and nature as inspiration for their architecture. As with all other aspects of life architecture becomes yet another way to glorify and capture the beauty and power of nature, which again is quite evident in their treatment of materials. The structure of temples and dwellings is left exposed glorifying the natural materials used and the way these materials are made to work together in harmony.
Dynamic space

Unlike the temple complexes in China, which were rectilinear, hierarchical and axial, the Japanese allowed their architectural space to spread in indefinite extensions, which was more in accordance with the rough terrain of Japan.

The rectilinear arrangement was both uneconomical and impractical, and its disregard of topography did not accord with the Japanese attitude towards nature. Thus flexibility of space is always emphasized. The stroll garden developed from the same concept, were so designed so that the person walking through them could get different views from different angles. Besides under the new arrangement there was always the possibility of changing the organic whole of architectural space by adding new elements, of adapting it to new functions and needs, of maintaining an inner harmony even while absorbing new and often surprisingly disparate elements.
Creating infinity with a finite space

The shrines at Ise and the Katsura villa are examples of how infinity can be created within finite space. These shrines and villas cleared parts of the forest, created an enclosure using fence to set a limit to the infinite and at the same time refused to admit that there could be limit to the spaces they enclosed. This is a special characteristic of Japanese enclosure; it sets a limit to the infinity on the outside and on the inside it recreates a miniature universe, a new infinity of its own.

Figure 3.4: Creating infinity within finite space
Ise shrine
www.pitt.edu/~asian/week-4/week-4.html
Asymmetry

Asymmetry was always emphasized in architectural design and garden layouts. The dynamic nature of the Zen philosophy laid more stress upon the process through which perfection was sought than upon perfection itself. True beauty could be discovered only by one who mentally completed the incomplete. The virility of life and art lay in its possibilities for growth. Thus if symmetry implied formality, completion and a static state, asymmetry suggests informality, incompleteness and movement. Nevertheless asymmetry must always maintain a certain harmony and balance. The approaches to houses and temples and the winding paths in gardens are illustrations of this point.

Garden as a miniature universe

The Japanese garden is as much a part of the architecture as are the buildings themselves. As discussed earlier the enclosure sets a limit to infinity and creates a miniature
It (Zen) makes no use of ideas or concepts: it appeals directly to concrete experience....all other religious and spiritual teachings try to prove the truth of their irrationalities by means of abstraction and rationalization and postulation, but Zen masters refuse to do this. They just let go their “direct action” and give their lessons in the most effectively personal way.

D. T. Suzuki

universe of its own, but the bare enclosure has yet no architectural significance. It’s only with landscape that architecture comes onto being. To some extent the landscape and building designs determine the nature of the miniature universe that has been created by the enclosure. The garden design in normally passive, unobtrusive permitting all persons to make their own interpretations of miniature universe.

Figure 3.6: Garden as miniature universe, Ryoan-ji Garden
http://ssad.bowdoin.edu:9780/projects/zen/cgi-bin/Garden.scgi?GardenID=12&ViewID=234

**Borrowing space**

The Japanese people devised ways by which the building would appear larger than it actually is. They borrowed space from the outside world and brought into their homes, they absorbed nature itself into the miraculously plastic confines of man made architecture. The flexible style of construction adopted by the Japanese allowed them to design architectural spaces with
flowing interior and exterior spaces.

Figure 3.7: Borrowed Scenery, Japanese stroll garden
http://ssad.bowdoin.edu:9780/projects/zen/cgi-bin/Garden.scgi?GardenID=12&ViewID=234

Roof as a symbol

The roof is a striking feature of Japanese architecture both because of its physical prominence and symbolic connotations. The heavy roof with extended eaves served the dual purpose of protection against earthquakes and keeping out of water during heavy rain. Approached from a distance, the roof was the first part to come into view and established as it were the character of the building from afar, the skyward pointing pinnacle of a pagoda reminding man of deity and the awe inspiring roof layers of a castle-keep speaking to him of authority. As the proudest part of a building, the most readily visible part, the roof thus acquired a mystique of its own.
Figure 3.8: Main hall of Horyuji Temple (7th century)
www.jinjapan.org/access/arch/develop.html
Chapter 4

Japanese influence on modern architecture

Japan a closed nation till the end of nineteenth century, had lived practically in a state of isolation for centuries without much exchange of ideas from the west. The only foreign influence, which Japan had, came from China via Korea. China had been a source of inspiration for Japanese art form and architecture during the Asuka and Nara period (i.e. between 593-794 A.D.). The Heian period bought about the assimilation of Chinese ideas and elements within the Japanese culture. And since then Japan had been developing on its own within its own world. It was not until the end of the nineteenth century the west realized the level of refinement and complexity, which Japanese culture had attained in these years of isolation.

The opening up of the doors to the western world bought about a rich exchange of ideologies and philosophy between Japan and the rest of the world. The influence of traditional Japanese art form and architecture over the east and the west in the past century has been profound and cannot be underestimated. Developing houses and gardens in the Japanese-style has become a common occurrence in the west. Frank Lloyd Wright, Richard Neutra, Mies van der Rohe, are some of the many architects who have tried to incorporate principles of traditional Japanese architecture and landscape design. The idea of simplicity of structure, lack of ornamentation, honesty towards use of materials, and the intermingling of the interior and exterior space can be quite evidently seen in most of the works of these architects. The organic quality of Japanese architecture (which Wright defined as "an architecture that develops from within outward in harmony with the conditions of its being as distinguished from one that is
applied from without." ) was the principal source of inspiration for Wright. This chapter focuses on examples of buildings by some of these architects who have tried to infuse the spirit of traditional Japanese architecture in their design.

**Frank Lloyd Wright**

Frank Lloyd Wright freely acknowledged an important philosophical debt to Japanese pictorial art. But at the same time he insisted that all his work was original and that Japanese art and architecture had no formal influence on his work. Indeed throughout his career Wright steadfastly maintained that he found in Japanese architecture, not the inspiration that many suspected but merely confirmation of many of his own organic ideals. “The sukiyo-e and the momoyama Japanese architecture and gardening, confirmed my own feeling for my work and delighted me as did Japanese civilization which seemed so freely and completely of the soil, organic.”

In the book “Frank Lloyd Wright and Japan”, the author Kevin Nute examines the evidence that apart from the philosophical lessons certain forms of Japanese art and architecture did in fact have a significant impact on Wright’s early work. There are many similarities between Wright’s work and traditional Japanese architecture primarily in the sympathetic use of materials, integration of building with the surrounding and in his treatment of space as an organic whole. The prairie houses designed by Wright during his early years show clear Japanese influence. Walter Behrendt has commented

... The domestic buildings of Wright are like Japanese houses, so fitted into the landscape that the building almost imperceptibly blends with the surrounding nature. The Japanese house the same spirit of nature, the same tendency toward an organic structure. It also shows this intimate connection with the scene it is set in, this multiform arrangement of roofs meticulously calculated in its effects, and the careful treatment of materials according to their physical and physiognomic properties. (P-92)
Wright himself admitted, “...the reality of the building does not consist of the four walls and the roof but in the space to be lived in!” which are in fact the words of the Taoist scholar Lao Tzu.

**Falling water**

The falling water is a classic example of how Wright integrates Japanese ideas, concepts and architecture in his own design.

"Falling water is a great blessing - one of the great blessings to be experienced here on earth, I think nothing yet ever equaled the coordination, sympathetic expression of the great principle of repose where forest and stream and rock and all the elements of structure are combined so quietly that really you listen not to any noise whatsoever although the music of the stream is there. But you listen to Falling water the way you listen to the quiet of the country..."

- Frank Lloyd Wright (Talk to the Taliesin Fellowship)

Figure 4.1: Plan Of Falling Water

http://www.math.umd.edu/~dng/WorldCourses/ARHU125/IMAGES/FLW_FW1.gif
Thick green moss,  
All pure and sunny warm.  
Rikkyu (describing the Dewy Path)

Figure 4.2: Interior and Exterior View
http://www.multrum.com/fallingwater.jpg
http://www.acm.org/jgt/papers/MollerTrumbore97/falling.gif

Tadao Ando

Tadao Ando is one of those rare architects who combine traditional Japanese architecture with basic geometric shapes of the Bauhaus school to produce masterpieces. His works may not resemble in style or form to any shrines existing in Japan but the basic principles underlying his design and Zen philosophy remains the same.

"There is so much in common between the tea houses of Sen no Rikyu and the residential designs of Tadao Ando in the nature of their spaces... Both have deliberately created simple appearance. Both are calm, quite and pure. Both are gentle, austere and clear in mood. Both are dimly lit but have light within their darkness. Though set in cities both are rural in nature. Besides this he shares with Rikyu an interest in manipulating light, in overlapping spaces, and introducing the world of nature." (Francesco Dal Co, Tadao Ando Complete Works, P-16)

Naoshima Contemporary Art Museum, Church on water, church of light and Koshino house are some of the examples of his work where he reconciles the modern minimalist vocabulary with the environmental sensitivity of Japanese building and garden design. He has the ability to relate the
The reason why the river and the sea are able to be king of the hundred valleys is that they excel in taking the lower position.

Lao-tzu

Church On Water

Located at the foot of the Yubari Mountains in Japan "Church on the Water" (1985-88) is a reinforced concrete structure that has a chapel with a glass wall facing an enormous cross rising from a man-made pond with forest and mountains in the background.

Figure 4.3: Aerial View – Church on water
http://www.geocities.com/arquique1/ando/grandes/atcw01.jpg

The overall form of the building consists of two overlapping cubes, with the larger cube serving as a chapel and the smaller as an entrance. The entrance to the building is circuitous and winding in order to create an element of surprise as one confronts the crucifix placed amidst water. The crucifix in flowing water, according to Ando is, "to express the idea of God as existing
water. The crucifix in flowing water, according to Ando is, "to express the idea of God as existing in one's heart and mind. I also wanted to create a space where one can sit and meditate."

Figure 4.4: View of the structure and cross
www.terravista.pt/mussulo/2797/Tadao.htm
Chapter 5

Design Proposal

This chapter presents the building type, the design program, and the site selection based on the study of traditional Japanese architecture. This continues with discussion of form, structure, materials and landscape design. It focuses on the approach towards the problem and the application of traditional Japanese architecture design principles in a modern context.

Program considerations

The design proposal is for a Japanese Cultural center; a multi functional building which will provide activities like display of Japanese art, performance of traditional Japanese dance and theater, lectures concerning Japanese culture, tearooms, social gatherings and events, administration etc. The building is planned to accommodate a maximum of 150 – 200 persons for major events. The Japanese cultural aims to promote Japanese art form and culture in the U.S.A: a place with different cultural and social settings. It aims to provide a place where people can understand Japanese culture by appreciating its art, enjoying its performance and studying its history and tradition. The facility also provides visitors with an opportunity of communicating, relaxing and entertaining by creating an artistic and cultural atmosphere. The basic purpose of this project is to design a building, which will incorporate principles and features of traditional Japanese architecture and landscape design in a modern context. The building through its design itself will serve as a demonstration of Japanese culture in architecture. The re-interpretation and application of principles of traditional Japanese architecture in a modern context will make the building more accessible and approachable to people of different cultural backgrounds.
Activity Settings

The following are the activity settings based on the users' activity requirements. It includes room size, user's type and number, activities and requirement. The spaces serve to provide a cultural, educational and recreational facility.

Auditorium

Size: 3000 SF
Users: 100 persons (visitors, artists, actors/actresses)
Activities: The auditorium serves as a gathering place for social and cultural activities.

Exhibition Hall

Size: 2500 SF
Users: 50 persons
Activities: The exhibition hall is a multi-functional space providing an intimate and comfortable environment for display of Japanese art. It can be used as gathering space for varied cultural activities, meetings and communication and at the same time divided into smaller areas if the activity demands so.

Tea Room

Size: 1500 SF
Users: 15 persons
Activities: The tearoom will have a tea drinking space (which is a ritual for the Japanese people) and also a dry garden attached to it, meant for contemplation.

Antique Shop

Size: 400 SF

Lobby
From the pine tree
Learn of the pine tree.
And from the bamboo
of the bamboo.
Basho

Size: 2000 SF
Users: 50 person

Restaurant
Size: 1000 SF
Users: 30 persons

Kitchen
Size: 250
Users: 3-5 persons

Reading Room
Size: 750 SF
Users: 25 persons

Audiovisual room
Size: 250 SF
Users: 25

Office area
Size: 1000 SF
Users: 10 persons

Mechanical room
Size: 1000 SF
Users: Mechanical engineers and staff

Parking
For 40 cars (visitors and staff)
Restrooms (for men and women) and storage space.
The following is the summary of space requirements:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Space (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditorium</td>
<td>3000</td>
</tr>
<tr>
<td>Exhibition Hall</td>
<td>2500</td>
</tr>
<tr>
<td>Tea Room</td>
<td>1500</td>
</tr>
<tr>
<td>Antique shop</td>
<td>400</td>
</tr>
<tr>
<td>Lobby</td>
<td>2500</td>
</tr>
<tr>
<td>Restaurant + Kit</td>
<td>1250</td>
</tr>
<tr>
<td>Reading room</td>
<td>750</td>
</tr>
<tr>
<td>Audio visual room</td>
<td>250</td>
</tr>
<tr>
<td>Administration</td>
<td>1000</td>
</tr>
<tr>
<td>Mechanical room</td>
<td>1000</td>
</tr>
<tr>
<td>Parking</td>
<td>8000</td>
</tr>
</tbody>
</table>

**Site selection**

The proposal for a Japanese cultural center requires that the building be placed in a very natural and scenic setting; a place that will not only provide a large space for functional activities but also, provide psychological room for the visitors to admire and appreciate Japanese arts. The Japanese attitude of reverence towards nature and the careful integration of building and the surrounding environment necessitate that the site should have very natural features along with some undulations, which will reflect the Japanese terrain. Water too has a very symbolic significance in Japanese architecture and hence the presence of a water body or stream is very vital with site selection.
A flower falls, even though we love it; and a weed grows, even though we do not love it - Dogen Zenji

Figure 5.1: Overview of Shenandoah valley
The proposed site at Massies corner, Virginia has all these features. The site is located 70 miles from Washington D.C in the heart of the Shenan doah valley. It is surrounded by the rising mountains of the Appalachian ranges which provide a very picturesque setting for the cultural
The mind of the past is ungraspable; the mind of the future is ungraspable; the mind of the present is ungraspable.

-Diamond Sutra

center. The site is set back from the main road by approximately thousand feet and is accessible by a motor able road. A small stream passes along the east end of the site. Located at the top of a small hill, the site is surrounded by huge cypress tress along the west and north end. A silhouette of the trees is very evident against the soft line of the mountain which rises in the background. There is no dense foliage along the east and south end of the site thus providing an unobstructed panoramic view of the beautiful landscape in the front.

Given below are some of the images of the site

Figure 5.3 A: Stream passing through site
Figure 5.3 B: Road leading to site
Nothing in the cry of cicadas suggests that they are about to die

Basho

Figure 5.5: View of the site

Figure 5.6: Panoramic view of valley from site.
Chapter 6

Design Interpretation and Discussion

This chapter illustrates the development of the building design regarding aspects of site, program, form, and technique. The analysis focuses on how the principles of traditional Japanese architecture and landscape design have been applied to the building design of this project.

The proposed Japanese cultural center is located at the west end of the site at the top of the mound. This portion of the site has a gradual slope and is best suited for the building as it offers a spectacular view of the mountain ranges along the east and south end. The natural topography of the site has been one of the important factors in deciding the position and location of various elements on the site. The entire building program is broken down into smaller components, which are spread over the site depending upon function and aesthetics.

The overall layout of the activity areas is a series of interlocking squares and rectangles. The prime areas are the parking lot along the south west end of the site, topped by larger rectangle forming the main building and it is followed by a smaller square which forms the tea house (at the north east end of site) The smaller rectangles in between form the circulation areas or landscaping.

Design interpretation

Concept

The layout of the building follows the principles of traditional Japanese architecture and garden design. The Buddhist and Zen philosophy lay more emphasis on the path to follow rather than the end itself. They believe that life is continuously changing, and these two concepts are applied to design too. The building has been designed so that the person entering the building is
applied to design too. The building has been designed so that the person entering the building is continuously changing axis, thus giving the visitor different sets of views at different points.

The free and irregular placing of the components of the building also help to give a more intimate and natural feel to the building. The asymmetrical design allows flexibility of space and harmony with nature.

**Access**

As one ascends the mound from the main road, the view of the building is blocked by means of trees flanked along the side of the access road. The smaller gaps between the trees offer a very restricted view of the building till one comes to the top where one gets an entire view of the building. The road has a drop off area for visitors and the same road leads to the parking lot area further.
The birds have vanished into the sky, and now the last cloud drains away. We sit together, the mountain and me, until only the mountain remains. - Li Po

Entrance

The landscaping in front of the building is subdued and minimal so that it does not overpower the building; rather the landscaping helps to create interesting spaces in the foreground which give the person a glimpse of the things that are to follow as one enters the building.

The access to the building from the parking lot follows an organic line which is in contrast to the strong rectilinear shapes on the building. This creates a subtle tension along the path. The structure has a strong horizontal cue to it with the roof line flowing laterally from one end to another. This stands out against the soft curve of the mountains in the background. The reason being to create harmony through tension, which is one of the principal concepts of Zen garden design. The water fountain along the access to the building is aligned with a mound in the backdrop to make it more emphatic.

The structure

As one enters the building, one confronts a large lobby area which is covered with a blanket of natural light coming in from the openings. The other end of the lobby area has a large horizontal window. The flowing water body at this end helps to integrate the interior spaces with the exterior. The offices and restaurant areas are placed at the west side of the building in order to separate them from more secluded spaces like the art museum and tea house.

A small courtyard between the offices and restaurant allow the light to pour into the work areas and at the same time open up the areas for the visitors. Creating tension by enclosing the areas and releasing the tension by opening up areas is an important design element of Japanese architecture. The entire design of Japanese cultural centre follows this principle.

The staircase placed between office and restaurant area leads the visitor to audio visual room on the second floor. A 5 feet wall surrounds the staircase. The small gap between this wall
room on the second floor. A 5 feet wall surrounds the staircase. The small gap between this wall and upper floor gives the visitor a slight glimpse of the dry garden behind it.

Silent areas like the art museum are placed at the east end of the building to provide them with a more intimate and personalized space. The art gallery is broken down into formal and informal display areas. The central art gallery has a part double storied height, with a mezzanine floor looking over into the gallery. The art gallery space is surrounded by wide passage space with sitting areas for visitors. This large artificial pool of water adjacent to this area offers a reflective space for the visitors. The informal art gallery adjacent to the central gallery houses objects of art which are on temporary display. The two walls on the sides on the gallery space direct the eye of the person to other end, which is a large picture window. This window itself acts as a piece of landscape painting offering a pleasant view of the exterior pond, and mountains in the backdrop.

The staircase between the art gallery spaces leads to the auditorium in the basement. The informal art gallery space connects the building to the landscaped area on the rear side by means of a bridge. The bridge again is made up of smaller vertical panels with gaps in between. These panels' create a rhythmic pattern of open and closed views. The bridge leads the visitor to a concrete paved area with landscaped garden on the left side and the teahouse at the other end.

**Tea House**

The teahouse is slightly raised from the ground, in order to symbolically separate it from the main building area. The tearoom offers tea service to the visitors, which is more of a ritual for the Japanese people. The teahouse is made up of smaller tearooms and a viewing gallery cantilevered over the water body. Viewing the full moon is symbolic of *nirvana* for the Japanese people and hence is an important component of teahouse design.
The gallery space adjacent to the tea room is oriented along the east axis so that it gives an uninterrupted view of the rising moon. The gallery is also aligned with an island in the water body. This organic shaped island represents symbols of longevity. The north end of the tea room is attached to a covered viewing platform overlooking a traditional Japanese dry garden. This dry garden is lined with trees along the periphery and it offers a silent contemplative space for the visitors.

**Lanscaping**

As mentioned earlier, what differentiates Japanese architecture from its western counterparts is the way the Japanese integrate the interior and exterior spaces. For the Japanese the surrounding environment is as significant as the built form itself and it is essential that both these elements be in harmony to create a pleasant environment. Hence care has been taken to design the landscape for Japanese cultural center accordingly. The most important element of the proposed design is the large artificial water body created adjacent to the building. The source of this water body is in the form of a wild running stream along the northwest end of the building. This stream becomes more controlled and geometric as it enters the artificially created environment. It pours down in the form of a stepped watercourse along the circular pathway and forms a large water body as it moves across the art gallery spaces. This water body helps to separate the tea house (which is more of a silent and private space) from the more public gallery spaces.

And at the same time, the water body also acts as a binding element, which helps to integrate the natural environment with the artificial man made environment. The water from this pond is allowed to spill over back to the natural environment through an outlet at the southeast end of the building. The viewing gallery adjacent to the art exhibit area overlooks the large pond,
thereby creating a pleasant reflective space for the visitors. The water body is flanged with a walkway, thus allowing the people to move around it and experience the building.

**Structure and Materials:**

The materials proposed for construction should reflect the Japanese concern of purity in expression and the use of materials in its true, uncontaminated form. The use of steel, concrete and glass is inevitable to express this idea. The structure has a column and beam construction. The basic structural members (i.e. beams, columns and slabs) are cast in concrete. The idea underlying the structural design was to have a central solid mass, which will be anchoring the adjacent floating planes. The central lobby area acts as this solid mass, which ties together other adjacent spaces. The large space of the lobby area is spanned by steel beams, which project out of the front façade and thus help to reveal the structure within. This steel framework is covered with a concrete slab to give a more solid definition to it. The office and cafe spaces are covered with flat slabs (with hidden beams) to express the horizontality. The corridor adjacent to the art gallery space too has a similar structural system. The roof of the office, café and corridor space has a large overhang which projects beyond the vertical supporting elements, so as to relate the design with Japanese shrines.
Some of the principles of Japanese architecture which I intend to apply to the design of Japanese cultural center are,

- Changing axis
- Hierarchy,
- Framing of view
- Impermanent space
- Linking nature and architecture
- Borrowed landscape
- Asymmetry
- Creating infinity within finite space
- Garden as a miniature universe

Figure 6.2: Concept
CONCEPTUAL PLAN

Figure 6.3: Conceptual Plan
Figure 6.4: Section through landscape and building
Figure 6.5: Conceptual model and sketches
Figure 6.6: Site plan
Figure 6.7: First floor plan of Cultural center
Figure 6.8: Second floor plan of Cultural center
Figure 6.9: Basement level plan of Cultural center
Figure 6.10: Plan of Tea house
Figure 6.11: Front elevation of Cultural center
View of Art gallery

Aerial view of conceptual design

Figure 6.12: Perspective views

View of bridge leading to teahouse

View through office space
Figure 6.13: Images of model
Chapter 7

Conclusion

Understanding the architectural tradition of a particular culture is a long and arduous task especially when viewed from the eyes of a non-native person. Japanese architecture with its added subtleties therefore offers even greater challenges to comprehend.

This thesis has been a similar experience; and in spite of all the complexities involved this research has helped me gain some insight into traditional Japanese architecture and landscape design.

The entire concentration of the thesis is on analyzing aesthetic and design principles of traditional Japanese architecture and its application to contemporary architecture. The attempt is not to create a stereotype building that would reflect all aspects of ancient Japanese architecture but rather to extract the design principles from the same and apply them in a present day context.

The literature review done on traditional Japanese architecture and the study of Buddhist shrines and gardens has helped me understand the way architecture has evolved in Japan. The Japanese perception of space and its expression differs drastically from its western ideas. The difference lies not just in the expression but the very basic principles of aesthetics which the Japanese have derived from the Buddhist and Shinto philosophy.

The principles enlisted in chapter three are some of the many elements which comprise the roots of Japanese architecture. These principles deal more with perception of space and are not reflective of any particular style of architecture, and can be used as guidelines for design irrespective of place and time.
The proposed design of the Japanese cultural center is an attempt at incorporating these principles. It aims at proposing a building which would have a Japanese feel to it and yet be contemporary in its expression through the right use of materials and technology. It also addresses today's needs of creating a space where a person can find some respite from the day to day activities. Though the design does not capture each and every aspect of Japanese architecture, it nevertheless serves as a guiding block for future research and application.
References


