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INDOOR OUTDOOR RELATIONSHIPS AT THE RESIDENTIAL SCALE

by

Benjamin H. George

A thesis submitted in partial fulfillment
of the requirements for the degree of

of

Master of Landscape Architecture

in

Landscape Architecture and Environmental Planning

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UTAH STATE UNIVERSITY
Logan, Utah

2009

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ABSTRACT

INDOOR OUTDOOR RELATIONSHIPS AT THE RESIDENTIAL SCALE

by

Benjamin H. George, Master of Landscape Architecture

Utah State University, 2009

Major Professor: Michael L. Timmons

Department: Landscape Architecture and Environmental Planning

The indoor-outdoor relationship has been important to mankind since the dawn of recorded history. Over the ages, and despite continual changes in culture, style and technology, the relationship has continued to endure and play an important role in the design and construction of both interior and exterior spaces. Despite its continued relevance little research has been done on the relationship.

This thesis examines the indoor-outdoor relationship in three distinct sections. The first section defines the relationship and discusses the various theoretical merits of the relationship. The second section is a broad overview of the historical treatment of the indoor-outdoor relationship. The third section is a detailed analysis of the tools and techniques used to create the relationship, with additional attention paid to potential applications for modern designers.

DEDICATIONS

For Pamela, who started me down this path and supported me throughout it.

And for my parents who have helped make it possible.

Benjamin H. George

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INTRODUCTION

Relating the built environment to its natural setting has occupied humans from the earliest days of habitation. The earliest human constructs were created in close symbiosis with nature out of pragmatic necessity. Survival depended on blending in with the surroundings, and a lack of technology required the use of local materials that were easily fabricated. While probably not appreciated from an aesthetic perspective per se, the built environment had the appearance of blending seamlessly with the surrounding landscape.

These constraints eased with the passage of time, and humans increasingly began to adapt the landscape to meet their needs. Now, with expanding self-confidence, new technology, and ever increasing population pressure, the anthropocentric urge developed to create constructs that imposed artificial order across nature's realm. Despite their new freedom to build with impunity of the natural landscape, centuries of designers and builders have swung like a pendulum between architectural egotism and a harmonious blending with the natural world. When the latter occurs, a powerful nexus between site and structure creates a pleasing aesthetic that design professionals refer to as an indoor-outdoor relationship. The realization of such a relationship has resulted in the creation of some of the most acclaimed and memorable sites in the world.

An effective understanding and appreciation of the indoor-outdoor is absolutely critical for all the design fields that impact the human built

environment. How buildings interact with the landscape is not merely an aesthetic issue that should be addressed if funding is available, or if a specific style is being used. The indoor-outdoor relationship has very real impacts on the emotional, physical and social well-being of people, and physical and environmental impacts on the landscape. Ignoring, or butchering, the indoor-outdoor relationship runs the risk of a design being unused, underused, misused and ultimately fail.

Despite the recognized potential that an indoor-outdoor relationship has in improving site design, there has been comparatively little academic research done on the topic. Perhaps this is due to its familiarity, or an assumption that it is already widely accepted and understood, as it is constantly referenced and discussed by designers. It is frequently mentioned, in varying degrees of detail, in works as varied as academic journals and consumer design magazines. There is a tremendous amount of information regarding the subject, but this information is scattered, making it difficult to quickly reference. There has been no examination of the indoor-outdoor relationship done where the indoor-outdoor relationship is the exclusive focus. In previous research the relationship was usually examined as only a subsection of a different question, or referred to when discussing some aspect of design. Never was it the sole focus, simultaneously examining the methods and impacts of the relationship. Furthermore, without an accepted definition of what constitutes an indoor-outdoor relationship, and what techniques can be used to create it, there will be instances where incorrect definitions and ineffective techniques are used in design work.

This paper will define indoor-outdoor relationship and examine the treatment of the relationship throughout history up to the modern day, in order to identify and catalog the techniques used to create the relationship. This work will provide a thorough examination of the topic and create a consolidated reference of the indoor-outdoor relationship. It will hopefully serve as an impetus for more detailed study of the subject and be an important foundation upon which future work on this topic can be built.

DEFINITION

Mankind has adapted the landscape to fit his needs from the very beginning of civilization. This ability to alter the landscape to suit human needs is one of the requirements for an advanced civilization, for without it man is reduced to the nomadic lifestyle of his earliest ancestors. The shift away from a nomadic lifestyle is, in part, identified with the construction of more permanent structures, rudimentary at first but increasingly more sophisticated as time progressed. These structures were necessary for "were the land in itself an adequate setting for the purposes of life, architecture would be entirely unnecessary" (Leatherbarrow, 2000).

The construction of buildings put mankind on a new footing with the landscape that he inhabited. He was no longer subjected to the wiles of nature, but rather could find protection inside his structures. How he interacted with the outdoors was now on more of a voluntary basis, being able to choose whether to

eat, rest and sleep outside or in, generally choosing the former only when it best suited his needs for comfort or practicality.

With the construction of the first building a new dynamic was born: the relation between the built, architectural structures of man, or the indoor environment, and the external landscape, or the outdoor environment. How this relationship has been treated has varied over time and place, with the dominance of the architecture over the landscape varying from seamless integration to overpowering dominance. Although the concept is not universally shared by designers, it is generally held that while it "is not necessary to integrate the architecture with its landscape... both structure and milieu can be enhanced by the effort to do so" (Menefee, 2003).

Ideally we should strive to create this successful melding of the architecture and the landscape, where both elements are improved through the relationship and, where the two joined together in a balanced harmony, create a setting for living that would not be possible exclusively within the setting of the architecture or the landscape. Thomas Church noted that "[g]arden and house belong together, visually and actually" (van Sweden, 2002), because together they can more fully provide for the happiness and contentment of man. The goal of a good indoor-outdoor relationship is to improve the function of a site and the experience of using it. That this is the case was identified by Will Bruder when he noted that the "integral kinship of architecture and landscape is at the center of the finest architectural works of our time" (Bruder, 2003).

Before it is possible to outline the history and processes behind the

creation of a good indoor-outdoor relationship, it is necessary to first define the separate elements from which it is formed. The words 'landscape' and 'architecture' are common to all of us as descriptions of the world in which we live. To most, they appear to be mutually exclusive, one begins where the other ends. However, this is not always the case.

At times the architecture becomes the landscape. For example, when one considers the landscape of the Costa del Sol it is not limited to the rugged hills and azure sea, but includes the iconic whitewashed buildings that form its villages and towns. In this instance, architecture has become part of the broader landscape, every bit as much as the geological formations and climate. In this context, landscape is very broad, referring to an area that usually shares similar visual and climatic features, and could encompass something as relatively small as a city up to an entire region of the world.

It is this type of landscape that provides the backdrop for most buildings, providing the canvas upon which the work is constructed and to which it relates. (Leatherbarrow, 2000). How the architecture interacts with this landscape varies, it "can be ignored; it can be merely observed; it can be occupied; it can be savored" (Menefee, 2003). Whatever the stance the architecture takes towards the surrounding landscape, it is impossible to remove the building from the landscape just as it is impossible to remove the canvas from the painting. Without the reality of the landscape to illuminate the building and provide the environment in which it stands it would cease to exist.

Within this broad landscape there is a smaller, more local landscape,

which will be the focus of most of this thesis. This landscape is site specific, and typically attached to some form of building. In the residential setting it is referred to as the garden, or the yard. It is in this landscape that an indoor-outdoor relationship is typically created, where the landscape and architecture have a tangible physical connection between each other that can be easily and effectively manipulated.

The prototypical definition of architecture is the building; a structure with four walls, a base plane and an overhead plane, creating a complete enclosure designed to serve a specific purpose related to the life of man. This simplistic definition creates areas of ambiguity, however. For instance, is a gazebo, which typically has no solid walls and only an overhead and ground plane, an example of architecture? Furthermore, what about the ruins of the Parthenon in Athens? It has no roof and only perforated walls made of columns. Is it architecture?

In each instance, though they are not fully enclosed buildings, both should be considered architecture for the purpose of discussing indoor-outdoor relationships. Architecture is an artificial, structured construction of inorganic material (ie. wood, stone, concrete, steel) forming either solid or implied vertical or horizontal planes, and oftentimes both. Using this definition, a wall is considered to be an architectural element the same as a house or factory might be. Marcel Breuer, the great Modernist architect, described architecture as being a "man-made work, a crystallic, constructed thing. It should not imitate nature - it should be in contrast to nature" (Leatherbarrow, 2000).

Breuer's opinion of the relationship between nature and architecture is a

good point to begin our examination of the indoor-outdoor relationship. As Breuer noted, architecture is a constructed thing, but should we agree with him in his assessment of architecture and the natural landscape necessarily being in contrast with each other? Should we agree with Le Corbusier's view of the "house as a 'machine for living' - set on the land rather than embedded within the landscape" (Bruder, 2003)? If we accept this Modernist position then we elevate the architecture of the building while making the landscape wholly subservient to it, "a milieu of which one is aware, less like a painting than the light that allows it to be seen" (Leatherbarrow, 2000).

The modernist view of architecture is very anthropocentric, and fails to acknowledge that the practice of architecture is not limited to mankind. There are many instances of architecture in nature, whose construction techniques predate the earliest forms of human architecture. Examples of natural architecture might include the massive termite mounds of Australia and Africa, the intricate order of a beehive, or the seemingly haphazard construction of a beaver dam. While we may be tempted to dismiss these constructions as primitive, they cannot be dismissed as examples of architecture and they can, and have provided inspiration for mankind in the development of his own particular type of architecture. (See Figure 1)

Although the architecture of man, as a construction of man, does contrast with nature, this does not preclude a harmonious and balanced relationship between the two. To see that this is the case one needs only look to nature, where we find many more instances of organic architecture beyond the examples



Figure 1: Nature is full of examples of non-human architecture. Beavers have been building dams much longer than humans. Source: <http://uploads.wikimedia.org>

satisfy their needs. Where building meets landscape a similar effect appears where man can take advantage of two different environments to fulfill his needs. However, as is the case in nature, these edges are very sensitive, and they can easily be damaged to the point that they will cease being used to their fullness. Similarly, if the indoor-outdoor relationship of a building is not treated properly, one or both of the elements will perform in a subpar manner (Waite, 1998).

it is important to recognize that what we are dealing with in indoor-outdoor relationships is an edge; or a transition space. As a space it moves and flows and may change over time and through the seasons. It is a grey area between

the architecture and the landscape, a no-mans land that neither can fully claim, yet one that attracts every man because of its ability to provide the best of both environments. In speaking of this transition space, Garret Eckbo asked the question: is it architecture or landscape (Eckbo, 1956)? We can respond that it is neither, and yet both simultaneously.

In order to properly appreciate good indoor-outdoor relationship, we have to cease considering it as architectural elements in the garden and vice versa, and instead taking a more holistic approach that recognizes all of the inter-related elements that create a unique space (Howard, 2001). The Greek architect Aris Konstantinidis recognized that it was the delicate interplay of the architecture and the landscape that created indoor-outdoor relationships, noting that it was one of equal reciprocation and describing it as a process of knotting the two together, weaving the interior to the exterior so tightly that they would be impossible to separate (Leatherbarrow, 2000).

Scales of the Indoor-Outdoor Relationship

There are three areas, two intimate and one distant, in which it is possible to observe the transitional space created by indoor-outdoor relationships. The first of these is from within the architecture, and is typically orientated out into the landscape. Oftentimes it is the most controllable of the three, as it is more easily framed through the use of the building material to dictate the sense of the space and relationship. The second area is within the local landscape: the garden.

Here there is a connection to both the building and the broader surrounding landscape. This area may also be fairly controlled, though not to the degree of the indoor environment, because it is typically heavily dependent upon living matter. The third area is removed from both the building and garden, and exists in the surrounding landscape. The view from the surrounding landscape, back into both the garden and architecture, provides an overall visual understanding of the relationship, but cannot satisfy any of the other physical senses, nor does it speak to any of the spiritual and psychological effects of the relationship. (See Figure 2)

The living experience is determined by the first two of these areas, inside the building and inside the garden. It is in these areas, and in the relationship between the two that the primary functions of life occur, and it is here that an individual will spend most of their time. The third area impacts the first two only in that it creates the face which is shown to the world and can set the mood for entrance into the two more intimate areas. While undesirable, it would be possible to create an enjoyable indoor-outdoor relationship that is effective only in the home and garden, while ignoring the outer area of the surrounding landscape. However, should enough people build irrespective of the surrounding landscape, that landscape is degraded and the impacts will spread into the more intimate areas of the relationship. Unfortunately this happens on a regular basis, and it is a regularly heard complaint of homeowners that someone has built something that has damaged their views or enjoyment of the landscape.

Exploring this concept of the relationship of the two intimate areas to the

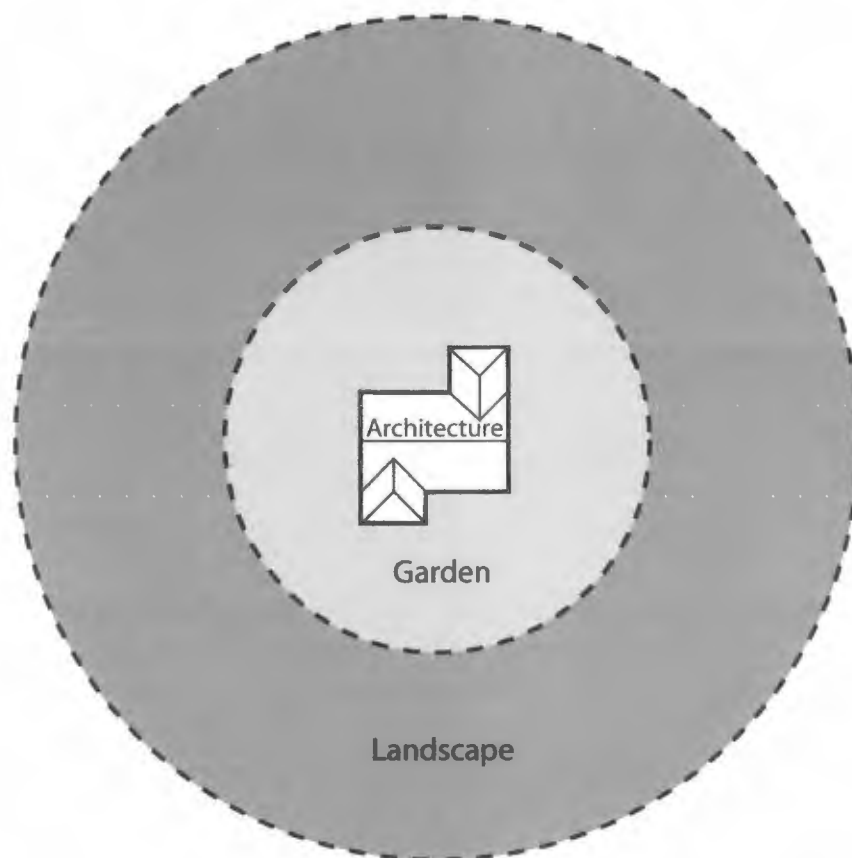


Figure 2: The indoor-outdoor experience is experienced within three zones: from within the architecture looking into the garden and landscape, from within the garden immediately adjacent to the architecture, and the surrounding landscape and how the architecture relates to the landscape.

third area of the broader landscape we should recognize that there is a context that exists beyond what can be visualized. This could be a cultural or spiritual context, more difficult to see yet readily felt even if the viewer is unaware or unable to identify it immediately. This is the *genius loci*, the sense of place or unique atmosphere that a place has. This sense of place can be as important as the physical characteristics in our interpretation of a landscape. For instance, the rural landscape of Ireland is not merely one of rolling hills, stone walls and flocks

of sheep. It is the light mist and overcast skies, it reeks of centuries of struggle, speaks of misery and happiness, and gives us the leprechaun and the banshee. Similarly the beaches of Normandy appear to the eye to be pristine stretches of sand slipping into the waves of the English Channel. Yet to be there is to be aware of the blood that was spilt and the sacrifice that was made. It is something not contained in the physical forms of the land; it is not physically tangible. It is something unseen, yet it can be experienced and felt and it can pervade every aspect of the landscape. (See Figures 3 and 4)

It is important that a designer is sensitive to the broader landscape, recognizing it as the milieu through which a site will be interpreted. Because it is extremely difficult, if not impossible, to alter the broader landscape, designs should be adapted to it. It is an example of the carelessness and arrogance of man to create a design that ignores or contradicts the surrounding landscape (Howard, 2001).

Integration

This concept of integration is fundamental to the successful design of the indoor-outdoor relationship and should be an overriding principle throughout the whole process. Without integrating the two it is impossible for a site to be whole because its disparate parts remain separate elements that compete and detract from one another instead of supporting and complimenting each other in a complete composition (Dee, 2001). There must be a balance achieved between



Figure 3: Omaha landing beach, Normandy, France. Photo: Benjamin George



Figure 4: An example of a prototypical Irish landscape, County Tipperary. Photo: Benjamin George

the two, with neither dominating the other. Though this balance does not need to be equally weighted, neither the architecture nor the landscape should be allowed to dominate the other if we desire to create a successful indoor-outdoor relationship. This balancing act is made more difficult because, while neither can be made subservient to the other, both must still retain their own unique identity because the landscape and architecture "can be joined only if they are distinct, interlocked only if separate, for only when they are different can they perform their roles *similarly*, and only then can the energies of the first, the landscape, animate the second," the architecture (Leatherbarrow, 2000).

That this is the case can be seen in the failed approach of several modernists to essentially remove the building from the landscape in an effort to create a good indoor-outdoor relationship. Perhaps the best example of this is the Glass House, designed by Philip Johnson. This house, with all four exterior walls composed entirely of glass, interrupted only slightly by steel pillars, was intended to blur the line between architecture and landscape in seamless integration. But in striving so hard to make the home as visibly permeable as possible, Johnson degraded the relationship between the the house and its landscape by nearly removing the building as a presence on the site, and the relationship between the two are are severely imbalanced. What is created is a display case of furniture. It is akin to setting up a bedroom set in the middle of a lawn and claiming that you have created a good indoor-outdoor relationship, yet the physical structure upon which that relationship is founded does not exist and therefore neither does a relationship.

One of the driving factors behind glass buildings was to improve the view from inside to outside of the structure. Their ultimate failure resulted because they created uncontrolled views that neither referenced nor associated with the landscape. This completely transparent view removes all mystery and intrigue from the relationship, elements which are essential to creating a good indoor-outdoor relationship because of their ability to create motion through the space.

Luis Barragán, one of the great masters of creating successful indoor-outdoor relationships, was strongly critical of the all-glass building favored by many modernists for creating spaces that failed their inhabitants. "Far from providing their inhabitants with the privacy of indoor life, these display-case structures imprison them in dehumanizing spaces" (Julbez, 1996). Barragán recognized that these all-glass buildings failed in their role of architecture, to provide privacy and shelter. If the architecture is deficient than it would stand to reason that it would be more difficult to create a good indoor-outdoor relationship, which is one of the main reasons that Barragán steered clear of the Miesian all-glass building.

Challenges to the Indoor-Outdoor Relationship

As mentioned earlier, the melding of architecture and landscape is not a universally accepted ideal. And beyond winning over supporters on the basis of design, there are challenges to application as well. Perhaps the greatest champion of the indoor-outdoor relationship in recent history was Frank Lloyd

Wright, who believed a home should have a form that would "make it graciously at one with external nature" (Wright, 1955). But following just a few years after Wright, Modernism swept through the architectural world, its banner carried by none greater than Le Corbusier. Le Corbusier and his fellow Modernists would largely destroy the dynamics of the indoor-outdoor relationship, holding up the architecture as the primary focus of the site, meant to be seen as a 'machine for living' and uncluttered by the unnecessary frills of design. It can be argued that Modernism was driven more by the ideas of engineers than architects, concerned only about the function of a building and caring little for the actual environment that it created or the image it portrayed (de Botton, 2006). In Modernist theory the "relationship to the landscape is assumed to be irrelevant, or worse, even antithetical, to modernist concepts" (Haney, 2001).

Recalling a visit to Greece, Le Corbusier stated: "One clear image will stand in my mind forever: the Parthenon. Stark, stripped, economical, violent; a clamorous outcry against a landscape of grace and terror. All strength and purity" (Birksted, 1999). Le Corbusier's interpretation of the ruins of the Parthenon failed to understand the careful thought and planning by the ancient Athenians to locate and build their temple in a manner that fit with and respected the 'landscape of grace and terror' that Le Corbusier saw as a force to be triumphed over.

Throughout his work Le Corbusier sought to "remove the inhabitant from nature." One of his favorite methods was to elevate the living space above the natural ground plane, creating a dwelling on stilts. In doing so, Le Corbusier

removed much of the intimate contact between man and nature, and put man in a position where he no longer dwelt on the land, but above it (Woudstra, 2000).

The most famous example of this is the Villa Savoye, a building viewed as a shrine of Modernism but described as unlivable by its inhabitants (de Botton).

Modernists also favored keeping the landscape around their buildings clean, so as to not interrupt the lines of the architecture or compete with it for attention. Though the strict functionalism of Modernism has waned, architects continue to desire to have the site as essentially a giant service platter on which



Figure 5: Villa Savoye, designed by Le Corbusier, is one of the most famous examples of Modernist architecture. Modernist designs have been criticized for being ambivalent, or even malignant, in relation to the surrounding landscape.

they can showcase their work. That a designer wishes to showcase his work is understandable and expected, but it is unfortunate that so many architects continue to view the landscape more as a competitor and less as an asset to their design, a dynamic that regularly hampers the creation of a good indoor-outdoor relationship.

Following World War II, American soldiers exposed to Japanese landscapes returned to the United States with a desire to recreate Japanese gardens in at least some small manner. This interest in the gardens of the Orient also coincided with the increased relevancy of designers not from the American and European milieu, such as Brazilian Roberto Burle Marx and Mexican Luis Barragán. This influx of new designers and design philosophies has slowly eroded many of the harsher views of modernists, and created growing interest amongst modern homeowners to incorporate indoor-outdoor spaces into their sites. Barragán noted that there is "no fuller expression of vulgarity than a vulgar garden" but that a "garden must combine the poetic and the mysterious with serenity and joy." (Barragán, 1996) In his gardens he saw "the majesty of nature [as] ever present, but it is nature reduced to human proportions." (Julbez, 1996) The stark and barren landscapes of modernism are giving way once again to designs more aligned with the ideas espoused by Barragán that have more vibrancy and life in them.

Beyond these clashes on design doctrine, there are several practical challenges to creating a successful indoor-outdoor relationship in our modern society. The most serious of these challenges is simple economics. The space

outside a building, oftentimes including the facade of the building itself, is viewed as less-worthy and "not good enough in itself to be designed on the same principle as the rest [i.e. the interior of the architecture]" (Woudstra, 1999). A quick survey of landscape professionals would turn up a host of stories of homeowners who spent nearly their entire budget on the construction and decoration of the home while leaving little or nothing with which to design and construct the landscape. When one of the elements is relegated to a mere afterthought, it is nearly impossible to create an indoor-outdoor relationship of any value. Rather the home is often surrounded by a landscape that cheapens and insults it aesthetically.

The living environments of homes are now oriented differently than they were fifty years ago. Previously, outdoor living space was geared towards the front of the house, embracing the neighborhood and streetscape. Today, most of the outdoor living occurs in the enclosed backyard. While it is not inherently bad to focus the outdoor living activities into the backyard, it compounds the problem of economics to further guarantee that the front, and most visible, landscape of most houses remain rather spartan.

A third problem is that rarely is the architecture and the landscape designed at the same time on a residential project. As a result, interior uses may not match well with potential exterior spaces. For instance, the creation of a courtyard off of the master bedroom may be precluded by the bedroom being located next to a narrow side yard. A kitchen garden may need to be located away from the kitchen because it was located on the northern side of the house

and is adjacent to a section of the garden that consequently gets too little sunlight for viable crop production.

A final problem particular to the emphasis of this examination of indoor-outdoor relationships is dealing with cold winter weather. Many homeowners may be dissuaded from putting more emphasis on their outdoor spaces because they cannot use the space year-round. Indoor-outdoor spaces have traditionally been associated with warm, temperate climates and as a result there is a misconception that creating a symbiosis of indoor outdoor space is less effective in harsher environments.

HISTORY OF THE INDOOR-OUTDOOR RELATIONSHIP

This section will detail the evolution of the indoor-outdoor relationship from ancient history to the present day. Divisions were made based on major shifts in design theory (i.e. Prairie Style v. International Style) or cultural divisions (i.e. eastern traditions v. western traditions). Each period contains information regarding the major advancements, or regressions, in the indoor-outdoor relationship contributed by the period as well as selected case studies.

Early History (to 800 BC)

This historical examination presents an evolution of the historical methods and styles for creating an indoor-outdoor relationship. Creating a good indoor-outdoor relationship is partly a functional problem and not purely aesthetic. To better understand how to create the relationship it is worthwhile to review how past societies have treated this functional problem, and how it evolved to take on important aesthetic qualities as well. The very first indoor-outdoor relationships arose out of a functional need, and it wasn't until later that the aesthetic element began to play an important part.

Before the technology and materials existed to mass produce large buildings, the exterior space around a building provided an area in which to expand living space with minimal effort. With the ability to create large architectural spans limited by the material, money and labor one had access to, it was more effective in the vernacular architecture to surround a space than to

entirely enclose it. This surrounded space is the courtyard, and it is perhaps the oldest true indoor-outdoor relationship tool we have detailed record of.

The earliest origin of the courtyard may have been an area enclosed by a few huts and fencing, used mainly to hold animals or store materials. From those humble beginnings, courtyards developed fairly quickly into a fully enclosed space within the architecture. The earliest known courtyards date from at least 3000 BC in ancient Egypt and Mesopotamia. (Keister, 2005) The courtyard filled many important roles; providing a degree of comfort and protection from the elements, safety from one's enemies, and a secure place for the storage of animals or the production of food. The effectiveness of the courtyard is evidenced by its continued use, from inception to the modern day, uninterrupted in history with minimal change of design.

One of the earliest courtyards we have record of is that of the Garden of Sennefur, constructed during era of the New Kingdom. The garden is composed entirely of a courtyard space, enclosed by a surrounding wall. Inside of the courtyard, proffered protection from the sun and wind of the Egyptian desert, flourishes a garden replete with ponds, vineyards and orchards (Jellicoe and Jellicoe, 1995).

Because of their ability to provide protection from a harsh climates, courtyards were used extensively throughout the ancient world. Their form would



Figure 6: Plan of Douar Oulad ech Cheikh (buildings appear in black), Morocco. Courtyards have traditionally been used in regions with hot climates as a means of cooling the building. Anciently they were used as a method of providing security.

vary depending on the climate in which they were constructed, responding to meet the need for comfort and protection in nearly any climate. Courtyards in a colder climate were wider so as to allow more sun into the space to warm it. Conversely, a courtyard in a hot climate was typically smaller so that the surrounding walls or buildings shaded the courtyard, limiting the amount of sun to reach the space and thereby keeping it cooler (Keister, 2005).

Greece and Rome (800 BC to 500 AD)

The waning of the power and cultures of the ancient Middle East coincided with the emergence of Greece. Despite the hot, Mediterranean climate of the Greek peninsula and Greek exposure to the Middle Eastern cultures through trade and conquest, the Greeks did not utilize the courtyard as extensively or in the same manner. Unlike the external courtyards of the Middle East, Greek courtyards were typically a room inside the house, connected in only a limited manner to the outdoors. The Greeks don't appear to have created many true garden spaces connected to their buildings, and they do not appear to have many physical connections between the indoor and outdoor environments.

However, the Greeks were adept in the art of *genius loci*, siting and constructing buildings that were connected to the land in both a visual and spiritual manner. The best examples of this are typically found in the monumental architecture of the Greeks, rather than in their residential architecture. For instance, the location of temples were often related to the specific physical characteristics of a site that gave it special meaning to the Greeks. The construction of a temple on a site could be viewed as an act of reverence towards the site, the physical manifestation of a deep held belief that the location was particularly sacred. This symbolic connection to the land, a metaphysical indoor-outdoor relationship, would have been easily understood by someone who was within the milieu of ancient Greece, but unfortunately the

power of the connection fades the further removed in space and time one is (Jellicoe and Jellicoe, 1995).

The Greeks interpretation of *genius loci* was not limited to matters of spirituality, but they would physically relate their architecture to the surrounding landscape as well. Often this was done as a matter of practicality, although the Greeks built many monumental structures they lacked several basic construction methods, most notably the archway, that prevented them from having greater reign in the siting and construction of many of their larger structures. This was particularly true in the case of amphitheaters which, in order to accommodate the needed rise for seating, would take advantage of the natural topography of a mountain side. This blended the architectural space of the theater into the natural landscape, softening the visual impact of the structure and also connecting it to the landscape (Rogers, 2001).

The Greek *agora*, or marketplace, is one of the earliest examples of the urban plaza, though more rudimentary than ones that would shortly be developed in Rome. The basic design of the *agora* changed little over the years, though one significant addition was that of trees to the space. The trees were used as a method of creating sub-spaces within the agora which were used by the philosophers for outdoor teaching. This is a good example of using pliable landscape elements in an architectural style, blending qualities of both the landscape and architecture in the same space. Because we do not know the exact placement of the trees in the agora we do not know how their locations related spatially to the surrounding buildings, if they drew guidance from the

edges or forms of the structures, or if they were placed irrelevant of the buildings surrounding the agora.

Often found surrounding the agora were *stoa*, which were large covered walkways or columned structures open to the outside on at least one side and covered with a roof. These structures were used to offer protection from the heat and elements while providing a location for meetings or markets. When a stoa opened onto an agora it would strengthen the indoor-outdoor relationship because the open space of the agora would provide an immediate and significant visual prospect of the outdoors. The stoas are the best example of a true indoor-outdoor relationship in ancient Greece as it provided both visual and physical connections between the two spaces (Rogers, 2001). (See Figure 7)

Eventually, the center of civilization in Europe shifted to the east, from the Greek peninsula to the neighboring Roman peninsula. The Romans borrowed many ideas of classical civilization from their Greek counterparts, which is apparent in the styles of Roman art and architecture. However, the Romans developed many important advances in technology that allowed them to explore alternate forms of architecture that previous civilizations had been unable to, due

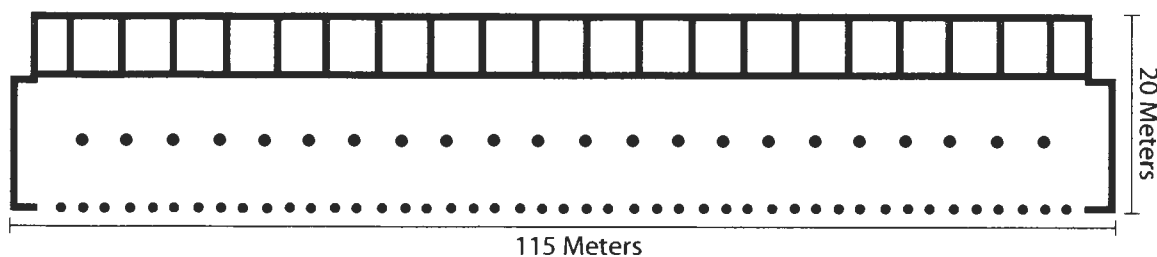


Figure 7: Plan of the stoa of Attalos in Athens. One side of the building was open to the agora by means of a series of columns.

to technological limitations. Perhaps the most critical of these discoveries was the arch, which made it possible for the Romans to span greater distances and create taller structures than the Greeks had been able to. The ramifications of this technology is evidenced by the Roman construction of elevated amphitheaters built on level ground (such as the Colosseum), which is in stark contrast to the Greek method of building an amphitheater into a hillside to achieve the necessary rise.

As Roman technology advanced, their ability to overcome environmental obstacles increased as well. While the Greeks had introduced the rectilinear planned communities to Europe, it was the Romans that perfected this model and proceeded to stamp it across Europe. Hundreds of towns across Europe retain remnants of the typical Roman settlement pattern, containing a forum and gridded street pattern, an ever-present reminder of the power and achievement of the Romans. Roman roads criss-crossed the continent, as straight as possible, regardless of the terrain over which they crossed. For the Romans, the natural environment was less of a concern, rather the empire was built on a quest for efficiency that only a bureaucracy could love (Newton, 1971).

Further evidence of this can be seen in the continuation of the Greek practice of exporting their architectural style throughout their empire. It is easy to distinguish the work of Roman architects and engineers because the forms, styles and techniques used were essentially identical throughout the entire empire. With limited modifications, a Roman house, or *domus*, in Italy looked identical to one you might find in Spain, Egypt or England. Though the style and

form of Roman architecture may not have reflected the surrounding landscape, the use of local materials meant that the structures did have a limited degree of visual integration with their milieu.

Despite Roman construction methods, which often produced structures that appeared to be placed on the land than in it, the Romans developed several of the most endearing and valuable techniques for creating good indoor-outdoor relationships. For the most part, these techniques developed as a functional solution for dealing with the hot summers of the Italian peninsula, when it was difficult to have comfortable living conditions during the day. Incorporating the outdoors into their architecture was an effective method of cooling the interior environment, providing shade and allowing for the movement of air throughout the structure.

Some of our best knowledge of residential Roman dwellings come from the city of Pompeii, where many of the villas and domus were preserved by ash from the cataclysmic eruption of Mount Vesuvius. The House of the Vetti illustrates many of the best techniques used by the Romans to connect their internal and external spaces, using physical, visual, audio, olfactory and symbolic connections between the two. The house is roughly square in shape, with an offset entrance into an entry foyer space leading into the atrium, an open room with a *compluvium*, or opening, in the ceiling to let natural light into the space. The light entering through the compluvium draws the eyes upwards into the sky, encouraging a visual connection with the outside. Below the compluvium would be located the *impluvium*, a sunken pool used to capture rain water that was

channeled off the roof and through the compluvium above. This water would then drain to a cistern below for storage and later use. The opening in the ceiling gives the atrium an airy feeling, with the natural light filtering from above suggesting to the mind that there is no protective overhead plane, that in fact one might be in an external courtyard rather than the heart of the house (Newton, 1971).

The atrium also produced deeper, though ephemeral, moments of connection between the indoors and outdoors through the rainwater collection system. During a rainstorm, the water pouring through the compluvium would produce a lively rush of sound as it fell and splashed into the impluvium below. Similarly to how one might open the window during a thunderstorm to take in the smell and sound of the rain, a resident of the house might have sat in the atrium observing and enjoying the sound and scent of the falling rain. Once again, though in the middle of the house, the opening in the ceiling created the appearance that the atrium is an outdoor space as much as an indoor one. (See Figure 8)

Adjoining the atrium is the second open-air room in the house, a *peristyle*. The peristyle was an interior courtyard in a house, surrounded on all four sides by *porticos*. The peristyle in the House of the Vetti measures roughly 90 feet by 60 feet, with the internal courtyard space roughly 60 feet by 30 feet. This creates ample room in which to create an attractive landscape within the courtyard, encircling it with a walkway wide enough to accommodate most indoor pursuits. Protected by the encircling walks the user has a sense of enclosure, being

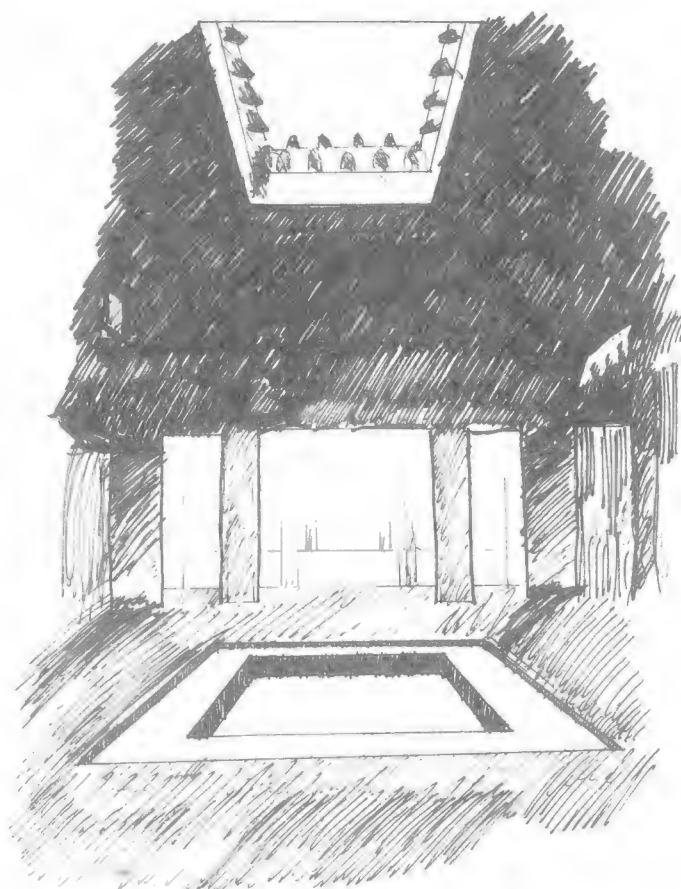


Figure 8: The atrium of the House of the Vetti in Pompeii, with the compluvium in the roof and the impluvium in the floor. The compluvium drew light into the middle of the home and also served as a means of water collection. During rain, water falling on the roof would be channeled through the compluvium into the impluvium, from where it would drain to a subterranean cistern.

provided with the familiar trapping of the architectural environment on all but one side, which is open to the courtyard. (See Figure 9) The interior courtyard of the peristyle provides the resident with the opportunity to take in the sights and smells of a garden space, and enter should he choose, leaving the protected confines of an interior space. Though not in the case of the peristyle of the House of the Vetti, many of these spaces integrated the interior and exterior spaces further through the use of wall paintings depicting floral and landscape

scenes. Often referred to by the French term *trompe-l'œil*, meaning trick of the eye, these visual images are intended to suggest a greater abundance of space and nature than was actually present, and draw that illusion of nature further into the architectural space (Newton, 1971).

The portico was another common architectural form used by the Romans that integrated indoor and outdoor spaces well. By definition a portico consists of a roof supported by columns, typically placed at regular intervals. It is typically oriented outward, most often taking the form of a porch located on the exterior of

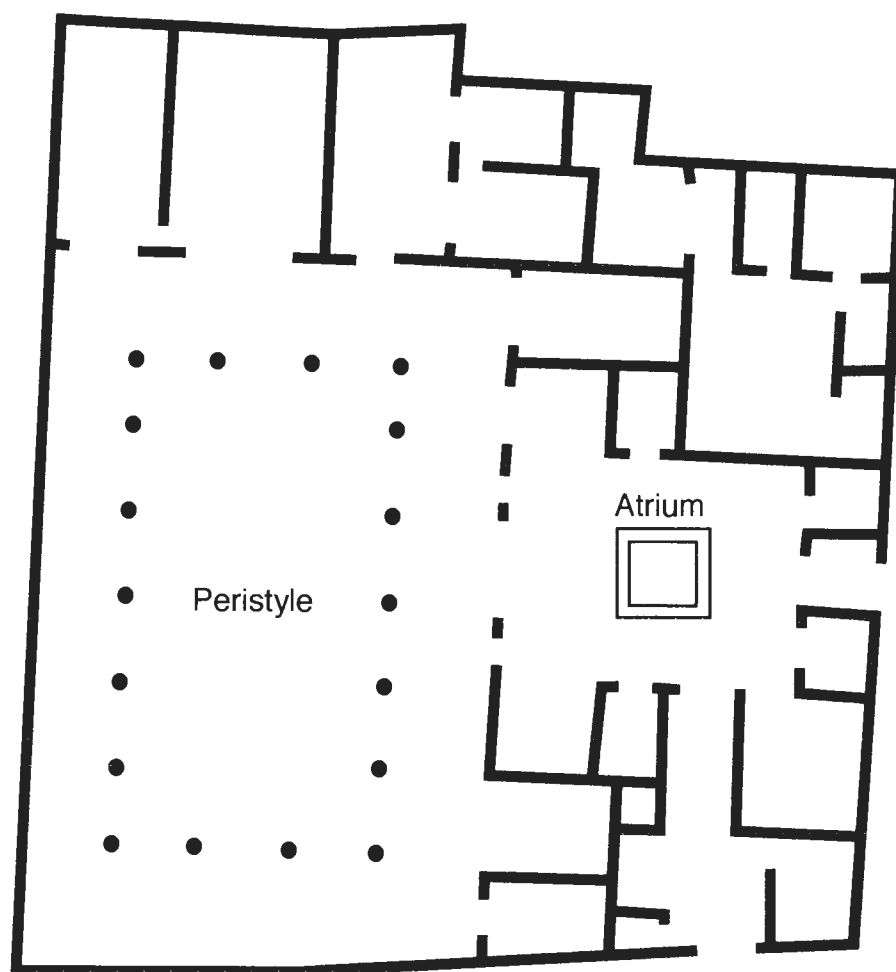


Figure 9: Plan of the House of the Vetti in Pompeii. The atrium was located near the entrance to the home, with the peristyle courtyard located adjacent.

the building, though they can be found in internal spaces, such as the peristyle, where they were used to surround the courtyard. (See Figure 10)

One of the guiding principles of Roman design was the idea that an axis should serve as the central focus around which the design would be built. Typically one, or both, ends of the axis would highlight a focal point, often a statue or structure, but these axes would also be aligned according to a particular element in the landscape or a scenic view. This technique is useful in creating a



Figure 10: St. Paul's Cathedral in London features a large portico. Photo: Benjamin George

visual connection with the landscape, even if the object of attention is miles from the site. The extensive use of axes in Roman designs was also often a detriment to the indoor-outdoor relationship of the site by imposing too strict of an order upon the land. Several examples of this occur at Hadrian's Villa in Tivoli where, in order to preserve an axis, the Romans had to build large retaining walls that emerge from the earth. Additionally, by its very nature an axis may detract from the landscape while emphasizing the architecture because the straight line so rarely occurs in nature that it feels out of place in the landscape. As mentioned earlier though, it is possible, when treated correctly, that an axis can help to reinforce the indoor-outdoor relationship of a site (Rogers, 2001).

Medieval Europe (500 AD to 1500 AD)

As the Roman empire collapsed, much of Europe fell under the rule of small kingdoms or fiefdoms which no longer had the resources to build and maintain large villas or estates. Additionally, the social order provided by the Roman empire disappeared and was replaced with an anarchic system of conflict and competition between kingdoms. During this time of increasing violence and fear architecture took on a very inward orientation, with the main focus on providing security. The indoor-outdoor relationship often suffered, as larger windows that permitted air and light into the building in abundance were replaced with increasingly smaller windows until they reached the extreme of an arrow loop, permitting merely enough space for an archer to see through to aim and fire his

arrow. Structure such as porticos were impractical as they were not defensible from the ground level, yet once an enemy was within one they were protected from attack, by defenders from above, by the porticos roof. The techniques used to create the transition spaces that embodied a good indoor-outdoor relationship were largely abandoned as Europeans sought to to close themselves off from the surrounding landscape in the interest of security.

Nearly all of the indoor-outdoor spaces of this time were internal courtyard spaces. The most common was the cloistered courtyard, most often built in religious buildings such as monasteries or cathedrals. While similar in most respects to the peristyle of the Romans, there are some noted differences between the two. The covered walkway, or *ambulatory*, that surrounds the courtyard has vaulted ceilings rather than the flat ceilings found in a peristyle. The cloister was designed mainly for religious contemplation, and as such its decoration was usually more austere, both in the courtyard and within the ambulatory, than the peristyle would have been. Despite their austerity, they have an excellent indoor-outdoor relationship, being open to the outdoors yet providing protection at the same time. In this turbulent time though, the cloister was a rare example of the indoor-outdoor relationship (Rogers, 2001).

Islam and the Moors (650 AD to 1500 AD)

Despite the best efforts of European kings to defend themselves, their territory was steadily encroached upon by a growing power: the Islamic empires

that emerged from the Middle East. The Islamic empires of the Umayyad and Abbasid caliphates brought stability to large swaths of the Mediterranean and Middle East, and with peace came a new found renaissance for the indoor-outdoor relationship. The undisputed masters of the technique were the Moors in Spain, who not only were unparalleled in their region at integrating the indoor and outdoor environments, but are arguably the greatest masters of the indoor-outdoor relationship in history due to their near total integration of the architecture and landscape in many of their designs.

Despite using many of the same techniques that had been previously developed in the Middle East, and by the Greeks and Romans, the Islamic cultures developed a different style and feel in their indoor-outdoor relationships due to a combination of environment and religion. Because many of the indoor-outdoor spaces were closely associated with important religious ritual, these spaces had a deeper interconnection, linking the architecture and landscape of the physical world to a spiritual dimension. The introduction of this spiritual element added a new dynamic to the indoor-outdoor relationship by integrating these spaces into the daily fabric of life in a way previously unseen. A portion of one's spiritual salvation was tied to many of these spaces, and as such they became holy and revered places, they were no longer a pleasure place for the wealthy to enjoy, but were essential spaces available to all classes.

At the center of daily religious activities was the mosque, which ranged from small and simple buildings to monumental and awe-inspiring structures. Most of the larger mosques contained a large prayer hall, where the faithful

would gather daily for prayers, and adjacent to the prayer hall a large courtyard space, typically enclosed by internal porticos. The courtyard spaces of the mosques thus followed the basic pattern previously outlined by the peristyle. However, these large courtyards were much more architectonic in feel because of their austere appearance and typical lack of vegetation in the interior space. Oftentimes these spaces felt very heavy, despite being so open, because of the large surrounding walls and the use of heavy support pillars in the portico, especially in older examples from the Middle East. The architecture weighed heavy in these spaces, its presence pervaded every inch with few landscape features to push it back, illustrating the need for balance between the landscape and the architecture to create the most effective relationship (Stierlin, 2002).

In many instances the only landscape element in the courtyard was a water feature which acted as a focal point in the center of the courtyard. Typically these were in the form of a brimming fountain, where the water flowed over the edge of the fountain in a symbolic gesture. These pools were known as ablution pools, and were used for ritualistic washing prior to the performance of prayer. The water served as a stark counterpoint to the heavy architecture and dry environment of the courtyard, a literal spring of life in the midst of an arid environment. (See Figure 11)

Located in the center the courtyard with no other competing elements in the design, the fountain drew the mosque patron to it through its form and texture, in addition to its religious importance. In some instances the architectonic nature of the courtyard was reinforced by locating the fountain



Figure 11: A typical ablution pool or brimming pool, though in this case the water is low and does not brim over. These are used for religious cleaning prior to prayer. Photo: Benjamin George

within an open pavilion at the center of the courtyard, as is the case of the great mosque of Fustat. Once at the fountain, there is an immediate enticement created by the surrounding porticos, which proffered enclosure and coolness under their roofs. In some instances the connection between indoors and outdoors was improved by the use of water channels connecting the central

fountain to smaller fountains located within the portico spaces. The use of these additional fountains was found mostly in Moorish Spain and other territory controlled by the Umayyad caliphate and their allies, who seemed to have an extra sensitivity to the indoor-outdoor relationship (Stierlin, 2002).

Amongst the Moors the use of water was not limited to the brimming pool, but was used for other, solely aesthetic purposes. The most famous examples of this occur within the Alhambra and Generalife in Granada, which will be discussed at some length below, but there are several other outstanding examples. Within the Alcazaba Palace in Malaga a reflecting pool serves as the main focal point and axis of a courtyard and in the Aljaferiya Palace in Saragossa a reflecting pool is built beneath a portico at the end of an interior courtyard space, pulling the soft feel of the landscape inside while simultaneously drawing the architecture down into the landscape element of the the pool through the reflection of the portico's arches and ceiling.

In the Court of the Oranges of the Mezquita in Cordoba we find another valuable indoor-outdoor technique where plants are used to mirror, or repeat the specific forms of the building's architecture in order to blur the line between the built environment and the natural one in a more complete manner. The Mezquita is famous for its pillared interior, a vast expanse populated by columns and arches that create the feeling of a forest of stone. The exterior courtyard carries this feeling out of the structure by utilizing the same grid from within the building, but swapping the columns for trees. (See Figure 12)

The feeling that this creates is to suggest to the viewer that the expanse of



Figure 12: The Mezquita of Cordoba. The trees in the Court of the Oranges reflect the columns of the interior. The interior has often been described as a forrest of columns, a fitting description when considering their relation to the grove of trees in the courtyard. Photographs by Benjamin George.

columns continues beyond the walls of the building, a feeling that Jellicoe describes as "an almost mystical weaving of interior and exterior" (Jellicoe and Jellicoe, 1995). This technique permits the visitor to pass over the threshold of the building into the courtyard in the most comfortable manner, where there has been no change to the structure and styles used, only the materials that have been selected. In this instance the selection of tree type is of less importance, where all that is needed is a tree that provides clean vertical lines and a canopy high enough to create a comfortable ceiling.

The Moors were also master at using vegetation in other ways to integrate the architecture and the landscape, using plants to create multiple layers of interest within their gardens, with a back layer that transitions into the walls of the garden. Alternating layers of flowering plants and taller evergreen shrubs and trees, with climbing vines planted along the base of the garden walls. The use of climbing vines would especially have helped to soften the edge between the garden and the building, while the alternating layers of plantings were meant to be visually enjoyed while sitting under the shade of a tree or pavilion (Jellicoe and Jellicoe, 1995).

One of the world's greatest examples of an excellent indoor-outdoor relationship is the palaces and gardens of the Alhambra and Generalife in the southern Spanish city of Granada. This sprawling complex of two separate palaces, the Generalife preceding the Alhambra by several decades, integrate the interior and exterior so seamlessly that in many instances it is impossible to define the space as either architecture or landscape, but must be defined as a

transitory space between the two. The creation of the Alhambra and Generalife can be credited to many factors; it was the result of a happy convergence of a series of powerful and wealthy rulers who valued garden spaces, located in a perennially temperate climate at the pinnacle of Moorish art and culture in Spain (Grabar, 1978).

The Alhambra and Generalife complex is built on two adjacent hills, separated by a ravine, overlooking the city of Granada. Perched on top of the mountain, the complex commands an inspiring view over the surrounding landscape, yet it does not impose its presence upon its milieu to the degree one would expect. The many towers and varied building heights within the complex diffuse the visual weight of the structure by giving it a more organic feel, as if the



Figure 13: The Alhambra, in Granada Spain, is considered to be one of the best examples of the creation of the indoor-outdoor relationship due to its extensive use of many different techniques throughout the palace and gardens. Photo: Benjamin George

mountain had eroded around the buildings. By utilizing similar color tones as exist in the surrounding landscape the structure is further integrated into the mountain top. The landscape is used to blur the edge where landscape meets architecture, as the lush foundation plantings and trees that climb up the hillside embrace the palaces and soften their edges. Finally, through the use of a series of terraces the architecture of the palaces fuse with the landscape instead of controlling it. This is especially true in the case of the Generalife, where a large portion of the palace is composed of a series of garden terraces and courtyards (Grabar, 1978).

Moving into the internal architecture and courtyards spaces of the Alhambra, we find an even higher degree of integration between the indoor and outdoor spaces. Throughout the entire palace there is extensive use of *loggias*, internal spaces open to the outdoors by means of archways or large windows. They can be found on the ground level or on upper stories and differ from porticos in that they are a subtractive space, located within the building having the perforated wall flush with the facade, while a portico is an additive space built on the outside of a structure and projecting the space into the landscape. (See Figure 14) At the Alhambra loggias are used throughout the palace as a means of integrating the interior and exterior, located on multiple levels and in every part of the palace. The majority of the rooms and courtyards in the Alhambra incorporate loggias to some degree into the architecture. In a few locations, such as the Court of the Lions, porticos are used instead of loggia, but the effect remains the same. The extensive use of a combinations of loggias, porticos, and

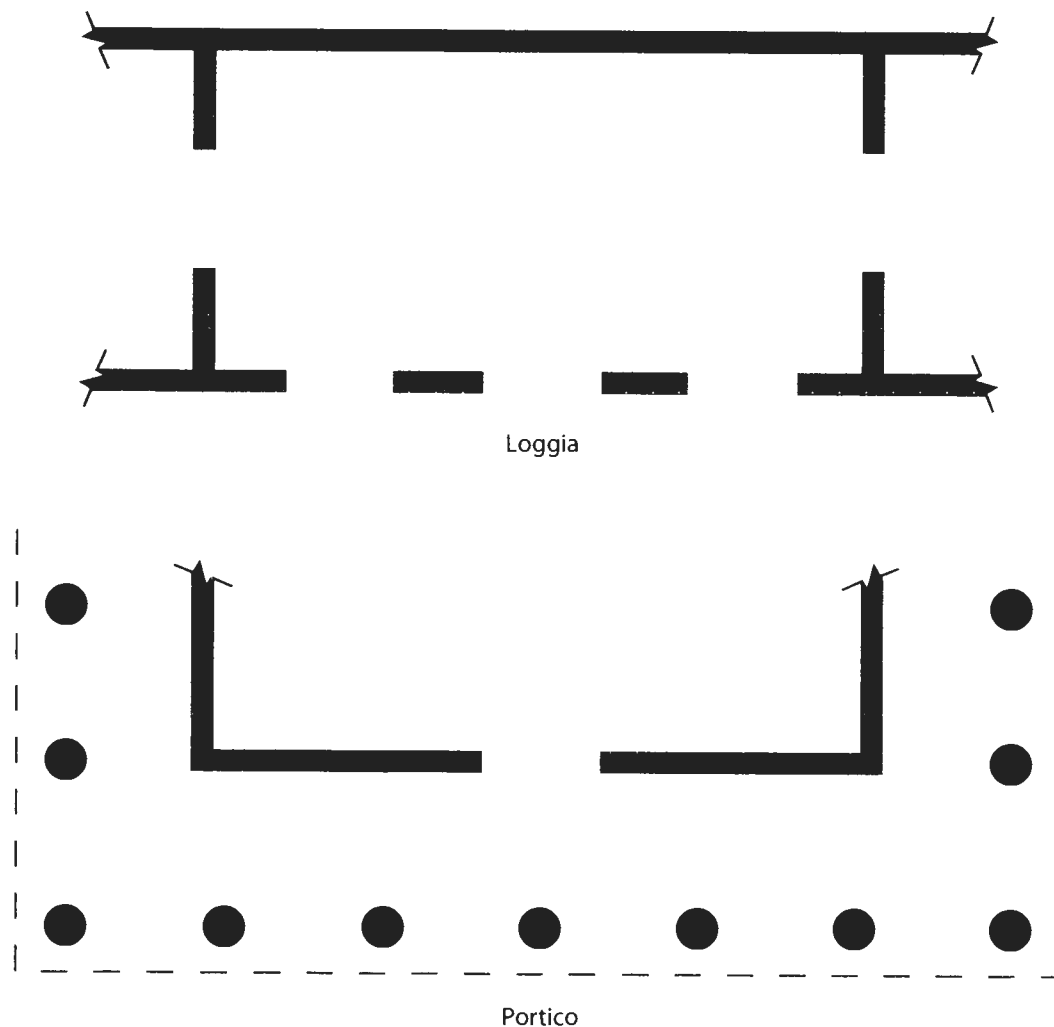


Figure 14: Plans of a typical loggia and portico. Loggias are subtractive spaces within a building while porticos are additive spaces attached to the exterior of the building.

internal courtyards creates the effect that one is constantly transitioning from the indoors to the outdoors, and that more often than not, it is impossible to define a space as internal or external.

In some locations, for instance at the Partal, loggias are located on either side of the building and sight lines have been created through the main room, making the structure feel lighter in the landscape while producing an inviting

internal space. Because of the second story and heavy tile roofing, the structure of the building is still felt, but is perfectly balanced with the landscape so that both elements compliment each other. In the instance of the Partal there is further visual integration through the use of a large reflecting pool in front of the building, which is designed so that the columns and arches of the loggia are reflected in the pool, but the heavier roof and second story are not, reinforcing the feeling of lightness in the structure (Grabar, 1978).

In the Court of the Lions, where porticos are used instead of loggias, the architecture is projected further into the courtyard on either ends, past the porticos by means of an attached pavilion. This unusual arrangement provides areas where one can move further into the courtyard while still remaining in the enclosed space. At the same time that the architecture further penetrates the courtyard the landscape is projected into the architecture; a series of fountains located in the pavilion and porticos connect to the iconic lion fountain in the center of the courtyard via a series of troughs. The physical connection of the troughs serves to reinforce what is already an audible and implied visual connection between the fountains in the courtyard. (See Figure 15)

Throughout the Alhambra and Generalife water is used as a focal point in most of the courtyard spaces. Often times it is used in the form of a fountain, as is the case in the Court of the Lion and the Court of Machuca, but in several other instances it occurs in the form of a reflecting pool, as in the Partal and the Court of the Myrtles. In the instance of the Court of the Myrtles, the reflecting pool serves as the main axis along which the space is orientated and, because it



Figure 15: A fountain and its channel in the Court of the Lions in the Alhambra. A series of fountains and channels flow from within the building and porticos of the Alhambra, out into the courtyard where they meet at the iconic lion fountain. Photo: Benjamin George

is a fully enclosed space, this serves to heighten the connection between the landscape and the architecture. At one end of the Court of the Myrtles is a loggia, while at the other end is a portico. Both spaces are open and inviting and aligned on the central axis and, with the reflecting pool pulling the architecture into the courtyard, act to draw the viewer through the landscape into the

architecture to create the prospect of movement to the other side, regardless of which end of the courtyard is being viewed. This is an excellent example of integration because it is not dependent on the visitor being in a certain location to fully appreciate the connection between the indoor and outdoors, but rather is all-encompassing of the entire courtyard space with its surrounding buildings.

Though it is difficult to know exactly how the plantings in the Alhambra would have looked at the time of their creation, the current planting design works effectively to reinforce the relationship between the landscape and architecture. As previously mentioned, lush plantings outside of the walls help to lighten the visual impact of the palace complex. These external plantings are complimented by a multitude of trees planted in internal courtyard spaces that are visible from outside the complex, further integrating the architecture into the landscape by demonstrating that the space beyond the walls is not a vast expanse of rooms, roofs, and hardscapes, but rather a series of buildings built within a forest of trees (Grabar, 1978).

Internally, the palace vegetation is much more diverse than a bosque of trees, incorporating planting elements at some point on nearly every level and plane. In many cases the outline of a wall is softened by vines, or rich foundation plantings that extend both up the wall and out from it. In other places, potted plants draw the landscape into spaces above the ground plane, trailing down a wall or spreading across a parapet, giving the architecture a more organic feel. In several instances the Alhambra and Generalife use the same technique seen in the Court of the Oranges in Cordoba, utilizing tall, columnar trees in a



Figure 16: Columnar trees mimic the pillars of the portico surrounding this internal courtyard in the Alhambra. This repetition of form helps create a unified feel throughout both the architecture and garden. Photo: Benjamin George

courtyard to mimic the columns of the surrounding porticos and loggias.

Finally, it is impossible to discuss the Alhambra without mentioning the ubiquitous fine detailing of the palace. Of especial interest to the indoor-outdoor relationship is the fine carved stone latticework that can be found in archways of exterior walls and courtyard spaces. This detailing, intricate and delicate, and so profuse that it can be compared to leaves of stone, a veritable carved forest, where the stone is eroded in a subtle manner that enhances the integration of the indoors and outdoors. (See Figure 16) It is firmly rooted in the architecture because of its material and position, yet it suggests elements of the landscape

because of its perforation and lightness. These elements are an adequate summation of the Alhambra and Generalife, a delicate balance of the indoors and outdoors nearing a level of perfection that is difficult to match.

Italian Renaissance (1300 AD to 1500 AD)

Following shortly after the fall of the Moors in Spain, the Renaissance in Italy led to the incorporation of many of the same indoor-outdoor techniques used by earlier societies into Italian architecture, especially in the country villas that began to dot the Italian countryside. Most notably, Italian designers carefully studied the works of their Roman predecessors, a reflection of the fundamental change in thinking that was occurring in Italy at this time. With the fall of Constantinople in 1453, a mass of scholars, historians and artisans flooded into Italy, bringing with them ancient texts and reviving an interest in the art, culture and philosophy of ancient Greece and Rome. This provided an existing, albeit small, Humanist movement the impetus needed to begin to transform Italian society through a reawakening of the arts and humanities. Under the stewardship of the Medicis in Florence, the Renaissance spread throughout Italy before being exported to elsewhere on the continent.

During the Renaissance a major shift occurred in the orientation of architecture in relation to the surrounding landscape. As was the case throughout the rest of medieval Europe prior to the Renaissance, security was the utmost concern, and urban landscapes were dominated by domineering

structures such as castles and large walls. The goal of these structures was to keep the surrounding landscape and the surrounding world out. During the Renaissance however, mankind began to venture out of his fortified enclosures once again and rediscovered his natural landscape. Additionally, it is important to note that the villas that began to be built were often constructed solely for the sake of enjoying the landscape setting, and to provide respite from the urban environment in order to refresh the soul and study the humanities. Architecture was no longer limited to only satisfying the needs of society, but there was an opportunity to design buildings for recreational pursuits. As a result, the great villas of the Italian Renaissance are orientated outwards, embracing the outdoor spaces that surround them, relishing the opportunity to create an indoor-outdoor relationship that was enjoyable and functional (Newton, 1971).

Stepping back for a moment, first let us look at the general siting of Italian buildings. Some of the best examples of good integration between the architecture and landscape come from the hill towns of Tuscany. Located mainly between the coastal Maremma and the central Apennine mountains of the peninsula, these hill towns blend well with the surrounding landscape because their outline is shaped by the hill on which they are built. The effect is to create a town that seems to rise organically out of the landscape. Some memorable examples of hill towns include San Gimignano, Manciano and Pittigliano (Pregill and Volkman, 1999). (See Figure 17)

The integration of the architecture into the landscape is not limited to the urban scale. We can find the same integration occurring in the design of villas



Figure 17: The buildings of Pittigliano blend seamlessly with the landscape due to their use of native color schemes and a tiered shape that continues the form of the cliffs. Photo: Benjamin George

throughout the region. Many villas were located on hillsides to take advantage of the commanding views and slightly cooler environment the hills provided. While providing a beautiful setting, these locations also presented unique challenges in constructing any type of sizable structure on the sloped terrain. The solution the Italians most often used was extensive terracing and building their structures into the hillsides. An example of this can be found at Villa Medici in Fiesole, where a series of terraced gardens were created to accommodate the natural grade change. In the front of the house a long rectangular garden stretches out from the house, while in the rear of the house is a second terraced garden several feet

lower than the front space. In the twentieth century a third terrace was added below the house and connected to the uppermost terrace by means of a stairway and pergola. At Villa D'este in Tivoli many of the architectural features on the site have been built into the hillside, or appear to have been, by the placement of plaza or garden spaces above them. This creates the illusion that the architecture has been carved out of the hillside, thereby making the spaces within these structures appear to be more fully part of the landscape than in fact they are.

Just as was the case with the Moors, the *loggia* was a very popular technique among Italian designers to create spaces that connected the indoor and outdoor environments. Not used as prevalently as in the Alhambra, nevertheless they were a prominent and defining element of Italian Renaissance architecture, with every substantial villa of the era incorporating at least one *loggia* into their design. The *loggia* served the important functional purpose of providing an area within the architecture that was kept cool during the summer yet would be warmed by the rays of the low sun during the winter months. Additionally, the *loggia* was often located to take advantage of particular views of the landscape or garden, with the arches or columns of the *loggia* structure framing the view. This further connected the indoors to the outdoors by giving the illusion of a semblance of organization and control of the landscape and, through framing desirable views, offered an invitation to the viewer to enter into the garden or surrounding landscape. (See Figure 18)

When the *loggia* was located on the ground floor it nearly always opened

onto a garden space that was usually kept in the manicured style that developed at the time. These formal gardens adjacent to the villa helped to strengthen the indoor-outdoor relationship in several additional ways. The first way was that the manicured plants, the trimmed boxwood hedges and other architectonic treatment of vegetation in the garden served to give the garden more of an controlled, indoor feeling. The landscape was less wild and unkempt, it now related visually and stylistically to the villa, as if it was an extension of the villa

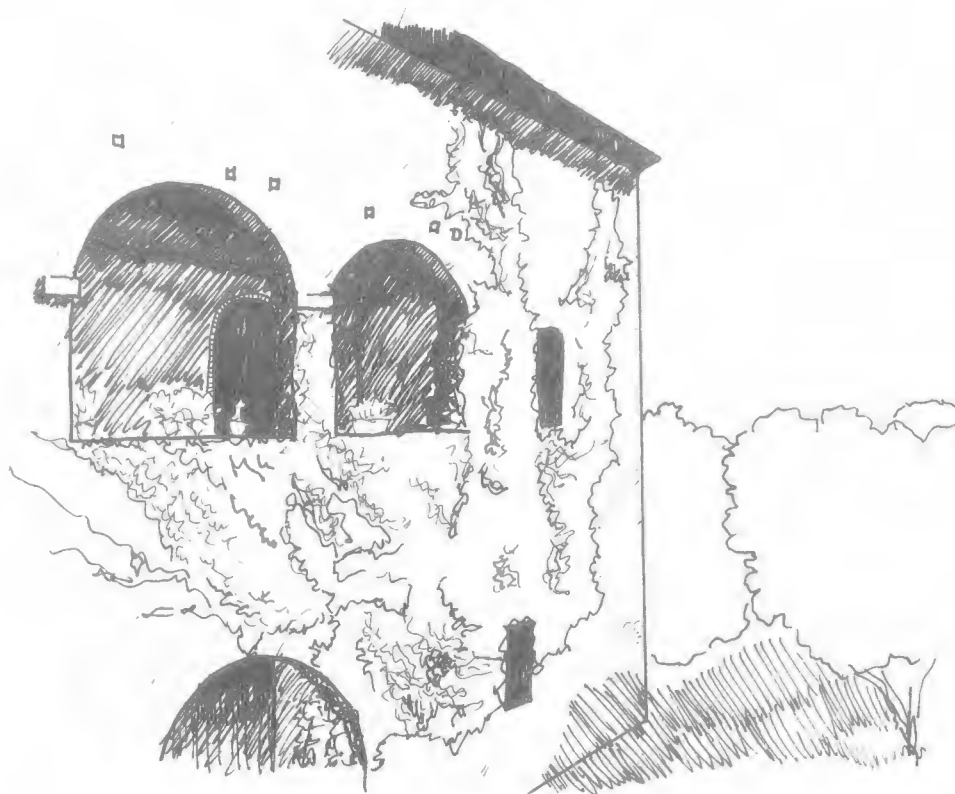


Figure 18: A typical Italian loggia. The loggia was frequently used by Italian designers because it provided a sheltered environment that allowed a person to enjoy the benefits of being outdoors without being exposed to the full effects of the sun and heat.

itself, merely created out of different materials.

This extension was further strengthened by the use of well-delineated patio or garden spaces hemmed in by low walls that were often times connected to the villa. The low wall bounding the site brought the architecture out into the landscape, enclosing it and pulling the landscape space within its boundaries closer to the building in an architectural 'hug'. An excellent example of this, while not attached to a residence, is the Piazza del Campidoglio in Rome, where the northwestern edge of the plaza is defined by a low wall that, despite its diminutive size, helps create a sense of enclosure in the plaza when combined with the other elements. The Villa Medici at Fiesole also provides an excellent example of this, where the retaining wall of the terrace is topped by a low wall that delineates the garden space and attaches to the corner of villa. A further example of this is the bottom terrace garden at Villa Lante, which is enclosed by a series of hedges and building faces, the ends of which connect to the two separate villa buildings. Here there is a greater sense of enclosure because of the height of the surrounding elements (Newton, 1971).

The Italians also used architectural elements extensively through their garden spaces, which helped to connect the garden to the building and to draw the feeling of the indoors into the garden spaces. Villa Lante is again a good example of this as there are a series of architectural features throughout the garden. On the uppermost terrace of the garden two casinos, open-air pavilions in a classical style, help create a strong axis at the top of the estate which runs through the entire site, thus anchoring an architectural element at the head of the

design. Directly behind the casinos, and filling the space between them, is a grotto and pool, whose water feeds the water features on the terraces below. The space in front of the casinos contains a fountain, which leads to the famous water chain that empties into a tiered fountain flanked by a pair of stairways. The grade change is managed by means of a terrace topped by a balustraded stone rail. The terrace itself is fronted by a retaining wall of cut blocks with insets decorated with classical statues. In front of the fountain is the Cardinal's Table, a stone eating table with a water trough in the middle of it. Although this area is certainly an outdoor garden space, the many architectural features and the space's dining function, an activity closely associated with the indoors, combine to give the space a degree of indoor feel.

Another water feature is incorporated into the wall of the next terrace, with the step leading through the middle of a descending tiered fountain. While this space does not create an indoor-outdoor feel by itself, it contributes to the effect throughout the site because it continues to carry the architecture through the garden. From this space you descend into the bottom terrace garden by means of a pair of small staircases tucked against the sides of the two villa buildings. This space between the buildings is integrated into the architecture by means of the low wall running between the two buildings, interrupted only by the entrances to the stairs.

The bottom terrace contains a series of parterre gardens surrounding a central, quartered fountain with a raised water feature in the middle. This courtyard is enclosed by hedges and buildings, the most prominent being the pair

of villa buildings that loom on the south side. These two buildings play an important role in creating an indoor-outdoor feel in the space because they are the architectural elements off of which the other elements of the space are projected and connected to. The balustraded walls that edge the pools pull the architecture out into the space owing to their similar style, color and material in relation to the buildings. Looking across this space back towards the villa, the layers of walls and hedges give the impression that the entire space is an extension of the villa. At the front of the courtyard the entrance to the villa is composed of a heavy stone arched gateway topped with a classical pediment. This archway matches the style of the villa buildings, and completes the integration of architecture and landscape that began at the top terrace with the two casino structures, and was carried throughout the entire villa grounds by means of the terraces, water features, and buildings. While not utilizing many techniques that directly connect the indoors to the outdoors, a strong indoor-outdoor relationship is created on the site through a series of techniques that creates an implied relationship between the indoor and outdoor spaces (Rogers, 2001). (See Figure 19)

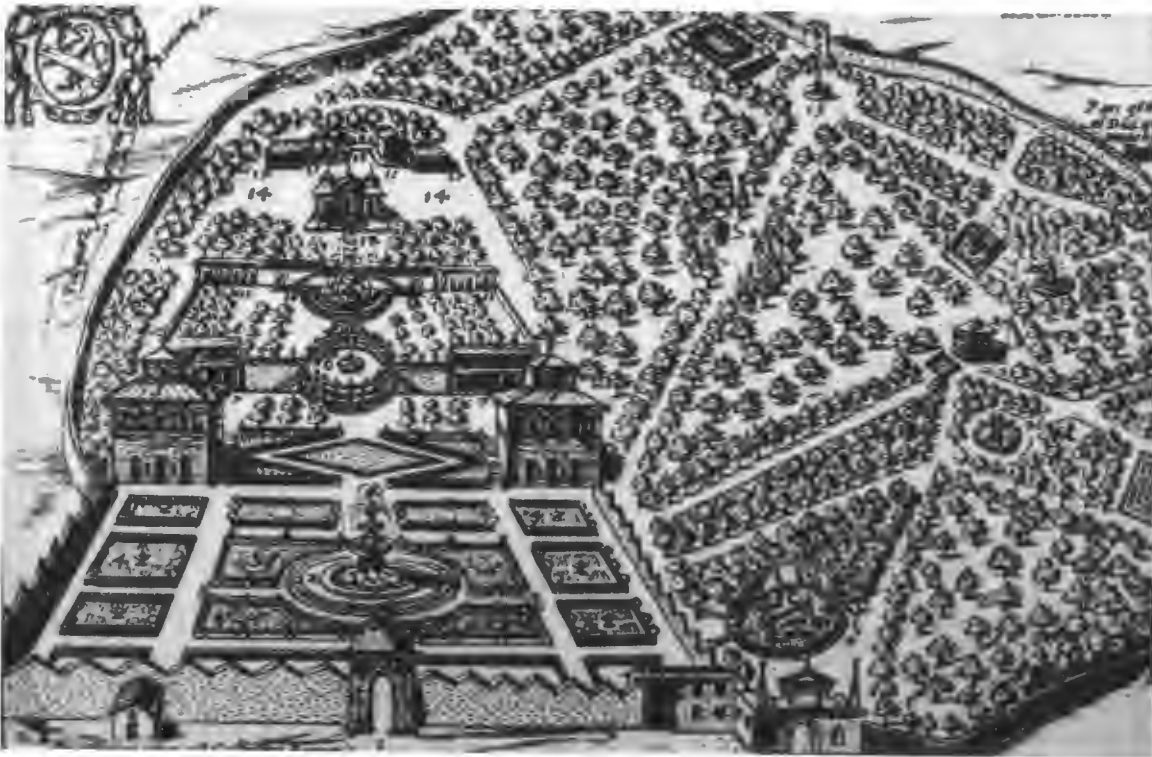


Figure 19: An historical illustration of Villa Lante. The main portion of the villa and gardens can be seen in the left of the image. The garden is famous for its terraces, but it is also a good example of how the architecture can be integrated throughout the landscape. In this case it is achieved primarily through the use of architectural structures placed throughout the garden that give the architecture a continued presence throughout the site. Source: <http://instruct1.cit.cornell.edu/>

China and Japan (200 BC to present-day)

The eastern cultures of China and Japan have a rich garden tradition that has incorporated not only physical manifestations of the indoor-outdoor relationship, but also symbolic manifestations as well. The gardens of China and Japan were both heavily influenced by the spiritual ideologies of Taoism, Buddhism and Shinto. The goal of the garden was to create a space in which man could live “in spiritual harmony with nature” (Rogers, 2001). As such the



Figure 20: The whitewashed walls in this Chinese garden serve as the perfect backdrop for the display of the plants and help the building to recede into the landscape due to their simpleness. Photo: Pamela George

gardens of the Orient served an entirely different function than their western counterparts. Rather than being a place for relaxation and pleasure, the garden was meant to be a place of contemplation and reflection on nature, man and the relationship they shared.

In Chinese gardens the most common technique of segregating space is the wall, typically whitewashed, and interrupted by the circular moon gate (used to suggest entry into a spiritual place) and windows of various sizes. The walls may be used to create hallways and rooms, creating what practically amounts to a garden house with no roof. The use of the walls creates a series of spaces

with varying degrees of enclosure that combine to give the garden a strong architectural order. At the same time, the walls are softened by heavy plantings that use the white-washed walls as a backdrop upon which a scene is painted in vegetation. In these walled spaces, though there is rarely any form of architectural overhead, the enclosing walls and carefully composed planting designs combine to create a feeling of being in a space that feels as if it is indoors and outdoors at the same moment. (See Figure 20)

While each space is basically a self-contained courtyard garden in itself, all the spaces are carefully choreographed and connected together. One of the techniques used extensively to draw first the mind, then the body, are the inclusion of small windows, sometimes grated, in the walls. These windows typically are located to provide a view of a particular element of the garden, or the landscape, that is meant to invoke a certain feeling or thought. In modern design this technique would best be described as 'conceal and reveal.' The object of attention is visible only from a certain spot, or only for a moment as one is moving by; and it is only by moving through the garden that one can glimpse a new view of the object or hope to approach it. This projection of the mind, creating the desire to move deeper into the landscape, was also used from within the house. In this instance the window would be larger, and frame a larger landscape image, but the principle of creating interest, which would in turn motivate the viewer to seek to interact with the landscape, is the same.

A similar visual technique was the use of borrowed scenery in Chinese gardens. This typically involved foreshortening the view of a particular element in

the surrounding landscape so as to make it appear closer to the garden than it actually was. For instance, a wall or planting in the garden might be placed so as to obscure other buildings or features between the garden and the object.

Without these additional visual layers serving as a reference point for the eye, the desired object appears to move forward in the view frame, allowing it to play a more prominent role in the garden. This technique was developed in China but was adopted and used extensively in Japan as well.

Water was an important element in the Chinese garden and was used extensively, with most gardens containing some type of pool. The water helped to unite the architecture and landscape in two ways. The first was through reflection which, as mentioned previously, creates the impression that the architecture is being drawn down into the landscape. The water of the pools also served an important role in creating a shared link between the architecture and the landscape. Typically the home or other garden structure bordered on the pond, giving one portion of the water an architectonic edge, while the other side of the pond would usually be a naturalized landscape. In this way the plane of calm water served as a connecting mechanism that the two disparate elements jointly shared, creating both a visual and symbolic relationship between the architecture and the landscape.

Chinese buildings within a garden had an extensive series of covered porches and overlooks. This transition space was an important element of the Chinese garden by providing an area for walking while contemplating the garden, while at the same time providing protection under the eaves. The ample

provision of porch space demonstrates that these garden homes were meant to be enjoyed outside as much as from within.

A good example of several of these principles can be found in the Garden of the Master of the Nets in the ancient Chinese city of Suzhou. At the center of the garden, surrounded by the house complex, is a modest-sized pond that is visible from most parts of the house. In several locations along the pond the architecture comes out right to the edge of the water, with only a few rough-hewn rocks as a transition. These viewing spots, whether a separate pavilion, covered walk or porch of a building, all provide an attractive view of the garden and other parts of the home while creating a sense of being both indoors and outdoors at the same time. Separate courtyard rooms flowed out from the central garden space, demarcated by walls and the placement of buildings. These spaces have an intimate feeling, enhanced by overhanging roofs or trees and a paved ground plane, that make the visitor feel as if they are in a room of the house that is merely more open to the air. (Rogers, 2001)

Chinese garden design was exported to Japan in the sixth century, and while it has evolved and been adapted to the unique physical, cultural and spiritual landscape of Japan, a strong connection between the two styles is still strongly visible. Both styles share a common emphasis on water, stone and landscapes in miniature among other things. Both styles also have produced a strong indoor-outdoor relationship, which is expressed slightly differently in the Japanese garden, but to no less effectiveness.

In Japan, the garden was viewed as a critical element of daily life. While

most of the famous Japanese gardens were larger, estate gardens of the elite, garden spaces were incorporated into the living space of the lower classes as well. Courtyard gardens were built into urban homes because "it was believed that people would have suffocated without [them]... the garden became a necessary part of the environment" (Ohashi, 1997). The garden provided a cool retreat within the house during the hot summer months.

There are several types of Japanese gardens that developed either to fulfill a specific use, or as a reaction to a change of philosophy. Some common Japanese gardens were the *Karesansui* garden, the minimalist dry gardens of Zen Buddhism; the *Chaniwa* garden, designed for the holding of the tea ceremony and consisting mainly of a path intended to prepare the mind and soul for the tea ceremony; the *Tsukiyama* garden, literally an artificial hill garden, meant to copy the landscape in miniature; and the stroll garden, a garden that contained a series of composed views meant to be experienced in a particular order while walking through the garden. While there is a large degree of variance in the appearance and treatment of the landscape in each of these gardens, the framework of interaction between the architecture and the garden remains fairly constant (Rogers, 2001).

Japanese architecture fit well in its natural surrounding because the form appeared softer and lighter and because of the extensive use of wood in the construction. While Japanese architecture is simple in form, it contains few truly straight lines, which breaks up the form of the building in the landscape and blends the two together more completely. Roof lines often changed pitches, or

were curved. Owing to a frequent use of porches, the roofs often cast a shadow on nearly the entire exterior wall of the buildings, causing the heavier interior structure to recede into the background. The roofing material was traditionally made of a tile in the same color palette as the surrounding landscape, causing what would normally be a very dominant visual feature to instead blend into the landscape. Additionally, Japanese buildings were often slightly elevated off of the ground by means of small posts. This further reduced the visual impact of the structure by making the building appear to be lighter, as if it was somehow effortlessly floating above the ground. (See Figure 21)

Traditional Japanese buildings also used wood extensively, if not exclusively, as their primary structural material. This clearly organic material is closely connected to the traditional forested landscape of Japan which is heavily represented in many Japanese gardens. These organic materials create an appealing environment to man, that contrast from nature through their rational order, while simultaneously maintaining a strong connection to nature through an implied, physical connection (Miller, 1999).

The porch of a building is a very important element in the architecture of a Japanese home, perhaps more so than in its Chinese cousin. In the case of a free-standing building located in a large garden, such as a tea house, a house would almost always contain a porch on one side of the building, if not on all sides. The space beneath the eaves would receive the same architectural detailing that would be found within the house, stylistically connecting the open porch to the interior spaces. As was the case in Chinese gardens, these porch

spaces were sometimes connected by means of covered walkways, interwoven between the various pavilions and buildings of a site, especially on smaller sites where these structures were placed close together.

Whereas in Chinese gardens the connection from the transitional porch space to the true indoor space was controlled by the heavy walls of the home, with windows and the doors providing connection between the two spaces, in Japanese homes it was often possible to open the entire indoor space to the porch and outside, when desired, by the use of sliding wall partitions. These sliding walls gave the occupant greater control of the indoor-outdoor relationship



Figure 21: Although it is only subtle, the raising of the building on stilts causes it to appear much lighter in the landscape. Source: <http://commons.wikipedia.org>

by providing them with the ability to vary the degree of protection and enclosure provided by the architecture. When opened, the view of the porch extending out into the carefully choreographed garden creates an invitation to the viewer that is difficult to refuse. Oftentimes these views were supplemented using the same borrowed-scenery technique of the Chinese (Jellicoe and Jellicoe, 1995).

In the case of zen gardens, the ground plane of the garden was typically very uniform in appearance, consisting of either gravel or sand. When this bed of gravel or sand would abut the porch of a building it created a strong connection with the interior and exterior space because it created the illusion that the garden ground plane was an extension of the indoor ground plane. Both would have been flat surfaces, typically with little adornment and only slightly varying color and texture. When located next to the house in such a manner, the zen garden created a unique blending of architectural and natural forms in the landscape, with the ground plane being very architectonic in form and appearance, while at the same time this was offset by the organic rock formations or minimal planting.

In comparison to other Japanese garden types, the zen garden was much more architectonic, and this was further reinforced by the enclosure methods employed by the Japanese. When located in a courtyard, the zen garden would have typically been surrounded by the home and walls. These walls were created out of inorganic material, such as stone, which was then often white-washed to give it a more stark and clean appearance. This method of enclosure contrasts with courtyard miniature landscape gardens. In these gardens, the enclosing wall was a much softer material, such as wood or bamboo, that fit

better with the character of the garden. This demonstrates the acute understanding that the Japanese had on how the architecture and the garden interact, and how architectural elements can be used as tools to reinforce specific goals within the garden space (Pregill and Volkman, 1999).

In courtyard spaces the Japanese would often use techniques that would enlarge the space, making it feel more spacious and inviting than in reality it was. The walls of the courtyard would often be obscured through the use of lush plantings, a technique that gives added depth to the space. At the same time, the walls were usually kept visible, never fully eliminated from the courtyard space, except when it was the goal to borrow scenery from beyond the courtyard (Ohashi, 1997).

The plantings within these gardens also added to the atmosphere of the site and the connection with the indoors. Japanese gardens were highly artificial; that they resemble a natural landscape is a testament to the talent and meticulous attention to detail of Japanese designers and gardeners. Certain forms in the vegetation created connections to the architecture, most prominently the spreading form of the Japanese maple and evergreen trees. Often times these trees were pruned to emphasize horizontal lines that mimicked the tiered form of a pagoda, or the horizontal form of the front of the eaves the house. In courtyard spaces the trees were pruned up to create the overhead plane in the space, making a roof out of vegetation that would meet with the walls of the building.

French Renaissance (1500 AD to 1750 AD)

While the Japanese and Chinese gardens were heavily manipulated to recreate lush depictions of natural landscapes, French gardens were heavily manipulated to demonstrate man's dominance and control over nature, and not his integration or respect of it. While much of the design style and fundamental elements of the French Renaissance garden have their roots in the Italian Renaissance, such as the axis, classical style and country estate, the French created gardens primarily not for pleasure or reflection, but as an expression of power. With this purpose in mind it should be of little surprise that the indoor-outdoor relationship in French gardens is weak. The landscape was to be dominated, not integrated (Newton, 1971).

The primary mechanism of integrating the house and landscape was through the use of one or multiple axes on the site, with the house typically located along each axes. While this technique was used previously by the Romans, Moors and Italians, it was applied differently by the French, who used it at such a grand scale that the axis became the focus of attention and completely overwhelmed the surrounding landscape. An axis was rarely aligned to take advantage of any particular element in the landscape, and even if they had they were so large that they were uncomfortable spaces to be in because of their immense size. When Louis XIV took visiting nobility or foreign dignitaries through the gardens of the palace of Versailles, it was not done for them to marvel at the beauty of the landscape, or even to enjoy the experience, but

rather to demonstrate the utmost power of the king. Louis XIV's megalomania is further illustrated by the fact that the main axis at Versailles, one of the axes in France aligned for a particularly compelling reason, was so aligned in order that the rising sun would fall upon the head of the Sun King in his bedroom.

The landscape around the main buildings of a house or chateau were often designed so as not to detract from the house, as the focal point of the axis. As a result, the contrast between the architecture and landscape is typically very stark and abrupt. It is unusual to find any element of the facade extending out into the landscape, such as a portico, in any fashion other than stylistic gestures that created unusable spaces. The spaces found immediately around buildings typically fell into one of three categories: water, a manicured landscape ground plane, or hardscape. (See Figure 22)

Of the three, water is the category that has the most potential to create a good indoor-outdoor relationship, except that, in this instance, the water was almost always the remains or reconstruction of a fortified moat. This created little connection between the architecture and the landscape. The water was often too small to act as a reflecting pool and the water's surface was too far below the ground plane for an individual to interact with it, or gain much benefit from its cooling effect. (See Figure 23) Any vegetation near the building was always heavily manicured and kept at a low height so that it did not distract from the building. While preventing any softening of the building's form, this also reinforced the concept that the landscape is subservient to the architecture. The final category, that of hardscape, also provides little connection between the



Figure 22: The gardens around Versailles relate to the architecture only in their shared formality, and have few indoor-outdoor spaces. Photo: Benjamin George

interior and exterior. In some instances, the material used for the hardscape is the same as that used in the construction of the building, providing some limited visual connection; but this connection is often overwhelmed by the size and domineering position of the building. Furthermore, without any overhanging structure to provide comfort from the hot summer and protection from the elements of winter, the hardscape spaces surrounding the buildings are often uncomfortable climatically as well as spatially.

The French treatment of plant material in their gardens was equally autocratic. Most of the words used today that describe manipulative pruning

techniques come to us from these French gardens; *espalier*, *parterre* (from the French *pareterre de broderie*), *topiary*, *bosque* and pleaching (from the French *plaisier*) to name a few. Plants were rarely allowed to grow into a natural form, their form being dictated by meticulous pruning. Often these forms were very



Figures 23: The moats at Villandry do not permit interaction with the water and do little to improve the indoor-outdoor relationship between the building and the garden. Photo: Benjamin George

architectonic, such as cubes, cones and spheres, and did add a degree of architectural interest into the landscape, but did little to actually connect the landscape and the architecture, or create a transitional space (Hobhouse, 1992).

There are instances of sites during the French Renaissance that incorporate indoor-outdoor spaces into their design. When it does occur it is merely the repetition of techniques developed elsewhere with little innovation or adaptation to the site or climate. An example of this can be found at the Grand Trianon, built near the Palace of Versailles. The palace is composed of two separate buildings connected by a colonnaded space. This space serves as the entrance to the palace and as the connection between the buildings. This space provides a comfortable transition with enough enclosure that it feels like an indoor space, but it is amply open to the outdoors and allows for easy visual and physical access to both the front and back gardens.

English Gardens (1650 AD to present-day)

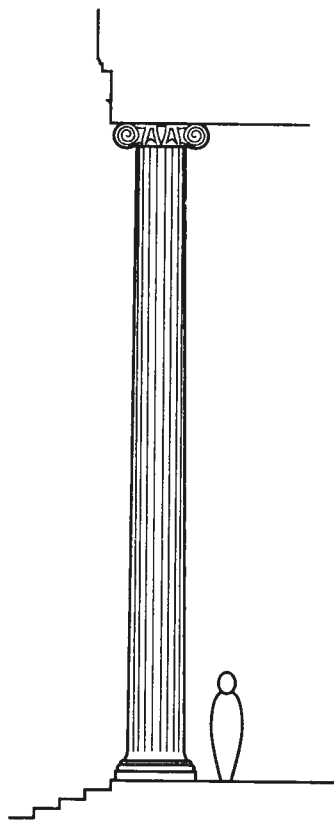
While England had its fair share of renaissance gardens in style similar to the French, a backlash against the French style gradually grew into a movement that swept England: the landscape garden. This was a reactionary movement, part aesthetic and part political, that rejected the finely manicured gardens of the continent in favor of a more flowing and naturalistic looking garden fitting with the English landscape. The English adapted the classical architectural styles, so popular at the time, and were particularly fond of the strict symmetry developed

by Venetian architect Andrea Palladio. This marriage of strongly symmetrical, classical and often monumental architecture to the flowing curves and edges of the naturalistic landscape style create quite a contrast that provides both interest and conflict in the English garden.

We'll examine the indoor-outdoor relationship of two English garden styles: landscape and formal. The landscape garden reached its zenith at the time of its most prolific designer, Lancelot 'Capability' Brown. Brown was so prolific in his design work that he single-handedly altered the nature of English gardens during his time, and the impact of his achievement is still felt today not only in England, but throughout the world. The landscape garden was meant to invoke a pastoral feel, not an image of the wilderness, but of managed nature (Newton, 1971).

In English landscape gardens there was a weak indoor-outdoor relationship. The garden was designed to be a picture to look at, and its peaceful setting would entice to the eye. Carefully crafted views from the house were constructed that might include any number of visual elements. But the architecture of the house had little connection to its surrounding landscape, rather it usually sat in a slightly elevated position, a monolithic structure that did not participate in the landscape other than as a visual focal point. Drawing architectural cues from Palladio as they did, English manor homes typically included some sort of *portico* on the front of the house, but the roof was often two or more stories above ground level, supported by large pillars, creating a space that was not intimate nor built at a human scale (Rogers, 2001). Had the *portico*

surrounded the building, as was the case with many Greek and Roman structures, these spaces would have been functional indoor-outdoor spaces as they would have been more in scale with both the architecture and the vast landscape. As they are now, they are too large to be comfortable as a space other than for moving through. (See Figure 24)



Scale: 1" = 10'-0"

Figure 24: The porticos of English manor homes were often too tall to create comfortable outdoor spaces built to a human-scale.

Placed throughout the landscape garden one would find secluded architectural elements such as pavilions or open rotundas. These were often substantial structures that were open to the air. Inside of one you have had a fair degree of enclosure, and they were typically built to a smaller scale than the manor house, and therefore were more intimate. However, because they were usually located quite a distance away from the main home, and because they were of little practical use, their indoor-outdoor relationship was limited. In reality, they were large-scale decoration for the garden, and weren't intended as structures that would be used on a regular basis.

The formal garden in England, was based on many of the concepts found in French and Italian Renaissance gardens. The most important variation, in regards to indoor-outdoor relationships in English formal garden design, was the use of more courtyards, a stronger emphasis on flowering plants, and a frequent use of conservatories to satisfy the needs of English plant collectors. Courtyards were used extensively, typically in spaces near the house, for a variety of purposes including secret gardens, flowering gardens and kitchen gardens. These courtyards were typically enclosed by either a brick wall or a clipped hedge, both of which would have been quite tall to provide the space a with its own identity. They were the equivalent of outdoor rooms, an architectural space with four walls and typically accessible through a gateway akin to doorways inside a house. It was quite common that these spaces were accessible directly from the house, though they may have been located a short distance from it, and for courtyards to be built as a succession of spaces, where you might pass

from one courtyard into another. When a courtyard was adjoining the house, this created a comfortable space with a good indoor-outdoor relationship, depending on the size of the courtyard. When the courtyards were connected with each other, the indoor-outdoor feel was carried further into the garden by the means of these formally arranged and well articulated spaces.

The English were very fond of flowering plants and used them extensively in their gardens, and the modern shrub and perennial borders used extensively in modern residential gardens is a direct descendent of these English flowering borders (Hobhouse, 1992). They were often used to create a transition next to a brick wall or sometimes the house. Typically they were located on the edge of a courtyard space, extending four or five feet into the courtyard on all sides, drawing the landscape up to meet the wall to soften the edge. A flowering border would also be planted on the outer side of the courtyard wall, and thus the impact of the wall was weakened from both sides, but it remained as the visible backbone of the border and still achieved its purpose of being the architectural definition of the space. (See Figure 25) At other times the wall of the courtyard, or building, might have been softened by the use of ivy, or other vine, instead of a planted border. This was an effective way of integrating the architecture and the landscape because, while ivy would often entirely hide the wall, it retained its clear architectural form so that the mind was still aware that the wall existed, and thus still identified the architectural nature of the space. The English also relied heavily upon hedges to define spaces in place of a wall, but these were nearly always kept well trimmed and therefore still played the role of a well-defined

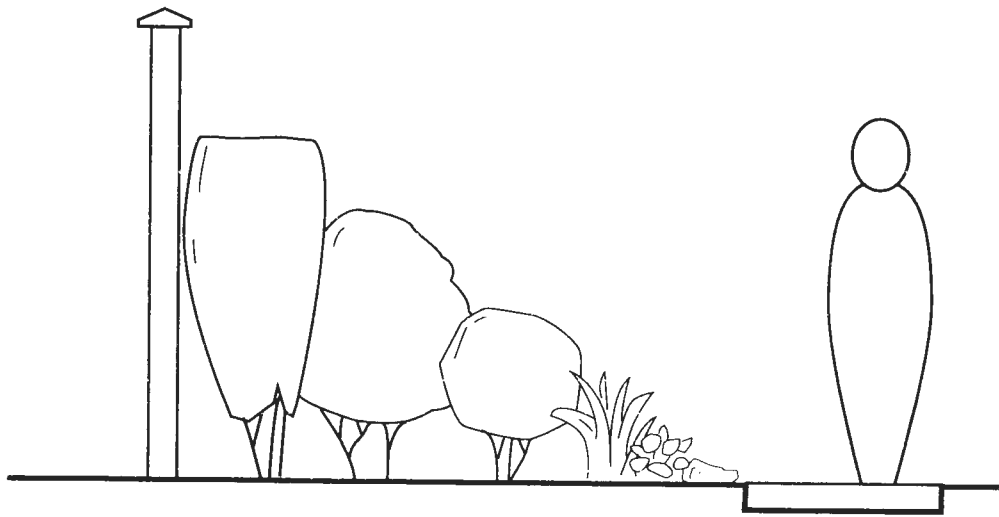


Figure 25: Layered plantings soften a wall but do not eliminate it entirely.

architectural border for the space.

As the English empire expanded and their trading companies reached across the globe, it became fashionable to maintain an exotic collection of plants, and the English were responsible for creating some of the greatest botanical collections that existed. Many of these botanical wonderlands were located in Cornwall, where the climate was more mild year-round, and conducive to the growth of even some tropical plants. But as more and more truly exotic tropical plants returned from the Americas, Africa, Australia and the Orient, it became a matter of necessity to construct large conservatories to house these plants year round. While earlier conservatories may have been modest, they quickly became massive structures that were architectural wonders, a process that was spurred on quicker by the industrial revolution. Conservatories were often attached to the house, and created a wonderful indoor-outdoor relationship

where one could walk directly from the home into a veritable jungle whose transparent walls provided ample visual connection to the surrounding landscape as well. In the case of the great manor houses and gardens, the conservatory was its own grand structure, easily accessible from the house, and retained much of the same indoor-outdoor feeling, though the transition was obviously weaker because you were not entering into the space directly from the house. (See Figure 26)



Figure 26: The Palm House in the Belfast Botanic Gardens houses tropical plants collected from across the globe. This is a stand alone form of the indoor-outdoor relationship as the plentiful windows and indoor plants serve to blur the line between indoor and out. Photo: Benjamin George

Early American Gardens (1650 AD to 1900 AD)

When British colonists arrived in America, they brought with them the English concept of the garden which has become the primary source of inspiration for the vernacular American garden. Although there was Spanish and French influence in the southern portions of the country, the majority of the United States developed a garden that took cues from English garden design with flowing lines, clumped plantings and borders, and an infatuation with expanses of grass. However, it is difficult to identify any single American design style, because the expansive country includes many variations in climate and culture, and there are many regional styles that evolved in response to these variables. Some notable garden and architectural styles occurred as a consequence of practicality, and others as a matter of aesthetics. A couple of styles of American garden and architectural design in particular had good indoor-outdoor relationships. Noteworthy were the courtyard gardens of Southern cities.

The early settlers of the southern United States dealt with the heat and humidity of the region largely through designing their homes so that they had easy access to cool outdoor spaces. Perhaps more so than any other design element, the covered porch epitomized the southern home and garden. Homes would typically have a covered porch where the family would often sit or eat in the evening hours. The porch was the transition between the house and the garden, and it used some of the best elements of both. The enclosure of the architecture provided protection from the sun and the elements in an intimate

setting. At the same time, the open nature of the porch permitted cooling drafts to flow through it, and the resident was privy to the views and smells of the landscape.

Careful consideration was given to the alignment of the house on the property to utilize the prevailing winds to cool the house. Large trees were planted around the home to cool both indoor and outdoor spaces. Located in the shade of these trees was often a courtyard garden, or similar intimate outdoor space. In all of their design aspects, a southern garden was designed for living, not just to be looked at or occasionally strolled through.

The city of Charleston, South Carolina provides an excellent case study of southern gardens. It is a city of gardens, where the house and garden are intimately connected and where good indoor-outdoor relationships flourish. Charleston developed a rich horticultural tradition very early on after its founding in the seventeenth century owing to its temperate climate, and this tradition has continued and evolved into an appreciation for fine garden spaces, rich in floral diversity (Hobhouse, 1992). The urban courtyard gardens which Charleston is famous for, developed in response to the desire of the wealthy class to "escape the ravages of malaria that plagued the river swamps and lowlands" during the summer. (Cothran, 1995) During the summer months, the wealthy would leave their country estates, which were often in the style of English or French gardens, and take up residence in the city, where smaller gardens were attached to the homes. These urban gardens shrunk over time as the city became more dense, but many of the homes have retained sizable courtyard gardens.



Figure 27: An intimate courtyard garden attached to the piazza of a home in Charleston, South Carolina. Photo: Cynthia Haddock

The indoor-outdoor relationship between the architecture and the garden in South Carolina was effective because the garden was a true living space, that was frequently used and enjoyed by the owner, and as a result it was designed to be easily accessible and to provide for human comfort and needs. Additionally, the garden courtyard was designed as a living space, instead of a landscape adapted for living, and so it took on more of an indoor feel as a result of its use for social functions typically associated with the indoors. The garden was located adjacent to the house and was typically surrounded by a tall brick wall that provided enclosure and protection. The wall attached to the house,

becoming an extension of the home that embraced the garden space and produced an intimate feel in the courtyard. Inside the courtyard, pathways of brick or stone weaved through the garden space, often decorated in basic geometric patterns much simpler than complex parterre gardens of France. The garden was often times designed around an understated focal point, a small statue or other object, which helped to provide interest in the garden without becoming overwhelming or detracting from the garden as a whole.

The hot and humid climate of Charleston was one of the most important



Figure 28: The piazza of the house faced towards the garden and acted as the link between the home and the garden. The design also utilized trompe-l'œil by making the front door appear to be entering into the house proper but in reality it enters into the outdoor piazza.

factors impacting the design development of the architecture in the city. Homes were designed and orientated on the site in order to take advantage of the prevailing ocean breezes in order to cool the home during summer. Even still, it was often more comfortable to be outdoors, and as a result homes would have extensive porticos, called *piazzas* in Charleston, to provide an outdoor place for eating, sitting and relaxing. The piazza would be located on the same side of the home as the garden, and was the transition space between the home and courtyard. Typically, there would be a piazza for every level of the home, stacked one on top of the other. (Cothran, 1995) Interestingly, when one entered the home from the street, although the door would suggest you are entering the house proper, you would enter onto one end of the piazza, and then walk through it to the main entry door to the house. This is significant for the indoor-outdoor relationship of the site for a couple of reasons. Firstly, this is a wonderful trick of the mind, because when entering through the ornate door, set into the brick wall, you are prepared to enter into a hall or entry room of the home, but instead you find yourself in the transition space of the piazza, meaning that your first impression of the interior of the home is in actuality not really an interior at all, but this transition space between the indoors and outdoors. Secondly this is significant because the orientation of the home is towards the garden, and not the street. The main entry to the house overlooks the garden and is typically centered on it, so that while outside, on the piazza, you always have an uninterrupted view of the courtyard, demonstrating the importance of the connection between home and garden. (See Figure 28)

In some instances there were additional doors entering into the courtyard space, at the side or to the rear of the garden. Where this was the case it added a further architectural element to the space, through the use of ornate doors and doorways that suggested that the courtyard was more of an interior space than it actually was. This sense of being indoors was further heightened by the use of both vegetative and constructed overhead planes. Nearly every courtyard had one, or multiple large and stately trees, depending on the size of the courtyard. These provided a sense of having a light and airy overhead structure that provided shelter and protection from the heat of the day. In some instances, arbors were used to create overhead structures in the courtyard. These could have been attached to the house or located separately in the garden. When they were attached to the house they visually and physically extended the architecture out into the garden and created an intimate space that was slightly less enclosed than the piazza. When the arbor was built separate from the house, it would still create a good indoor-outdoor relationship because it was located in close proximity to the home and therefore retained a visual and spatial connection with the architecture.

The edge of the courtyard was formed by a tall brick wall that provided a firm architectural boundary and feel to the space. At the same time, the visual weight and impact of the wall was reduced by several methods. Grated windows that provided for views both in and out of the courtyard were one method used. Another more common method was to soften and screen the wall through the use of lush plantings, as was seen in the courtyard gardens of England. By

using vines, coupled with layered plantings, the wall was merged with the landscape, so that it appeared that it naturally belonged, rather than being a human construct set upon it. With the softened wall on three sides and the open transition space of the piazza on the fourth, the courtyard gardens of Charleston were true urban havens where the indoor-outdoor relationship flourished.

Frank Lloyd Wright and Arts & Crafts Style (1900 AD to 1920 AD)

The prairie style design of Frank Lloyd Wright represented a dramatic departure from the standard architecture, of the day and was an early bellwether of greater changes that would sweep across the architectural world in the twentieth century. Wright's designs abandoned most of the ornamentation of the neo-classical and art nouveau architectural styles that were popular at the time, in favor of cleaner forms, unfinished material, technological experimentation and an emphasis on horizontal lines. The style developed by Wright is quite interesting because of the way in which the architecture was meant to incorporate the landscape and become a part of it. Rather than adopting the traditional view, where the building is a separate element placed upon the land, Wright believed that houses should appear as if they had grown out of the ground, and might be a product of it. Wright described the purpose of the house as being to create a "broad shelter in the open" land, as opposed to a pinnacle rising above it (Wright, 1955).

The broad shelter that Wright spoke of was developed in reaction to the

look and feel of the prairie landscapes of the midwest, where a great portion of his work took place. The strong horizontal lines were meant to blend with the landscape, fitting in with the surrounding terrain instead of fighting against it. When working elsewhere, Wright would sometimes adapt the form of the surrounding landscape into the structure of the building. His two studio's at Taliesin in Wisconsin and Taliesin West in Arizona illustrate this. Taliesin, located in the plains and rolling hills of Wisconsin, adopts Wright's prototypical prairie style with horizontal lines and low-pitched, cantilevered roofs, while Taliesin West has steeper pitched roofs at multiple heights and layers, combined with more angular construction that mimics the rugged form of the surrounding mountains. (See Figure 29)

Wright placed great emphasis on trying to connect the indoor and outdoor spaces seamlessly with each other, and the method he believed to be the most important and effective at doing this was to create overhead shelter outside of the house by means of cantilevering the roof past the main walls of the home. When done at the height of a single story these created intimate spaces at a human scale that could be enjoyed. Additionally, by cantilevering the roof out, it eliminated the need for support beams, making the space under the eave feel much more open to the outdoors. It is debatable whether or not this space created by the cantilever creates a better, worse or merely different indoor-outdoor relationship than when posts are used in typical *portico* fashion. The drawback to the cantilever space is that it is less well defined due to the subtraction of an edge of enclosure, making the space feel more connected to

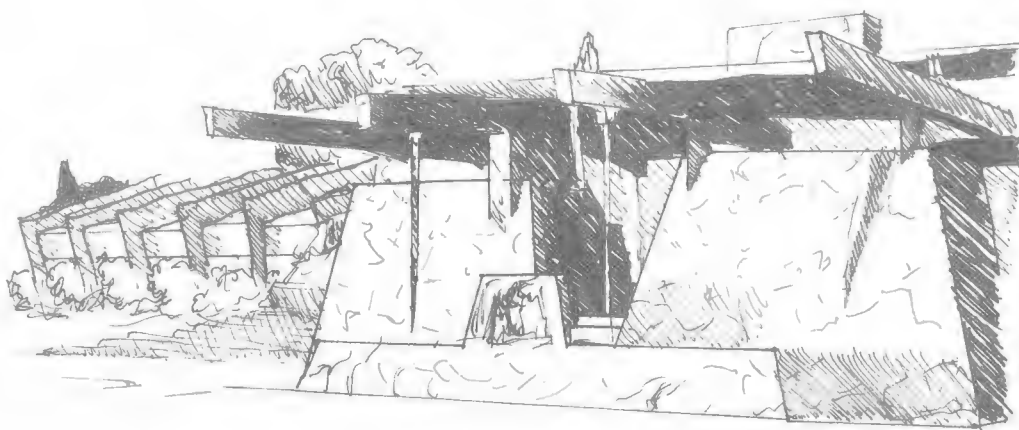
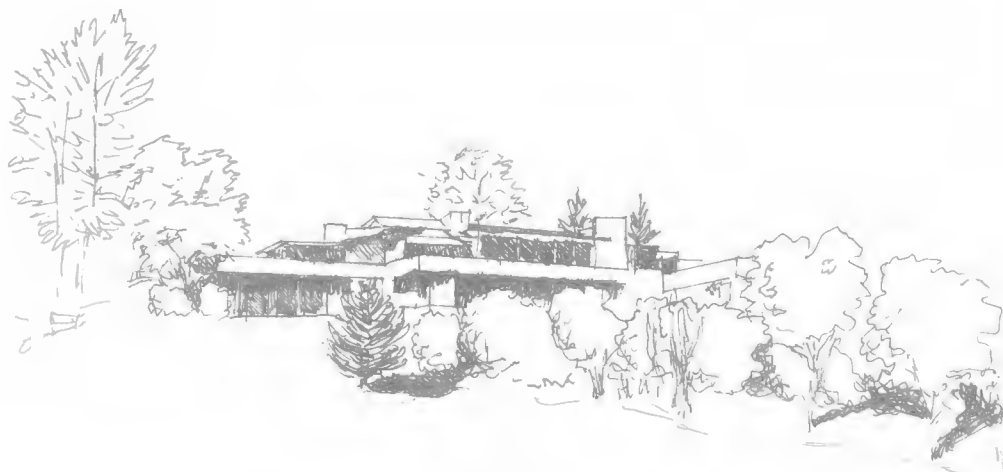


Figure 29: Taliesin (top) and Taliesin West (bottom). Each home reflected the landforms around them.

the outdoors and less to the indoors, whereas the opposite is true of a traditional *portico*.

The elimination of a solid enclosing wall was not limited to the cantilevered spaces outside, but was used by Wright as a guiding principle throughout his design work. He wanted to destroy the box, enclosed on all sides, that had dominated architecture for centuries, replacing it with an open design that maximized visual connection between the interior and exterior. One common method he developed to do this was to replace the portion of walls at the corners with windows, supporting the weight of the structure above on the center of the wall (Wright, 1955). This served to lighten the appearance of the structure and created four, unconnected vertical planes instead of one continuous stretch of wall forming the room.

As time progressed, Wright went even further to eliminating walls, supporting the ceiling with thick pillars with windows being put where the walls previously were. The effect was to create walls that were increasingly more glass than stone. However, Wright's designs didn't eliminate the architecture from the home, because instead of large expansive windows, most of Wrights homes used smaller windows en mass, where the frames of the window gave the wall a look similar to a trellis. This served as a visible plane that ensured the architecture did not completely disappear. Wright was never attempting to fully eliminate the building from the landscape, but wanted to create an equal relationship between house and landscape in which each would compliment and benefit the other.

Wright also tried to push the house into the landscape while simultaneously drawing the landscape inside the house. His designs often used wings to extend the architecture into the landscape, so that the living space throughout the house would be surrounded by the landscape on at least three sides whenever possible. At the same time, the extension of the wings created a reciprocal space where the landscape pushed into the architecture, creating a yin and yang of architecture and landscape. (See Figure 30) Wright used detailing to strengthen this further, creating decks and porches for outdoor living spaces, and used smaller details to pull the landscape further into the house through means of skylights and garden planters inside the house.

Wright's most famous work, Fallingwater in Mill Run Pennsylvania, exemplifies many of the indoor-outdoor techniques that Wright developed and used. Fallingwater, so named because of its location above a natural waterfall, follows Wright's mantra of a home appearing to emerge from the earth. The strong, horizontal lines of its many cantilevered roofs and patios, combined with the stratified grey stonework of the facade, invoke the natural geological formations of the surrounding landscape. By using local material, Wright ensured that the color palette of the house matched its surroundings as well, again reinforcing the appearance that the house may have been naturally carved from the rock over several millennia by the modest stream flowing beneath it (Turner, 2005). (See Figure 31)

On all sides of the house, cantilevered roofs and patios create outdoor enclosures beneath them, several of which have direct connection to the

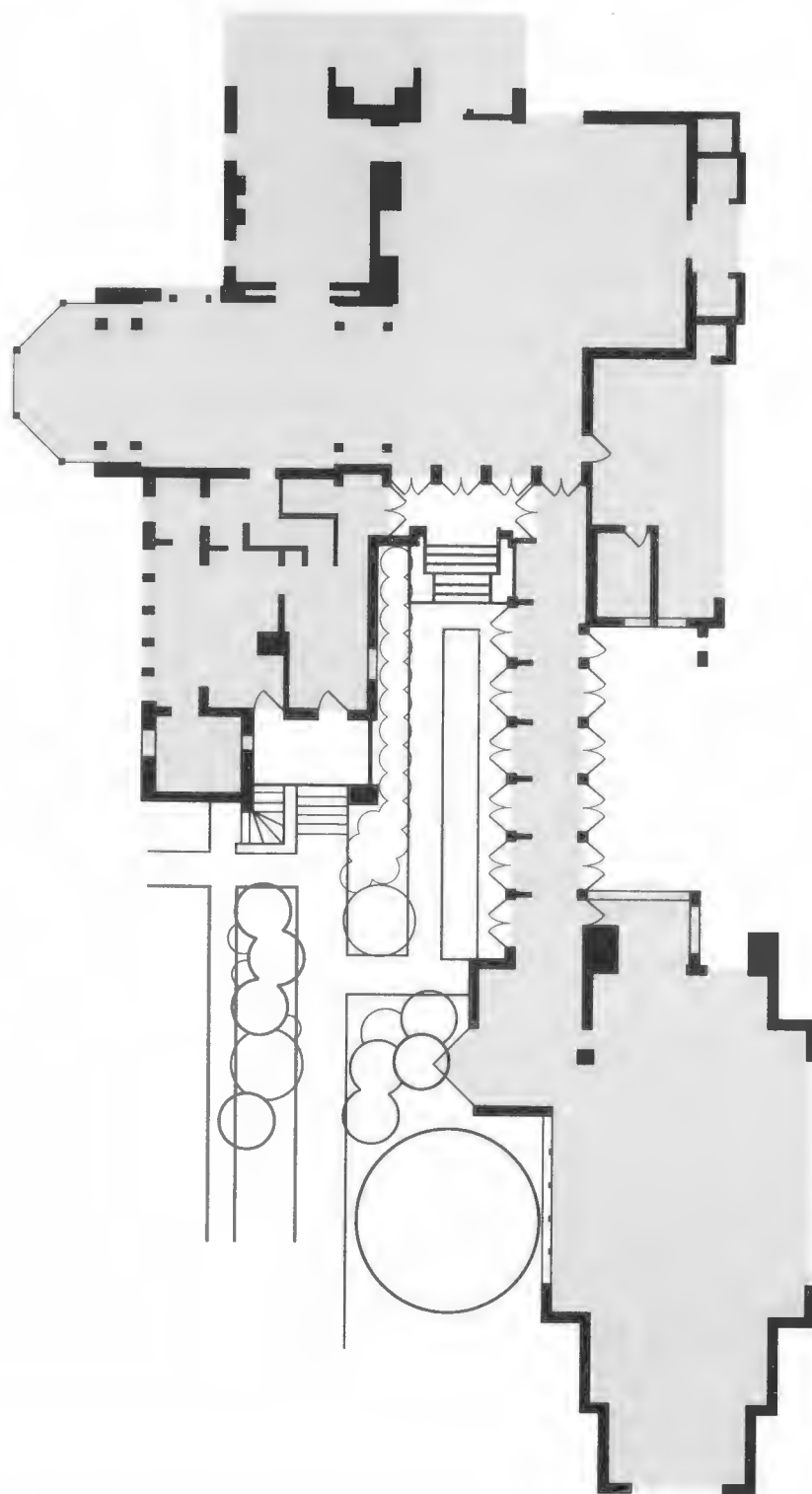


Figure 30: The Dana House, by Frank Lloyd Wright, uses several techniques to incorporate the indoors and outdoors, including many doors and windows, as well as enclosing the outdoor spaces with the building.

interior of the house by means of a door. The patios are surrounded by a low wall that attaches to the house, giving them a strong sense of spatial definition. As elsewhere in the house, these patios are paved with native stone, once again pulling the surrounding landscape into the architecture. Importantly, all of these patio spaces are visible from the interior by means of walls of windows and glass doors which, combined with the low surrounding wall of the patio, creates a strong impression that the architecture is extending into the outdoors that is rarely achieved without the use of an overhead plane.



Figure 31: Fallingwater is Wright's most highly regarded design and possibly the most famous home in world. It uses many different indoor-outdoor techniques, including using native material and local forms, creating protected outdoor spaces under the overhangs and incorporating an abundance of windows.

Inside the home, much effort was made to pull the outdoors into the house. One of the most famous examples of this was the retention of an exposed boulder that protrudes from the floor of the house in front of the fireplace. This joins the home to the landscape most effectively because the boulder is such a striking image, a natural part of the landscape where one is used to seeing an artificial floor. Other methods used for including the outdoors inside the house were the use of built in garden planters, skylights that bring in images of the sky and trees, welcoming the sound of the stream into all parts of the house, creating easy access to the water's edge and the use of strong horizontal lines that mimic the exterior facade and the landscape.

Of special note is Wright's extensive use of windows in the building. While containing several walls of windows, there is an important difference between the window-walls of Fallingwater and those of later International-style homes. Under the International style, the framing of the windows dissolved into an all-glass wall, creating a fishbowl effect from both the inside and out. In Fallingwater, and in Wright's other buildings, the framing of the windows is ever-present, sufficient to remind the viewer that they are in an interior space, but not so dominating that they become a distraction to the scene. The windows in Fallingwater were used not to simply provide expansive vistas, but also to lighten the appearance of the architecture. Corner windows, and window-walls that extend from the cantilevered roof to the stone floor, make the architecture feel light upon the landscape, present but not dominating (Wright, 1955). (See Figure 32)



Figure 32: Corner windows in Falling Water creates the illusion that the building is light.
 Source: <http://commons.wikimedia.org>

The architectural work of Wright was part of the broader Arts & Crafts movement in the United States (also known as Craftsman style) and the United Kingdom. As with Wright, the Arts & Crafts movement espoused the idea of a good indoor-outdoor relationship, creating a real renaissance of a concept that had waned in America due to the heavy influence of English landscape gardens. The bungalow, the quintessential structure of the Arts & Crafts movement, incorporated, at minimum, a porch, and often a courtyard space (Walker, 1996). As was the case with Wright's architecture, bungalows typically used natural

materials in the architecture and plenty of windows, to allow fresh light and air to enter the building. However, this renaissance of the indoor-outdoor relationship in America was short lived, as a new movement in architecture would take the world by storm, and would eventually flow into landscape design as well.

(Keister, 2005)

International Style (Modernism) (1920 AD to present-day)

In between World War I and World War II, a style emerged in Europe that would come to be known as the International Style. As the architectural expression of the Modernist movement, it would change the face of architecture around the world. Many of the buildings designed according to the International style might well have been designed by engineers rather than architects, for the new guiding light in architecture was functionalism, with aesthetics taking a back seat. The style was meant to represent a bright new future for the world, democratic architecture that provided equally for all. The style spread quickly around the world, inspiring many of the brightest young architects (de Botton, 2006).

For the first time, a style began to create a true worldwide architectural vernacular, making it impossible to identify a building's origin simply by architecture alone. Previously, buildings were made from local material, because the cost and difficulty associated with transporting material from any great distance made it difficult and prohibitive. Using local materials meant that the

architecture, almost by default, related better to its surrounding landscape.

Anyone that has walked through the ruins of a cathedral or castle can't help but feel a connection to the surrounding landscape, because the structure was built out of the landscape, quarried stone by stone. This all changed with the International style as it used the new materials of construction: steel, concrete and glass, all of which were available around the world (Woudstra, 1999).

International style sought to suppress the historic and cultural references of vernacular architecture to create an overarching global society fitting for the new world (Julbez, 1996). (See Figure 33)



Figure 33: The Bauhaus building illustrates the International Style, with its clean and simple lines, use of flexible and inexpensive materials, and incorporation of large panels of glass. Source: <http://commons.wikimedia.org>

The new International style brought a dramatic change to the relationship between the architecture and the landscape. Before the modernist movement, the Arts and Crafts movement had a strong focus on creating a good indoor-outdoor relationship, but International style, especially in its early years, truly turned its back on the landscape. Modernists disliked the enrichment of spaces or landscapes, and the gardens or landscapes of the time were viewed as being just that, unnecessary embellishments that detracted from the savage beauty of the building (Eckbo, 1956).

This style was personified best by Swiss-French architect Charles-Édouard Jeanneret-Gris, better known as Le Corbusier. Le Corbusier was an innovative architect, and a strident supporter of the new International style, which he helped to define. He is possibly the most famous and influential architect to come out of Europe in the twentieth century, and his shadow still looms large over the modern field of architecture. While Le Corbusier has been heralded for his achievements in architecture, his influence on the surrounding landscape is less well known. Partially this is due to Le Corbusier's attempts, quite naively, to leave nature alone, and to essentially plop the building down in the middle of the existing landscape. The result of such actions was, more often than not, the creation of a very poor relationship between the architecture and the landscape, the indoors and the outdoors (Woudstra, 2000).

The Villa Savoye, built in Poissy, France epitomizes Le Corbusier's approach to architecture and landscape, and demonstrates the poor indoor-outdoor relationship that was created. The main living quarters of the house are

raised on stilts, a full story above the ground, the bottom floor containing a garage, entry room and service rooms. Le Corbusier envisioned that his raised house would allow the garden space to flow beneath the house essentially uninterrupted. Instead the space under the house is barren, with no vegetation and no reason for anyone to use it other than to enter the house. The main living quarters, and all the social activity, is entirely separated from the landscape ground plane. Thus, while the physical design is akin to the Italian *loggia*, the space functions entirely differently because of the spatial layout of the home. Furthermore, immediately surrounding the house is an expanse of grass, a flat plane on which to showcase the structure, with dense plantings of trees ringing the grass and providing a deep green backdrop that contrasts with the bright white house.

Moving to the upper level of the home the relationship does improve considerably. A large courtyard with some sparse plantings incorporates an outdoor space into the home, and this space is visible from much of the interior space and easily accessible. But this space is not without its problems as well. In keeping with modernist principles the plantings in the courtyard are sparse, and the lack of embellishment makes the courtyard feel barren, a feeling that is intensified when one looks out the openings in the wall at the surrounding lush forest. Still, this space does transition between the indoors and outdoors quite well, and if the aesthetics of the space were treated a little differently it could be quite a comfortable space. If you ascend to the roof you enter the solarium of the house, which is an interesting space that provides a pleasant view of the forested

site. The solarium was a place for relaxing, and to enjoy the outdoors while soaking in the sun. While decorated with a few plantings, again the space was quite barren and seemed to have little connection to the surrounding site which was quite lush. Ironically, the main failing of the indoor-outdoor spaces in the Villa Savoye is that the surrounding landscape is visible from within them, and the landscape beyond the building looks more enticing and enjoyable than the space within the courtyard.

While design styles have continued to evolve, the ideas of the modernists were here to stay. Homes were built with more functional considerations in mind, and increasingly with the bottom-line being the primary concern. The indoor-outdoor relationship was viewed as an extra amenity that was merely for pleasure, now that modern technology could mitigate many of the climactic effects which a good indoor-outdoor relationship had previously been a functional solution to. With the rapid population boom after World War II necessitating the construction of large numbers of new homes quickly and cheaply, the indoor-outdoor relationship became a victim of economics (Kunstler, 1994). (See Figure 34) Modern homes were built en-masse in large subdivisions using house plans that were probably designed without ever having seen the site. Landscapes were increasingly becoming more uniform as "the availability of prefabricated materials has meant an increasingly uniform appearance of gardens." (Woudstra, 1999)



Figure 34: Modern residential developments typically have very little concern for the indoor-outdoor relationship. Source: <http://commons.wikimedia.org>

For the next several decades the indoor-outdoor relationship would become largely the domain of the wealthy, who had the money and land needed to create a good indoor-outdoor relationship if they so desired. The needs of these homeowners were catered to by a handful of skilled designers, such as Thomas Church and Garrett Eckbo, who proved it was possible to incorporate good indoor-outdoor solutions into many modern designs. To do this, these designers incorporated many of the techniques that had been developed previously, adapting the form and shape to fit with the architecture of the building and the nature of the landscape. For instance, Eckbo was fond of using large

pools of water near the house, typically not as a reflecting pool to be seen from the landscape, as was often the case in the past, but as an enticing and relaxing element to be seen from the house and to be enjoyed by sitting on its edge and swimming in its waters. Church, who worked extensively on small lots in San Francisco, used the principles of *trompe-l'œil* to make the garden space appear larger and more inviting, but did so by carefully selecting plant material instead of creating a two-dimensional optical illusion as was previously done. They were also helped by the waning influence of the most extreme and austere forms of modernism, especially at the residential scale, though the modernist movement was still strongly felt.

Under designers like Church and Eckbo the garden began to be a simpler entity, with cleaner lines, less ornamentation, less complexity and modern materials. These new modern gardens blended better with modern architecture by giving the garden a more architectonic appearance that drew on the reductionist form of the architecture. To create a good indoor-outdoor relationship using these principles was a delicate balancing act between creating a comfortable outdoor environment, while at the same time creating a modern landscape that fit with the architecture. These designers often used simple forms and techniques to enhance the indoor-outdoor connection. For instance, low wooden decks create a smooth texture that blends well with sleek modern architecture, creating an architectonic exterior space. Another favorite technique used by many designers of this period was to incorporate sliding glass walls that could open entire walls of a building to the outdoors, similar to the movable

partitions of Japanese houses. Another good approach was to use large, spreading trees in the residential garden that provided the feel of being outdoors with a soft overhead plane that provided comfort and enclosure, but made it possible for the ground plane and lower elements of the garden to be constructed in the more modern style. A good example of this is the Donnell Garden, designed by Church, which used majestic spreading oaks as an organic counterpoint to the simplistic lines and level ground plane of the rest of the garden (Church, 1983). (See Figure 35)

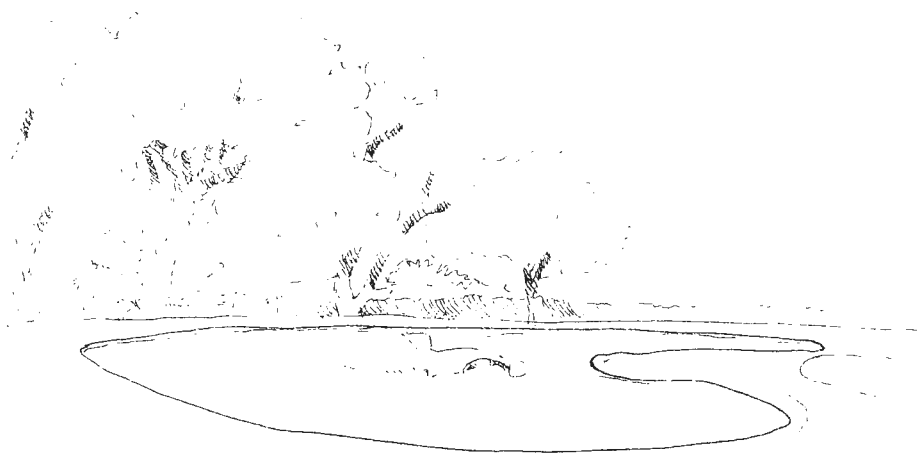


Figure 35: The Donnell Garden uses the ancient canopy of the existing on-site oak trees as an overhead plane instead of constructing an artificial one.

TECHNIQUES USED TO CREATE INDOOR- OUTDOOR RELATIONSHIPS

Despite developments in technology, material and taste, many of the techniques for creating an indoor-outdoor relationship that were developed by past societies are still used today. These techniques have been adapted to meet the different needs of climate and society, and are therefore still relevant to designers. This section identifies and extracts the various techniques used both historically and modernly, inventorying all of the techniques into a detailed list that can be easily referenced when designing for the indoor-outdoor relationship.

The techniques are identified through the use of three different methods: site visit, photo inspection and informal surveys. Site visits were used, when possible, to provide a full-sensory experience by which to identify the techniques utilized on-site, to and create an effective indoor-outdoor relationship. This is the most thorough and effective approach because it permits intimate inspection of the site with all the senses, and the ability to freely move through the site by which to examine and experience it. The photo inspection approach involves the collection and examination of thousands of photographs of sites with good indoor-outdoor relationship, which are then meticulously analyzed to break down what techniques are used. This approach is not as effective as the site visits because it is limited to a purely visual interpretation of the conditions on the site. Finally, informal surveying of professional architects and landscape architects is

utilized to gather information on commonly used techniques to create indoor-outdoor relationship. This approach is more technical in nature, constituting an exchange of words and ideas with no accompanying sensory analysis.

This process produced an exhaustive list of techniques that can be used to create indoor-outdoor relationships. This list was subsequently organized into a set of categories, loosely based upon accepted elements and principles of design in the fields of both architecture and landscape architecture. The decision to classify the techniques as such, was undertaken with the intention of making the list a functional tool for designers, one that could be referred to easily during the design process to meet specific needs.

While a great amount of effort was put forth in analyzing sites, identifying techniques and describing and compiling them, this list should not be viewed as an exhaustive list of possibilities for creating an indoor-outdoor relationship. The list focuses on identifying the general characteristics of a technique, and not the numerous applications that may exist. Within the techniques themselves there is a great array of methods and strategies by which a technique could be applied. However, a limited number of potential applications are provided with each technique to assist in identifying and describing them. As with every design, techniques should be chosen and adapted with regards to the particular idiosyncrasies of the site; adhering to the ancient practice of consulting the genius loci of the site.

HISTORICAL PERIOD	MOST FREQUENTLY USED TECHNIQUES
<i>Early History</i>	Overhead structures; Walls and fences; Siting the building to take advantage of views; Using natural materials indoors; Courtyards; Clustering of ancillary buildings in the landscape; Points of connection; Open sight lines from the indoors to the outdoors.
<i>Greece and Rome</i>	Using natural material in formal fashion; Altering the ground plane elevation; Terracing; Overhead structures; Vegetation used as overhead; Walls and fences; Facade detailing; Trompe-l'œil; Use of focal point; Central axis; Sighting the building to take advantage of views; Using natural materials indoors; Drawing cues from the surrounding landscape; Architectural elements; Open sight lines from the indoors to the outdoors; Prospect; Points of connection.
<i>Medieval Europe</i>	Using natural material in formal fashion; Overhead structures; Walls and fences; Hedges; Use of focal point; Central axis; Using natural materials indoors; Courtyards; Points of connections; Use of fragrant plants next to windows and doors.
<i>Islam and the Moors</i>	Using natural material in formal fashion; Create continuity between the indoor and outdoor ground plane; Terracing; Reflecting Pools; Overhead structures; Vegetation used as overhead; Connecting buildings by overhangs; Walls and fences; Hedges; Softening walls with vegetation; Facade detailing; Visible internal or rear plantings; Use of focal point; Framing; Central axis; Siting the building to take advantage of views; Drawing lines off the home; Repetition of patterns and form in indoors and outdoors; Using natural materials indoors; Using roof and landscape ground planes of similar color; Courtyards; Transition through a series of enclosures; Separation of exterior spaces into rooms; Open sight lines from the indoors to the outdoors; Prospect; Drawing connections between in and out; Points of connection; Accenting connections; Gradual integration of landscape and architecture; Use of fragrant plants next to windows and doors.
<i>Italian Renaissance</i>	Using natural material in formal fashion; Terracing; Reflecting pools; Overhead structures; Walls and fences; Hedges; Softening walls with vegetation; Facade detailing; Trompe-l'œil; Visible internal or rear plantings; Use of focal point; Framing; Central axis; Siting the building to take advantage of views; Drawing lines off the home; Repetition of patterns and form indoors and outdoors; Using natural materials indoors; Indoor artifacts used outdoors; Using roof and landscape ground planes of similar color; Architectural structures; Courtyards; Transition through a series of enclosures; Separation of exterior spaces into rooms; Open sight lines from the indoors to the outdoors; Conceal and reveal; Prospect; Drawing connections between in and out; Points of connections; Gradual integration of landscape and architecture.
<i>China and Japan</i>	Using natural material in formal fashion; Create continuity between the indoor and outdoor ground plane; Altering the ground plane elevation of the house; Reflecting pools; Overhead structures; Connecting the building by overhangs; Walls and fences; Hedges; Softening walls with vegetation; Use of focal point; Framing; Siting the building to take advantage of views; Using natural materials indoors; Drawing cues from the surrounding landscape; Using roof and landscape ground planes of similar color; Architectural structures; Courtyards; Separation of exterior spaces into rooms; Open sight lines from the indoors to the outdoors; Conceal and reveal; Prospect; Points of connection; Gradual integration of landscape and architecture.
<i>French Renaissance</i>	Using natural material in a formal fashion; Terracing; Reflecting pools; Vegetation used as overhangs; Walls and fences; Hedges; Trompe-l'œil; Use of focal point; Framing; Central axis; Siting the building to take advantage of views; Using natural materials indoors; Open sight lines from the indoors to the outdoors; Prospect; Points of connection.
<i>English Gardens</i>	Using natural material in a formal fashion; Altering the ground plane elevation of the house; Reflecting pools; Walls and fences; Hedges; Softening walls with vegetation; Use of focal point; Siting the building to take advantage of views; Using natural materials indoors; Architectural structures; Courtyards; Separation of exterior spaces into rooms; Open sight lines from the indoors to the outdoors; Conceal and reveal; Prospect;
<i>Early American Gardens</i>	Using natural material in formal fashion; Altering the ground plane elevation; Overhead structures; Vegetation used as overhead; Walls and fences; Hedges; softening walls with vegetation; Visible internal or rear plantings; Use of focal point; Framing; Drawing lines off the home; Indoor artifacts used outdoors; Architectural structures; Courtyards; Open sight lines from the indoors to the outdoors; Points of connection; Locating similar uses adjacent to each other inside and out; Use of fragrant plants next to windows and doors.
<i>Arts & Crafts Style</i>	Overhead structures; Connecting the building by overhangs; Implied overhead; Walls and fences; Implied walls; Visible internal or rear plantings; Use of focal point; Framing; Siting the building to take advantage of views; Drawing lines off the home; Using natural materials indoors; Indoor artifacts used outdoors; Drawing cues from the surrounding landscape; Courtyards; Architectural inclusions; Open sight lines from the indoors to the outdoors; Glass doors located at the end of a hallways; Prospect; Drawing connections between in and out; Points of connection; Locating similar uses adjacent to each other inside and out; Gradual integration of landscape and architecture.
<i>Modernism</i>	Create continuity between the indoor and outdoor ground plane; Reflecting pools; Overhead structures; Implied overhead; Walls and fences; Implied walls; Framing; Siting the building to take advantage of views; Indoor artifacts used outdoors; Architectural inclusions; Open sight lines from the indoors to the outdoors.

Table 1: Historical periods with their most frequently used indoor-outdoor techniques.

GROUND PLANE

Using natural material in a formal fashion

Description:

This technique can be used both inside and outside as an effective means of connecting the ground plane between the two spaces. When used outdoors, it can create the feeling of flooring that might be found inside the house. The use of natural material in a formal manner provides an outdoor space with a similar design structure as architecture, yet it retains an air of naturalness. It is also useful as a method for subtly defining an outdoor space, as the formality of the ground plane will contrast with the surrounding landscape.

When used indoors this technique can furnish the interior flooring with a more natural feel, typically associated with outdoor spaces, as well as aid in connecting the house to the landscape. The use of natural material, such as rough cut stone or wood, creates the look and feel of the outdoors, which can be strengthened through the use of native material. This provides both a visual and tactile connection to the outdoors.

Potential Applications:

Outdoors:

Wood decking, stone paving, crushed rock, ground cover plants in an architectural pattern, compacted earth.

Indoors:

Genuine wood flooring, stone flooring, exposed bedrock.

Examples:

Outdoors:

Fontfroide Abbey, France: Crushed gravel, compacted earth.

Mount Stewart, Northern Ireland: Ground cover plants in an architectural pattern.

Indoors:

Fallingwater, USA: exposed bedrock, stone flooring.



Figure 36: Fontfroide Abbey in southern France. The crushed gravel of the ground plane draws the color and texture of the architecture into the outdoor space. Photo Credit: Benjamin George

Create continuity between the indoor and outdoor ground plane

Description:

This technique is used both indoors and outdoors, preferably in spaces that are adjacent where there is a point of existing access between the two. Continuity between the indoor and outdoor ground plane can be based on any number of attributes, including material, form, pattern, texture, color, etc. Combining multiple attributes will further strengthen the connection between the indoors and outdoors. No single attribute is fundamentally better than the others, rather the most effective attribute should be determined on site.

While it is not necessary that the indoor and outdoor spaces are adjacent, the technique is especially successful when they are joined in every way possible, including placing the indoor and outdoor spaces at the same elevation. This creates the most visual continuity between the internal and external ground planes and also provides the most ease of access between spaces.

Potential Applications:

Both indoors and outdoors:

Combination of paving and flooring of similar material, form, pattern, texture, color, etc.

Examples:

Both indoors and outdoors:

Alhambra, Spain: Continuation of identical paving and patterns.

Fallingwater, USA: continuation of material, form and texture.



Figure 37: The same floor material and pattern flows seamlessly from the exterior space of the courtyard into the interior of the home, creating strong continuity between the two spaces. Photo Credit: Benjamin George

*Altering the ground plane elevation of the house**Description:*

This technique involves raising or lowering the elevation of the ground plane of the house relative to the ground plane of the landscape. This can create the effect that the house is light and barely floating off of the ground when raised, or that the home is emerging from the landscape when the elevation is lowered. Going to an extreme in either direction can be detrimental to the relationship however. If raised too high, the home and living space can become detached from the landscape, while if lowered into the ground too much the home runs the risk of disappearing from the landscape completely. When the floor is raised, the space below the floor should be visible from the exterior, otherwise the effect is negated. Either the elevation of the house or the elevation of the landscape may be altered while using this technique.

Potential Applications:

Outdoors:

Creation of a sunken or raised courtyard space around the house.

Indoors:

Placing the home on stilts or sinking it into the ground.

Examples:

Both indoors and outdoors:

Traditional Japanese architecture: home is slightly elevated by stilts.



Figure 38: A Japanese tea house with a raised floor reduces the apparent weight of the building in the landscape. Photo: <http://commons.wikimedia.org>

Terracing

Description:

Terracing the landscape, especially with architectural elements such as buildings or walls, can create the effect of integration between the architecture and the landscape as the two blend together in function and appearance. This reduces the visual impact of the architecture on the landscape by making it fit into the landscape better. Rather than having the junction between the architecture and the landscape limited to one point, terracing creates multiple junctions, interweaving the two together. When a series of terraces is not used on steep terrain, the result is typically a very visible large expanse of wall, or massive retaining wall.

Terracing is also valuable for its ability to create usable exterior spaces surrounding the architecture. Without terracing on steep slopes, the only other viable option for creating outdoor spaces may be the creation of cantilevered patio space, stilted deck structures or balconies. Outdoor terraced spaces often provide enjoyable vistas, and the terraces can be designed as a series of spaces in which one can move from one space to the next, similarly to how one moves through an interior space.

Potential Applications:

Outdoors:

Building the architecture into the landscape, using natural grade as edge definition, creating spaces through grade change, formal steps pulling the architecture into the landscape.

Examples:

Outdoors:

Villa Lante, Italy: Extensive terracing of a hillside to create a series of spaces with architectural structures built into the landscape.

Villa Medici Fiesole, Italy: Terracing to create defined outdoor spaces.



Figure 39: Terracing plays an important role in the design of Villa Lante not only as a means of dealing with the slope on the site, but also as a design element to integrate the architecture into the landscape. Source: <http://instruct1.cit.cornell.edu/>

Reflecting pools

Description:

Pools of calm water, located in strategic positions to reflect the image of a buildings or landscape, can be used to soften the transition between the landscape and the architecture. The calm water acts as a mirror that provides a perfect visual image but not a physical presence. Thus, while the image of a building may be present in the pool, it remains light and insubstantial. This also has the effect of softening the building, especially when the reflecting pool meets the base of the structure, by drawing it out into the landscape. Reflecting pools can also be used in internal spaces to reflect the sky and landscape, drawing it into the house.

Potential Applications:

Outdoors:

Reflecting pool or pond.

Indoors:

Reflecting pool.

Examples:

Outdoors:

The Alhmabra, Spain: Reflecting pools pull architecture into the landscape.

Indoors:

Aljaferiya Palace, Spain: Reflecting pool draws the landscape into the architecture.



Figure 40: A reflecting pool in front of the Partal at the Alhambra draws the architecture down onto the ground plane of the landscape. Photo: Benjamin George

*Overhead structures*Description:

Overhead structures include a diverse array of structures that can vary dramatically in size, form, style, and material. Overhead structures create a physically defined overhead plane that provides a varying degree of enclosure, dependent upon how perforated the overhead is. These structures may be free standing, or attached to the architecture, but they will normally have multiple sides at least partially open. Most often they consist of some variation of a post and beam construction (arbors and pergolas) or post and planar (covered porches, porticos).

The overhead structure is very effective at creating the feeling of being indoors, because it provides a sense of enclosure and security. Overhead structures also provide relief from sun and inclement weather, creating a protected space suitable for many types of social activities. They are most effective when attached to the home, and when they are a near or at the height of the interior ceiling.

Potential Applications:

Outdoors:

Covered porches, pergolas, porticos, arbor, covered walk, pavilions.

Attached to the home, to provide enclosure of social spaces, to create architectural interest in the garden away from the home.

Indoors:

To create an outdoor room feel inside the home. Ceilings or outdoor structures constructed indoors.

Examples:

Outdoors:

Desert Pearl Inn, USA: Pergola creates enclosure and provides shade from hot summers of southern Utah.



Figure 41: The overhead structure of the Desert Pearl Inn relates to the structure of the building to create an outdoor space that feels attached to the architecture and the interior. Photo: Benjamin George



Figure 42: A portico in old town of Albuquerque, New Mexico. Photo: Karen George

Implied overhead

Description:

An implied overhead is created by constructing a standard overhead structure, except that the overhead is very porous, with few cross-support members. Although the overhead does not physically exist, the structure and minimal cross-members suggest to the mind that overhead is stronger than it appears. This type of structure still produces a sense of enclosure, though it is weaker than a standard overhead structure.

Potential Applications:

Outdoors:

To provide enclosure in a shady location. To provide very light enclosure.

Examples:

Outdoors:

Rose Garden at Parque del Retiro, Spain: A successive line of metal archways with climbing roses are used to create an implied overhead that creates a feeling of enclosure despite the lack of a physical overhead.



Figure 43: The successive archways in the rose garden create an implied overhead. Photo: Benjamin George

*Vegetation used as overhead**Description:*

Vegetation can be used to create an overhead, or soften an existing overhead structure. Large spreading trees, especially if pruned up, can create an overhead that has a similar effect to an architectural structure, though the form is not as well defined as an architectural structure. By clustering multiple trees together in a bosque it is possible to extend the natural overhead to any size. A benefit of using deciduous trees as an overhead is that they provide shade throughout hottest times of the year, and permit sun during the coolest times of the year.

Vines can also be used to create an overhead, though they require a structural frame on which to be trained. This structure can be designed to either be entirely hidden by the vine or to be merely obscured, but still visible. Typically when used on a structure attached to a house it is best that the support structure is still visible through the vine, in order to extend the architecture of the house.

Potential Applications:

Outdoors:

Using trees next to the house to create a vegetated overhead similar in function to an overhead structure, a bosque of trees using vines on an overhead structure, green roofs, vegetation visible through a skylight.

Indoors:

Small trees or vines can be used to create overhead in an atrium or sunroom. The use of silk floral materials could be used to create the appearance of a lush vegetated overhead.

Examples:

Outdoors:

Donnell Garden, USA: Live oaks provide expansive vegetated overhead.

Monasterio de San Jeronimo, Granada, Spain: Trees are used to create an overhead plane.

Red Butte Gardens, USA: Vines create overhead on pergolas.



Figure 44: A bosque of orange trees creates an overhead plane that gives intimacy to a plaza outside of the Monasterio de San Jeronimo in Granada, Spain. Photo: Benjamin George

*Connecting buildings by overhead**Description:*

Connecting separate buildings by means of an overhead structure extends the architecture through the landscape and preserves a sense of enclosure along the entire path from building to building. The exposed sides of the structure ensures that the space remains strongly connected to the landscape, and provides a balance to the architecture of the buildings and overhead. This technique also creates a relationship between the separate buildings, but does so in a delicate manner so as to give the appearance that the buildings are weaved into the landscape.

Potential Applications:

Outdoors:

Connect separate buildings by means of an overhead, such as through a pergola or covered walkway.

Examples:

Outdoors:

Chataignier, Colorado: Covered walkways provide a point of connection between the two buildings of the house.

Portland Classical Chinese Garden: Covered walkways weave through the landscape to connect a series of buildings throughout the garden.

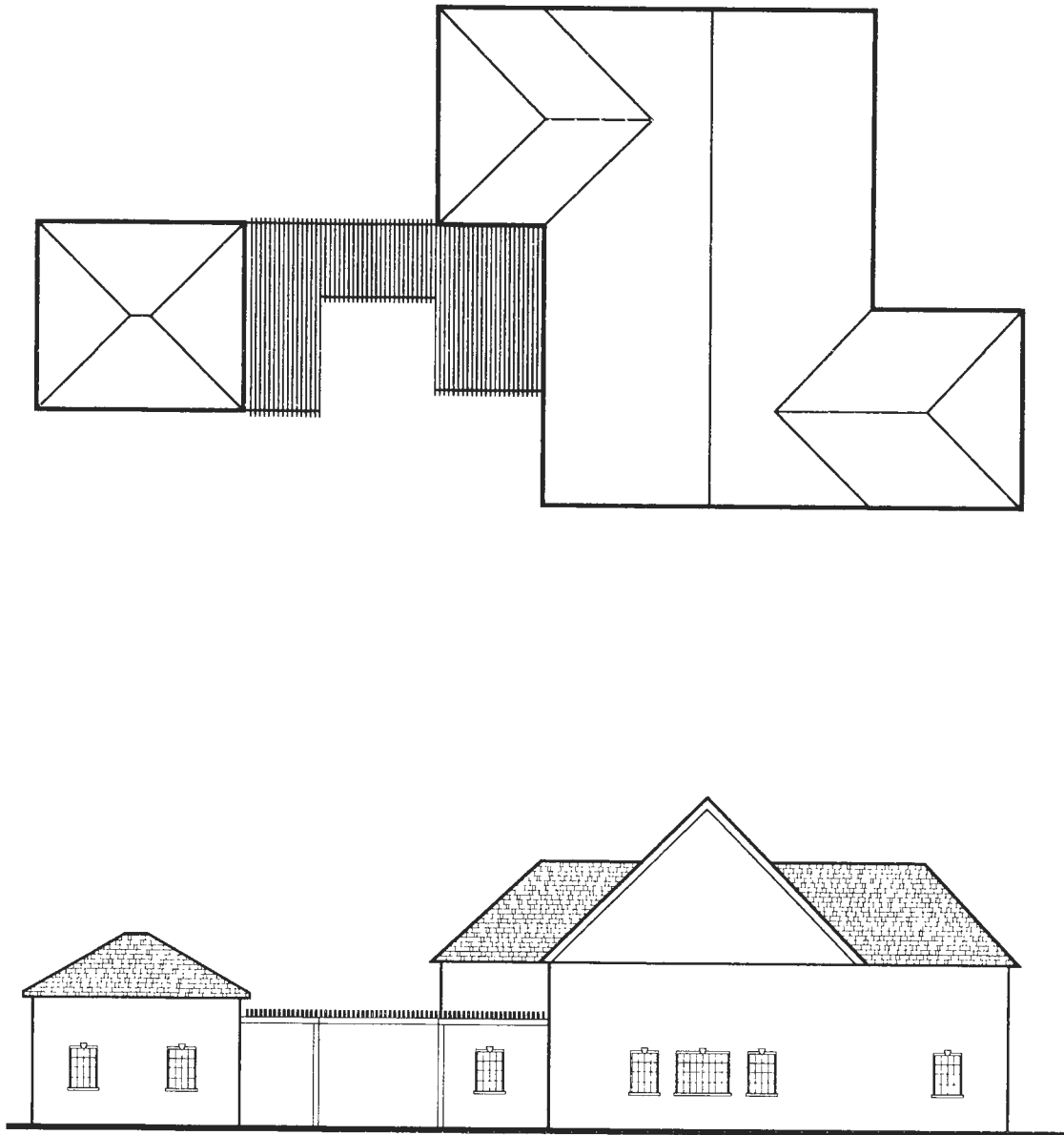


Figure 45: Using overhead planes to connect buildings provides an unobtrusive link while creating an enclosed space beneath the overhead that can be utilized for more than just passage.

VERTICAL PLANE

*Walls and fences**Description:*

Aside from the building facade, walls and fences are the most common form of vertical planes to be found in the garden. Both are architectural structures that form a solid vertical plane used to provide clear definition of space, either as a means of delineation or enclosure. Both are typically meant as a barrier, visually and physically, although a low wall or fence will permit site lines to continue past it. The height of the wall or fence has a profound impact on the sense of enclosure in the space enclosed by or near the wall, with the highest walls and fences providing the most enclosure and the lowest providing the least.

Walls can be used to create an indoor structure and feel outdoors, replicating the architectural environment that we are familiar with inside the home. Gaps may exist in a wall in the form of windows and doors, just as is found inside. Fences can also create an indoor feel, though typically not to the same degree as a wall. The degree to which a wall or fence suggests a typical indoor space will largely be determined by the material with which it is constructed and the finish that is applied. To connect the home and the garden, it is typically best to use a material and style that matches or compliments the facade of the home.

Potential Applications:

Outdoors:

Extended wall connected to home, wall enclosing garden space, define edges of spaces, fabric used as a wall, hedging of plants or pleaching of trees.

Examples:

Outdoors:

Courtyard gardens of Charleston, South Carolina: Walls are used to create enclosure and define the outdoor space.

Garden of the Master of the Nets, China: Walls are used as borders around the site and also as connectors between buildings within the site.

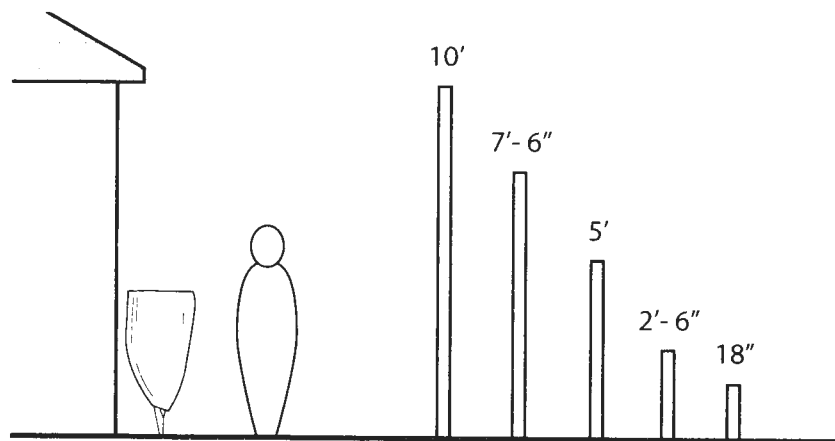


Figure 46: An illustration of the varying heights of walls and how they relate to creating enclosure. Careful consideration is necessary when choosing a wall's height to avoid making a space feel too open or uncomfortably narrow.

Hedges

Description:

A hedge performs the same function as a wall. Whereas a wall is an architectural structure, the hedge is an organic structure pruned into an architectural form. Hedges will provide a softer barrier to a space while still providing the same amount of edge definition. Hedges are less formal than walls or fences, but more formal than a shrub border. The height of the hedge will vary the degree of enclosure felt in the space. As with walls, a hedge acts as both a physical and visual impediment, but a lower hedge will permit site lines to continue. An important consideration when selecting between a hedge and a wall or fence, is that the size of the footprint necessary for a hedge, especially a taller one, can be substantially wider.

Potential Applications:

Outdoors:

Hedging of plants or pleaching of trees.

Indoors:

Hedging a planter indoors to define a space.

Examples:

Outdoors:

Hidcote Manor Garden, UK. Hedges are used to create rooms and walls.

The Generalife, Spain: Hedges are used in the gardens outside of the palace to create a series of intimate hallways and rooms.



Figure 47: Hedges are used to create an outdoor room in the gardens of the Generalife. Photo: Benjamin George

*Softening walls with vegetation**Description:*

Vegetation can be used to soften a wall, or entire structure, as a means of blending the landscape and the architecture. This blurring of the two elements occurs because the connecting point between the two (the base of the wall) becomes obscured, making it much less of a clear-cut definition where the architecture begins, giving the wall a more organic appearance. The degree of coverage can vary from covering all of the facade to only a small, carefully chosen portion. This can be accomplished with either climbing vines or through the use of foundation plantings. This technique can be used on an internal wall, the external wall of a house, or a free standing wall.

Potential Applications:

Outdoors:

Plantings placed at the base of the wall, complete coverage of the walls surface with vines, replacing or hiding architectural elements with landscape elements.

Indoors:

Using indoor plants to soften the appearance of a wall.

Examples:

Outdoors:

Stockholm Cityhall, Sweden: Ivy growing up the walls of the building.

The Alhambra, Spain: Lush plantings at the base of the exterior of the palace softens the walls and connection point between the architecture and the landscape.

Indoors:

West Building of the National Gallery of Art, Washington D.C.: Internal atriums feature lush plantings along the walls that soften the walls of the space.



Figure 48: Vegetation on the wall of a house, or a free-standing wall, helps to blur the edge between the landscape and the architecture. Photo: Benjamin George

Facade detailing

Description:

This approach involves any number of detailing techniques used to alter the visual appearance and physical texture of a wall, and can be useful on both internal and external walls. Because the facade is the most visible feature of a building, effective treatment of it to strengthen the indoor-outdoor relationship is critical. Detailing facades so that the interior and exterior relate, or to make both relate to the surrounding environment, can be a subtle, but effective technique.

Potential Applications:

Outdoors:

Using color to accent an architectural element, choosing a color palette that matches the surrounding landscape, using material that matches surrounding environment.

Indoors:

Using a rough and earthy finish on a facade, using facades normally associated with a landscape space internally, choosing a color palette that matches the surrounding landscape.

Examples:

Outdoors:

Fallingwater, USA: Horizontal stacked rock facade of the exterior suggests the form of the waterfall and matches the natural color tones.

Indoors:

Fallingwater, USA: Interior facade finish is identical to exterior finish.

El Mirador, USA: Interior facade of rough rock is similar to the exterior and matches the surrounding layered rock and plateaus of southern Utah.

Implied walls

Description:

An implied wall is formed by using minimal structural members in a way so as to create the impression of a boundary. Implied walls typically do not impact sight lines much, if at all, but could impact the ability to move through the space. Implied walls can be used to provide a limited feeling of enclosure, without creating a substantial architectural structure, wall or hedge. An example of an implied wall could be a frame of posts and beams that outline a negative space on a vertical plane. It could also be formed by a line of columns that create a well-defined boundary.

Potential Applications:

Outdoors:

To create a light enclosure, to define a boundary without interfering with sight lines.

Examples:

Outdoors:

Villa Medici at Fiesole, Italy: The opening of the loggia on the main floor creates an implied wall.

Parque del Retiro, Madrid, Spain: Columns are used to imply a vertical plane and enclosure.



Figure 50: Despite the lack of a solid wall, these pillars imply a vertical frame around the space, providing it a sense of enclosure despite the openness of the site. Photo: Benjamin George

*Trompe-l'œil*Description:

Trompe-l'œil, meaning trick of the eye, is a painting technique that involves creating an image on a wall that appears to be three dimensional and real. This can be used in the landscape to create the impression of a larger space than actually exists. Indoors, trompe-l'œil can be used to create views of an outdoor environment that may not be possible to actually create, such as in an internally-located room. Trompe-l'œil can also be created using materials such as platings to create an illusion of greater depth or space. Although trompe-l'œil is only a mirage, it can have a very strong impact on the mind, and successfully create the feeling of a visual connection between the interior and exterior.

Potential Applications:

Outdoors:

To create the appearance of a larger space.

Indoors:

To create the appearance of a connection to the outdoors.

Examples:

Indoors:

House of the Vetti, Italy: Trompe-l'œil is used in the colonnade of the peristyle to create the impression that the space is connected to a larger surrounding landscape.

Indoors:

Villa Farnesina, Italy: Trompe-l'œil is used on interior walls to create grand vistas through colonnades, all of which are painted.



Figure 51: This countryside mural creates an illusion of a landscape beyond the wall. The effect is improved upon by using the three dimensional elements of the pot and poppies. Photo: Benjamin George

EMPHASIS

*Visible internal or rear plantings*Description:

This technique reduces the apparent mass of the building and makes it appear more integrated with the landscape. Plantings in an internal courtyard of a home, that are visible from outside of the building, illustrate that the building is not one uninterrupted mass, and the building appears to be embracing and internalizing the landscape, weaving the two together. Of lesser impact is rear plantings that are large enough to be visible from the front of the home. These plantings frame the building, but bring the landscape forward in the eye of the viewer. In this instance, it is the landscape that appears to be embracing the house.

Potential Applications:

Outdoors:

Trees planted in internal spaces large enough to be seen from outside of the home. Trees planted behind the home that are high enough to be seen from the front of the home and close enough to the home to appear intimate with architecture.

Examples:

Outdoors:

Alhambra, Spain: Lush internal plantings are visible from outside the palace.



Figure 52: Internal plantings within the Alhambra create multiple layers of landscape and architecture, which ties the two together strongly. Photo: Benjamin George

Use of focal point

Description:

A focal point is a good technique for creating interest in the landscape or inside the architecture. A focal point can be most anything, as long as it is placed in a prominent position, prominently framed or is striking enough of itself to draw attention. It gives the viewer a prospect, or reason to move from the indoors to the outdoors, or vice versa, and it also provides a point of interest that will draw the eye, and the viewer's attention.

Potential Applications:

Outdoors:

Creating a central focal point in a courtyard. Using a water feature as a focal point. Placing a focal point in line with a doorway or window. Creating a focal point in the landscape.

Indoors:

Creating an internal focal point, such as a fireplace, that is visible from outside.

Examples:

Outdoors:

Viana Palace, Cordoba, Spain: Fountains and other objects are placed in courtyards to provide a focal point, often visible from both within the palace as well as the courtyard.



Figure 53: This fountain serves as a focal point that creates interest and encourages movement from inside the building out into the adjoining courtyard. Photo: Benjamin George

Framing

Description:

This technique involves using a variety of framing methods to draw attention to a particular element of the interior or landscape, so as to create prospect to move from one to the other. Framing can be used to emphasize or draw attention to a focal point. It can also be used to capture a particular view, such as emphasizing a good view while excluding less-desirable portions of the view. Ultimately, framing is used to guide the eye to what the designer wants to be observed.

Potential Applications:

Outdoors:

Framing to emphasize a connection point such as a doorway. Framing architectural elements with vegetation. Focusing attention on a particularly good view.

Indoors:

Framing an external view through a window or doorway.

Examples:

Outdoors:

Dallas Arboretum, Texas: Freestanding doorways are used to frame views and provide entries to portions of the garden.

Indoors:

The Alhambra, Spain: Windows and doors are used to frame views of the surrounding landscape.



Figure 54: This doorway in the Alhambra frames a view of the hillside of Granada which helps to draw the viewer onto the outside balcony. Photo: Benjamin George

Central axis

Description:

A central axis is an imaginary line drawn through the landscape or architecture, along which the design is reflected on both side. A central axis can be utilized to draw the eye through the landscape, architecture or both. It can also be used as an element of emphasis, especially when combined with a focal point at the end of the axis. The central axis creates movement, and is especially useful when there are enclosed spaces or buildings on either side of the axis when done on a fairly intimate scale.

Potential Applications:

Outdoors:

As a connection between separate architectural elements or enclosures.
To lead to a focal point, especially from a famed indoor view.

Indoors:

To draw the eye through the architecture and out into the landscape.

Examples:

Outdoors:

El Mirador, Utah: Several axis run through the house and yard creating a strong connection between the two.

Indoors:

Generalife, Spain: The central axis of the main courtyard in the Generalife draws the visitor through the site, moving between the buildings on either end.



Figure 55: The use of a central axis creates movement through the courtyard space and draws the eye through to the architecture at the other end. Photo: Benjamin George

*Siting the building to take advantage of views**Description:*

Choosing the location for the building on a site is critical for many reasons, including the vistas provided. Consideration of the obtainable views on site should be considered when finalizing the location of the building because this will lead to a more pleasant and appealing view of the landscape. These types of views improve the indoor-outdoor relationship by making a visual connection between the architecture and the landscape that is attractive and desirable.

Potential Applications:

Locating building to create good views of the surrounding landscape

Examples:

Villa Medici Fiesole, Italy: Home is located on a hillside to take advantage of views of the surrounding landscape.



Figure 56: This home has been carefully tucked into the Italian hillside to take advantage of the view (below). Photo: Benjamin George



Figure 57: The rolling hills and plains of Tuscany. Photo: Benjamin George

*Drawing lines off the home*Description:

Nearly every home will have some natural accent points on its facade: corners, windows, doors, etc, upon which elements of the landscape can be related. Most commonly a wall, fence or hedge will could be aligned with the corner of the house. Relating landscape elements to the house in this manner makes the landscape feel more connected to the house because they are constructed on a similar grid to the house. This also creates the illusion, especially in the case of walls, that the architecture of the home is being extended into the landscape, and that the wall is not a separate element. This technique is not limited to using vertical elements, but can also include elements on the ground plane, such as having a patio edge align with architectural lines, overhead elements, such as a pergola drawn off of an architectural extrusion, and a variety of other landscape elements.

Potential Applications:

Outdoors:

As a connection between separate architectural elements or enclosures.
To lead to a focal point, especially from a famed indoor view.

Indoors:

To draw the eye through the architecture and out into the landscape.

Examples:

Outdoors:

Historic homes, Charleston, South Carolina: The walls surrounding the courtyards connect to the corners of the home, causing them to blend seamlessly with the architecture.

Villa Medici at Fiesole, Italy: The walls and hedges of the western terrace are aligned with the exterior walls of the villa.



Figure 58: The western terrace of the Villa Medici at Fiesole. The edges of the garden use the lines of the house as a template. Source: <http://uploads.wikimedia.org>

REPETITION

*Repetition of pattern and form in indoors and outdoors*Description:

Repeating of patterns or forms will make the transition between indoor spaces and outdoor spaces more seamless by creating continuity between the spaces. It is not necessary to use the same material at all times, though it will improve the connection, because the eye will naturally pick up similar patterns. An effective use of this technique is on the ground plane, where indoor tiling or flooring patterns can be repeated on the outdoor ground plane.

The repetition of form helps to keep all of the disparate elements of the garden connected, even when visually separated. A freestanding structure, such as a gazebo, that has been placed separate from the home will still feel connected to the house if it is built using a similar form. This is based on the principle of a memory relation, where the mind will relate similar forms. The form of the landscape can also relate to the form of the house. For instance, a house that is very angular would be well complimented by, and feel more connected to, a landscape that is based on an angular grid.

Potential Applications:

Outdoors:

Using elements from the architecture in the garden, such as brick or stone. Architectural elements in the garden match the architectural style of the home. Detailing in the landscape refers to the architecture of the house. Garden and architectural styles match.

Indoors:

Using natural or landscape elements indoors. Lush indoor plantings to compliment visible exterior plantings.

Both:

Use of matching patterns and forms indoors and outdoors.

Examples:

The Alhambra, Spain: Tiling patterns are repeated in both internal and external spaces. Motifs are repeated in architectural forms and in landscape forms such as fountains and plantings. Columnar plants mimic the form of the many columns in the palace.



Figure 59: Repetition of similar forms can be found throughout the architecture and gardens of the Alhambra and serve to give the buildings and gardens a unified feel.
All Photos: Benjamin George

Using natural materials indoors

Description:

Using natural materials can make an indoor space feel more connected to the outdoors, especially if local material is used. Incorporating elements such as stone, wood, water or plants can give an indoor space a more natural feel that makes the space feel less fabricated and artificial. These type of materials also stir feelings of a connection to the outdoors because they are materials which are more commonly associate with the landscape.

Potential Applications:

Indoors:

Use of roughly finished natural material for a wall or floor finishes, such as stone. Incorporating a water feature into the home. Incorporating natural plantings and potted plants indoors.

Examples:

Falingwater, USA: Rough hewn stone used inside for wall and floor finish and internal planting beds are incorporated into the interior.

Fontfroide Abbey, France: The stonework of the interior spaces, especially the flooring, give the interior a strong connection to the exterior spaces and surrounding landscape.

*Using landscape color schemes in rooms connected to the outdoors**Description:*

Rooms that have direct visual connections to exterior spaces can use this technique to improve their relation to the surrounding landscape. By using colors that appear in the landscape immediately outside of the room, the room fits better with the landscape and lessens the abrupt change between indoors and outdoors.

*Potential Applications:**Indoors:*

Use color schemes in the walls and decor of rooms connecting to the outdoors that match the colors in the landscape view.

*Indoor artifacts used outdoors*Description:

This technique involves decorating an exterior space as you would an interior space in order to give it a stronger indoor feel. This technique is probably the most widely used by the average homeowner, and can include the use of any number of items, from tables and chairs to items of decor. Homeowners decorate interior spaces to give them a feeling of comfort and identity, and these same feelings can be recreated in exterior spaces as well. The connection between the outdoor space and the indoor rooms of the house can be strengthened if a similar decorating style is observed in both.

Examples:

Outdoors:

Exterior spaces can be decorated as if they were interior spaces, with furniture and decor. Indoor decor can be reinterpreted outside, such as making a 'rug' out of a paving pattern. Doorways and windows will give a space a more architectural feel. Incorporating a fireplace outdoors gives a room a stronger indoor feel than a fire pit, which is typically associated with an outdoor setting.

Case Studies:

Outdoors:

Parador de Granada, Spain: Furniture seating in the courtyard space is used to give an indoor feel to the space.



Figure 60: The use of chair and tables gives this courtyard space a more indoor feel.
Photo: Benjamin George

*Drawing cues from the surrounding landscape**Description:*

The indoor-outdoor relationship of a site can be improved by connecting the interior and garden with the surrounding landscape. This creates a greater sense of place and connects the home and garden to the landscape. It blurs the line between space as well, with the resident no longer moving from the house into the garden and then into the surrounding landscape, rather all three are closely related to each other.

Potential Applications:

Outdoors:

Vary the pitch of the roofline to make it more organic. Use vernacular architecture for the region. Use local material in the landscape. Use plants in the garden that are native to the region. The garden design responds to the climate of the region.

Indoors:

Use vernacular decor and architecture indoors. Use local material for finished and detailing. Layout of house responds to the local climate of the region.

Use of matching patterns and forms indoors and outdoors.

Examples:

Outdoors:

Taliesin, Wisconsin, USA and Taliesin West, Arizona, USA: Wright's studio homes use architectural styles that relate to the forms of the surrounding landscape. The prairie style architecture of Taliesin suggests the rolling prairies surrounding the building, while Taliesin West draws its rugged, angular lines from the surrounding mountains.

Indoors:

Fallingwater, Pennsylvania, USA: The stone lines of the walls relate to the stratified rock layers on which the home is perched.

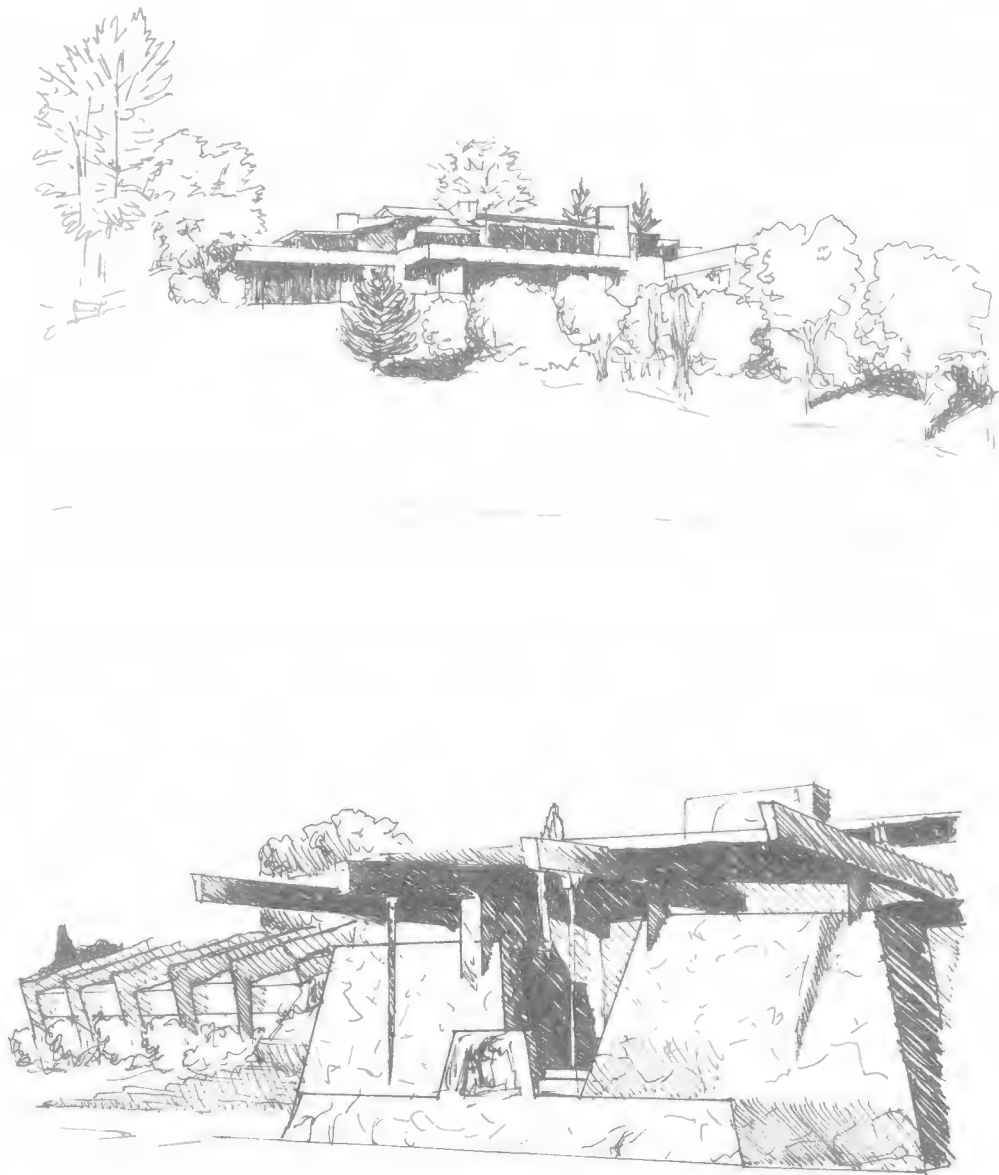


Figure 61: Taliesin (top) reflects the rolling hills of the Wisconsin countryside while Taliesin West (bottom) reflects the rugged, angular forms of the western mountains.

*Using roof and landscape ground planes of similar color**Description:*

Using the same color for the roof and the ground plane in the landscape connects the architecture to the landscape and vice versa. The roof is often a very noticeable feature of the exterior of the home, but its visual weight can be reduced by introducing the same color onto the ground plane. In this manner, the roof no longer stands out isolated from the rest of the visual composition, but rather appears to be a carefully planned part of the whole. Similarly, the paving in the landscape will feel more connected to the architecture.

Potential Applications:

Outdoors:

The roofing material is the same color as the paving of in the landscape.

Examples:

Outdoors:

Generalife, Spain: The colors of the roof tile and the stonework of the ground plane use the same gray-brown tones, providing a unified whole and anchors the architecture to the ground.



Figure 62: Similar color tones in the paving and the roof of the Generalife helps to integrate the floor and the overhead plane which subsequently makes the connection between the architecture and the landscape much stronger. Photo: Benjamin George

ENCLOSURE

*Architectural structures*Description:

Architectural structures in the landscape can enhance the relationship between the main home and the landscape, as well as creating a separate indoor-outdoor relationship themselves. Architectural structures that create an indoor-outdoor relationship can be built into the home or attached to it, as is the case with a loggia or a conservatory, which strengthens the indoor-outdoor relationship of the home by creating internal spaces that provide direct access to the exterior. When used in the landscape, they can strengthen the relationship between the architecture and the landscape by pulling the architecture out into the landscape and interweaving the two together.

Freestanding architectural structures are useful for providing an architectural presence that can provide shelter and interest in the garden, even when located at a distance from the main home. These structures provide a formal sense of enclosure, and are substantial enough that they can be enjoyed as an actual interior space. Oftentimes they are directly open to the outside, though in the case of a structure playing the role of a greenhouse (including atriums, conservatories and sun rooms) they are fully enclosed but will have an ample amount of windows permitting a visual connection to the outdoors. Because of the amount of construction and planning required, these structures

can be quite costly, and may be suited best to a larger home and/or site due to their size.

Potential Applications:

Outdoors:

Outbuildings converted for pleasure use, such as a pool house, greenhouse, casino, gazebo.

Indoors:

Atrium, conservatory, sun room, loggia, cloister.

Examples:

Outdoors:

Villa Lante, Italy: Casinos located on the top terrace of the gardens provide architectural interest and enclosure in the garden.

Indoors:

Villa Medici at Fiesole, Italy: The Loggia on the ground level provides access to the garden but feels like an indoor space.



Figure 63: The conservatory between the home and the garage not only serves a functional purpose of providing a sheltered connection between the two, but it also strengthens the connection between the indoor and outdoor environment due to its opaque nature and the use of the internal space for plantings. Photo: Benjamin George

Courtyards

Description:

The courtyard is one of the oldest and most effective techniques used to create an indoor-outdoor relationship. There are two primary types of courtyards: internal and external. Internal courtyards are fully enclosed by architecture on all sides, and act as a landscaped oasis in the middle of the home. These courtyard spaces provide the greatest amount of shelter and intimacy and maximize the number of rooms that can open and connect to the outdoors. The treatment of the courtyard space can vary from more architectural in feel to lushly landscaped. The connection between the building and courtyard can be improved through the use of a surrounding transitional structure such as a colonnade or a cloister.

The external courtyard is located adjacent to the house and is surrounded by some form of physical and visual barrier, such as a wall or hedge. Traditionally this barrier is tall enough to prevent visual access into the courtyard, though external courtyards are now often bounded by a lower barrier that still permits sight lines into the space. External courtyard spaces often act as the transitional space between the home and the landscape, a space that is surrounded by architecture but designed like a garden.

Potential Applications:

Outdoors:

Internal courtyard, external courtyard, transition space from the home to the surrounding landscape.

Examples:

Outdoors:

Viana Palace, Spain: Known as the museum of courtyards, this palace has several courtyards of varying shape, size, and effect.

Residential patios of Spain: The many internal courtyards of the Spanish residences serve a practical function of providing a well of cool air in the center of the building and also provide an enjoyable indoor-outdoor space.



Figure 64: Internal courtyards in the Spanish city of Granada. These courtyards become wells of cool air that refresh the interior of the building while providing an indoor-outdoor space not only in the courtyard, but also in the balconies surrounding it. Photo: Benjamin George



Figure 65: A courtyard is one of the best tools for creating indoor-outdoor space as the space is both indoors and outdoors at one time. The use of plants and the fountain in the center of the courtyard help to give the space a stronger landscape feel. Photo: Benjamin George

*Architectural inclusions**Description:*

An architectural inclusion is similar to a courtyard but is normally considered to be too small to typically be designated as such. An architectural inclusion is surrounding on three sides by architecture with the remaining side open to the landscape. These spaces can be made into sitting nooks or private gardens, when there is a door permitting access between the home and the outdoors. When a door does not exist, these spaces can still be used to create an indoor-outdoor relationship when there are windows facing each other on either side of the inclusion. In this way the viewer is able to look from one portion of the home, through the landscape and into another portion of the home. This creates the illusion that the landscape is contained within the house.

Potential Applications:

Outdoors:

Sitting area, secret garden, private garden.

Indoors:

Sight line from home to the landscape and then back to the home.

Examples:

Outdoors:

Dana-Thomas House, Illinois, USA: An architectural inclusion In the center of the house creates an intimate space with a courtyard feel.

Indoors:

El Mirador, Utah, USA: Windows on either sides of the architectural inclusion create a sight line through the landscape and back into the home.

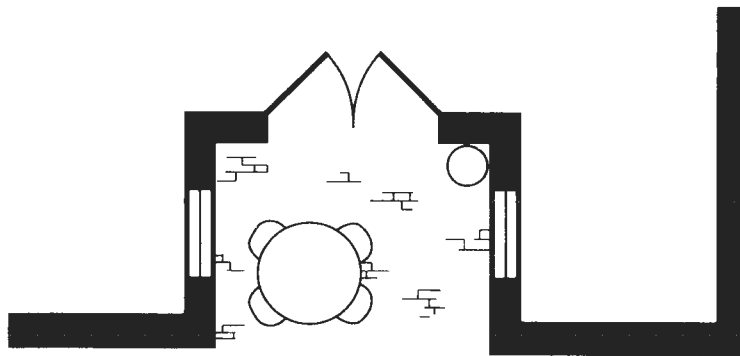


Figure 66: An example of an architectural inclusion where the space has been used to create a private sitting area.

*Transition through a series of enclosures**Description:*

This technique involves the gradual transition from a fully enclosed indoor environment to a fully exposed landscape environment, through the use a series of spaces with varying degrees of enclosure. This creation of a subtle transition makes it more comfortable to move from one space to the next, and makes it possible for the user to choose what degree of enclosure they are comfortable with. For this technique to be effective there needs to be multiple spaces with direct accessibility and preferably arranged so as to create linear movement between spaces.

Potential Applications:

A series of spaces connecting indoors and outdoors. An example could be: home, loggia, arbor, courtyard, surrounding landscape.

Examples:

Villa Medici at Fiesole, Italy: There is a transition from the fully enclosed indoors space to the loggia then the courtyard garden and then the broader landscape through the accompanying view from the terrace gardens.

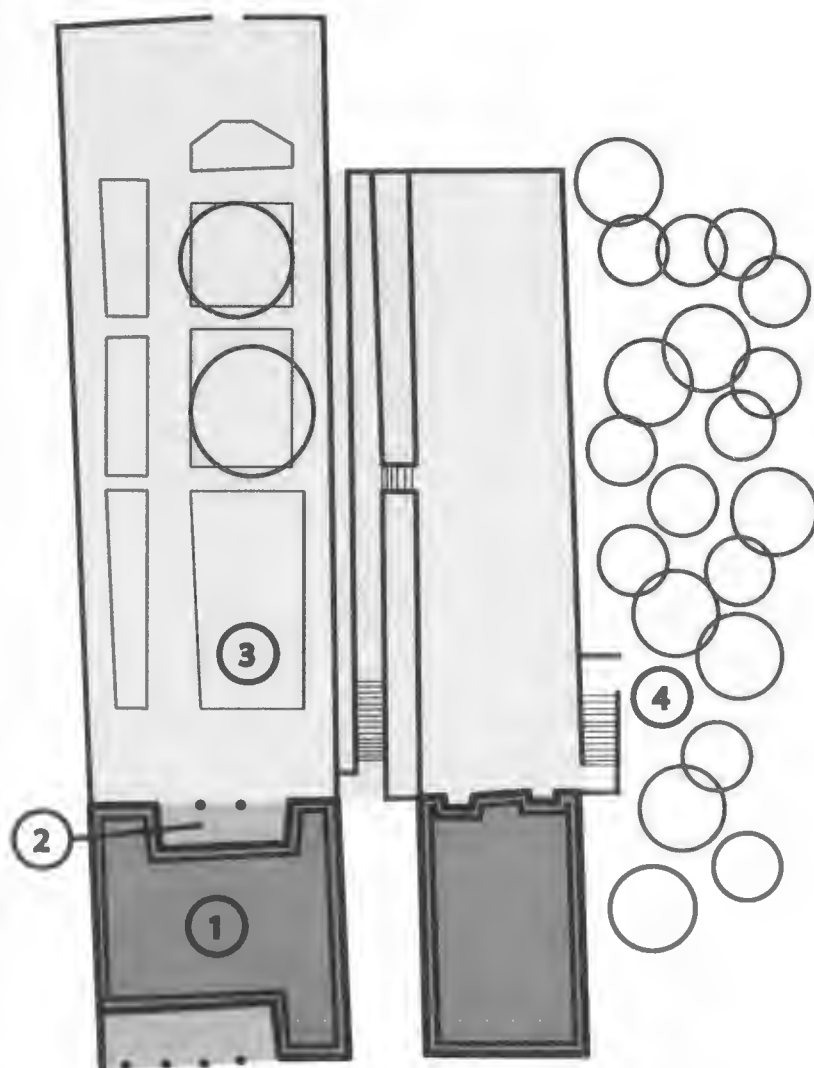


Figure 67: A person moves through a series of degrees of enclosure at the Villa Medici in Fiesole. The villa itself (1) is the most enclosed, from which one moves into the loggia (2) then onto the terraced gardens (3), which are enclosed by walls of varying height, before passing into the broader landscape (4).

*Separation of exterior spaces into rooms**Description:*

This technique calls for the arrangement of outdoor spaces using the same pattern as an interior floor plan, with outdoor spaces replacing rooms and short connecting paths replacing hallways. This imitation of the interior can be strengthened by formally or informally walling these spaces in, and by furnishing them with appropriate decor. The connection between these spaces is critical to the success of this technique. If they feel disconnected from each other than the effect is lost. To improve the relationship, these outdoor rooms can be arranged so that they are easily recognized social spaces, i.e. for sitting or eating.

Potential Applications:

Outdoors:

Series of interconnected courtyards or patio spaces.

Examples:

Outdoors:

Hidcote Manor, England: The garden is divided into a series of outdoor rooms with easy access from one to the next.



Figure 68: A series of interconnected courtyard spaces, or rooms, make up a large portion of the gardens at Hidcote Manor. Source: <http://uploads.wikimedia.org>

*Clustering of ancillary buildings in the landscape**Description:*

Clustering of buildings in the landscape has two major benefits to the indoor-outdoor relationship. Firstly, by clustering buildings it is possible to reduce the visual impact on the landscape to a very limited area instead of impacting the entire site by spreading buildings out. Secondly, when clustering the buildings it is possible to create pleasant and intimate exterior spaces between the buildings. These can be used as courtyard spaces, patio spaces, and other general outdoor living spaces. As well, this creates the opportunity to create sight lines between buildings that pass through the garden, which improves the visual integration of the home and landscape.

Potential Applications:

Outdoors:

Siting buildings to create usable exterior spaces. Reducing the visual impact of buildings on the site.

Examples:

Outdoors:

Garden of the Master of Nets, China: The various buildings of the house are placed throughout the site so as to create a series of courtyards and other distinctive garden spaces.

Portland Classical Chinese Garden, Oregon, USA: The buildings are used to define the garden spaces and give them an intimate feel.



Figure 69: The buildings of the Portland Classical Chinese Garden are used to define spaces in the garden. Source: <http://uploads.wikimedia.org>

MOVEMENT

*Open sight lines from the indoors to the outdoors*Description:

Creating open sight lines between the indoors and outdoors is one of the simplest and most basic ways to create indoor-outdoor relationship. This can be done through windows or doorways, and should be placed to take advantage of attractive views. Providing a view of the surrounding landscape is useful, not only for instilling a desire to enter it, but also to afford a subject which someone could concentrate and contemplate upon. These views specifically designed for contemplation were especially important in Oriental gardens and viewed as an essential process for man to connect with nature.

It is important when opening views to the outside that the architecture does not disappear completely. This was a fundamental flaw in the Glass House, it removed the architecture to the point that the relationship between the building and the landscape was damaged, especially when looking into the house. Rather than having complete glass walls, consider having a low wall with a series of windows stretching to the ceiling. Another technique is to use windows at the corners of houses which have the benefit of opening up a larger cone of vision.

Potential Applications:

Indoors:

Frame or focus views through windows and doors.

Examples:

Indoors:

Chishaku-in, Japan: Open doorways frame attractive garden views.

Fallingwater, USA: An abundance of windows, including corner windows, provide plenty of sight lines out of the building.

*Glass doors located at the end of a hallway**Description:*

This technique is a combination of framing and prospect. By placing a glass door at the end of a hallway, an attractive view can be framed in the landscape while simultaneously taking advantage of the movement of the hallway to project the viewer out into the landscape. Because they will already be moving down the hall, an inviting doorway creates an enticement to continue that movement out into the landscape.

Potential Applications:

Indoors:

Doorway located at end of hall or along another central axis in the house.

Examples:

Indoors:

El Mirador, Utah, USA: Glass doors located at the end of the hallway provide a view into the outdoors that promotes movement into the landscape.

*Conceal and reveal**Description:*

This technique takes advantage of the natural curiosity of humans by providing glimpses of a larger landscape outside of the house, or enclosed garden space. A series of small windows located along a wall, both internally or externally, could be used to provide a glimpse of an outside space that is attractive and inviting. This can inspire a desire to enter that space which the windows only reveal in a tantalizingly small amount. Though this technique does little to physically connect the indoors and outdoors, it is useful for the psychological impact it can have on the viewer to encourage movement between the indoors and outdoors. The technique can also be used in a garden wall, or in freestanding garden architecture to similar effect.

Potential Applications:

Outdoors:

A series of small windows along a garden wall or in garden architecture.

Indoors:

A series of small windows on an internal room or hall.

Examples:

Outdoors:

Portland Classical Chinese Garden, USA: Small windows in the walls of garden rooms provide views to other parts of the garden.

Indoors:

Alhambra, Spain: Small windows provide progressive glimpses of outdoor spaces



Figure 70: Detailed windows provide glimpses to other portions of the garden that entice the visitor to move through the space. This can be applied with the external walls of a home to entice someone indoors to move and explore the outdoor landscape. Photo: Pamela George

Prospect

Description:

Prospect involves placing a point of interest in the landscape at a sufficient distance that one must move into the landscape towards the object to investigate it. It is meant to serve as a destination point, a place to move towards. This is useful for creating an indoor-outdoor relationship because it provides interest and a destination in the landscape that is visible from the home, and which will act as a magnet to draw someone outside. Perhaps the best use of this technique, in regards to the indoor-outdoor relationship, is to have the prospect be a piece of architecture, especially one that already has the indoor-outdoor relationship built into, it such as a building with loggias or a casino.

Potential Applications:

Outdoors:

Create prospect of enclosure in the landscape, separate from the house but still visible. Place focal points in the landscape to create prospect.

Examples:

Outdoors:

The Alhambra, Spain: Many courtyard spaces have architectural focal points on opposite sides that serve as points of prospect to draw you through the space.

Portland Classical Chinese Garden, Oregon, USA: The architecture is used to create prospect on the side of the lake in the center of the garden.



Figure 71: The pagoda and paths, visible from across the lake, create a prospect of enclosure. Classical Chinese Garden, Portland, Oregon. Photo: Pamela George



Figure 72: The loggia located at the end of these fountains in the Generalife provide prospect of shelter and protection which serves to draw the individual from the architecture, through the landscape, and then back into the architecture. Photo: Benjamin George

CONNECTIONS

*Drawing connections between in and out*Description:

In some cases an element can straddle both the indoor and outdoor space simultaneously. When this is possible, it creates a powerful connection between the two spaces because they share a common element. The effect is strongest when the passage of the element from the indoors to the outdoors is plainly visible, such as through a glass wall. When the transition is not at all visible the connection between the interior and exterior can be discovered, but has little direct impact on the indoor-outdoor relationship.

Potential Applications:

Both:

Built in seating that passes from indoors to outdoors. A pool or other water feature that moves from the interior to exterior.

Examples:

Both:

Fallingwater, USA: Stonework continues seamlessly between the interior and exterior of the home.

Home by Thomas Church: Stone bench extends both indoors and outdoors.



Figure 73: The same pattern and stone of the internal walls is used on the outer walls. The effectiveness of this technique is improved by making the similarity visible through the window. Source: <http://uploads.wikimedia.org>

*Points of Connection**Description:*

The points of connection between the interior space and the exterior space are the fundamental element upon which the indoor-outdoor relationship is built. Things such as windows and doors provide both visual and physical connection, and are the most commonly used technique in home design. Physical connection points, such as doors or movable walls, should be placed in a location easily seen and accessible from both the indoors and the outdoors. Consideration of windows should be based more upon the outside view and climatic conditions, and windows should be operable where possible. Reflective, or glass-like windows should be avoided, because they create a one-way relationship in which it is not possible to see into the interior from the landscape. Although the most basic element of the relationship, points of connection are not sufficient in themselves to create a strong connection between the indoors and the outdoors, this develops with the addition of other techniques to enhance the point of connection.

*Potential Applications:**Indoors:*

Having plenty of windows in rooms. Using a glass door. Using full length glass french doors that can create a larger opening than a traditional door. Incorporating a movable partition or wall. Using a skylight.



Figure 74: The many windows on this home help to soften the walls and make the building feel lighter in the landscape. From inside, these multiple windows provide plenty of natural light and views of the surrounding landscape. Photo: Benjamin George

Locating similar uses adjacent to each other inside and out.

Description:

When designing a home, an architect will try to group appropriate uses together to improve both the function and comfort of the home. Similarly, indoor and outdoor spaces of similar use should be located adjacent or close to each other for the same reason. The classic example of this is to locate an outside eating area adjacent to the kitchen or dining room. Clustering similar uses improves the likelihood of moving between the indoor and outdoor spaces by making the connection more appropriate and usable. Spaces that compliment each other, even if they vary in function, should also be located next to each other. Outdoor sitting spaces are often located next to bedrooms to provide a space for relaxation and contemplation in the morning and evening.

Potential Applications:

Both:

Locate similar or complementary uses next to each other.

Examples:

Both:

Logan Residence, Utah, USA: Outdoor spaces are reflect the indoor uses they are adjacent to.

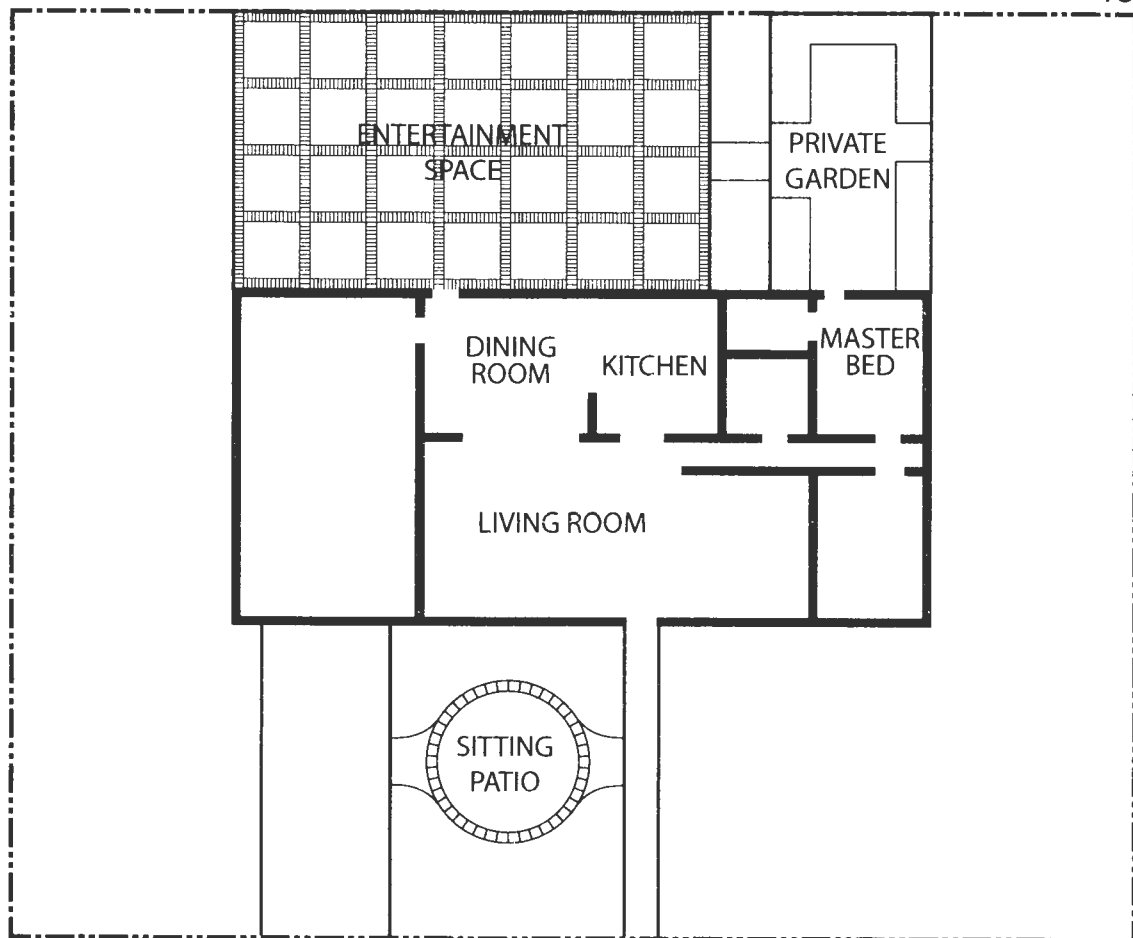


Figure 75: An example of how complimentary spaces inside and outside of the home can be located adjacent to each other.

*Accenting connections**Description:*

Drawing attention to the points of connection will improve the indoor-outdoor relationship by drawing attention to the possibility to move between the spaces, or to accent views. This can be done both internally and externally, and is often achieved through the use of detailing elements such as patterns or decor.

Potential Applications:

Outdoors:

Create a gateway or frame of vegetation around a window or door. Use paths to guide the eye to the door. Use patterns on the ground plane to draw attention to the door.

Indoors:

Use items of decor to lead the eye to the doorway or window.

Examples:

Outdoors:

Mont St. Michel, France: Planters and vegetation are used to accent doors throughout the town.

Indoors:

Spanish residential courtyard gardens: Decor and patterns are used to highlight points of connection between the courtyard and the home.



Figure 76: The patterns and stained glass around the doorway accent and draw attention to the outdoor view and the courtyard which lies beyond. Photo: Benjamin George

*Gradual integration of landscape and architecture**Description:*

By creating alternating layers of landscape and architecture, one element increasing in domination while the other diminishes, it is possible to create a gradual integration of the landscape and the architecture. The end point of this spectrum is the house on one end and the broader landscape on the other. This technique begins at the facade of the building and does not extend into the architecture, except in the case of an included architectural element such as a loggia. This helps to ease the transition between the two spaces, drawing the architecture into the landscape and vice versa. The desired effect is the creation of a transition space that is neither landscape nor architecture, but rather a combination of both.

Potential Applications:

Outdoors:

Placing layers of walls in the landscape. Extending architecture into the landscape.

Examples:

Outdoors:

Villa la Petraia, Italy: Through the use of terracing, surrounding walls, outlying buildings and a gradual increase in the density of vegetation creates a gradual integration of the architecture and the landscape.



Figure 77: Villa la Petraia utilizes walls, terracing and varying densities of vegetation to create a gradual shift from more formal and architectural spaces to more informal and naturalized spaces. Source: <http://uploads.wikimedia.org>

*Use of fragrant plants next to windows and doors*Description:

Using fragrant plants next to windows and doors can provide an extra dimension to the indoor-outdoor relationship through the sense of smell. The smell of plants makes the outdoors seem to be closer than they physically are, and their presence can be sensed throughout the interior.

Potential Applications:

Outdoors:

Locate fragrant plants near operable doors and windows.

Indoors:

Select fragrant indoor plants.

CONCLUSION

The relationship between the built environment and the landscape has been, and continues to be, an important element in the design of living spaces. Originally used out of necessity as a means of mitigating the harsh climatic conditions of the Middle East, the indoor-outdoor relationship has spread and been adapted to nearly every culture and climatic region throughout the world. It can provide for safety, protection and comfort; and can be utilized to create attractive and comfortable spaces.

In the modern world, technology has enabled man to artificially alter the climate of his buildings, and for a time it appeared that the indoor-outdoor relationship might become largely a relic of past, less-technologically advanced societies. This would not be the case, however, as the indoor-outdoor relationship has evolved to take on a more social and aesthetic role, becoming increasingly popular in the last decade with a focus on outdoor living spaces. Outdoor spaces are being used today in ways similar to the Italian Renaissance, where the garden was used as a place for the entertaining of guests, or a retreat for private contemplation. The creation of outdoor rooms is one particularly prominent trend that illustrates the important social and aesthetic role of the relationship.

The resurgence of interest in indoor-outdoor relationship is also connected to an increased sensitivity towards the environment. The integration of the home and garden helps to increase the awareness of the landscape, and is often used

as a statement of principles regarding man's relationship to his surroundings.

The indoor-outdoor relationship can also be used to make homes more efficient, by reducing the need for cooling and by creating livable outdoor spaces that can be enjoyed during the hottest parts of the day instead of artificially regulating the interior temperature of the home.

Though the indoor-outdoor relationship still suffers from budget trimming, the economics of the current housing market may be contributing to the increased use of the relationship. Whereas before, when the indoor-outdoor relationship was essentially eliminated during the middle of the twentieth century in order to build homes at the cheapest price possible, the dramatic increase in home prices has led to increased interest in incorporating outdoor living spaces in designs because they expand the living space at a cheaper cost than an architectural addition. It has now become cost effective to incorporate the relationship in many residential properties as a partial solution to expanding living space without purchasing a larger and more costly home. This is especially true in environments where the climate is more temperate throughout the year.

Further Research

This paper has examined the historical basis of the indoor-outdoor relationship and identified many of the techniques used to create it, but there is still room for much research to be done on this topic. A preference survey, while a complex undertaking because of the multitude of variables involved, would be

valuable in evaluating what techniques of the relationship are preferred. A cost-benefit analysis of the different techniques would be beneficial for landscape architecture and architecture professionals, as well as homeowners, contractors, and realtors, and could provide economic data that may help justify the inclusion of the indoor-outdoor relationship in their homes. Along the same lines, it would be beneficial if a system of measurement was developed to evaluate the strength of the indoor-outdoor relationship of a site. Though it would be impossible to rate many of the subjective elements of the relationship a simplified scale, measuring the number of techniques used, or the percentage of transitory space in relation to the total area of the site or home would be a good place to begin.

It would also be useful to look at a series of bio-regions, or climatic regions, with an eye towards identifying the most appropriate tools and techniques that could be used in each. Though a daunting task, such work could have the potential to make important contributions in very specific and directed areas. While this thesis has looked at the indoor-outdoor relationship in a general manner, it has not attempted to necessarily identify when a certain tool or technique is preferable under certain circumstances. This leaves the door open to continued incorrect treatment of the indoor-outdoor relationship if the designer selects a tool or technique entirely unsuited to the site, a mistake that could be mitigated to a greater degree by identifying preferred tools based on site or climate conditions. A region-focussed approach is likely to also uncover additional tools and techniques used to create indoor-outdoor relationship or, at the very least, alternative interpretations of the tools and techniques.

This thesis found that the indoor-outdoor relationship has played a critical role in many of the most influential societies throughout human history, in meeting the physical needs of humanity as well as pleasing aesthetic desires. Its continued use speaks to its value and warrants further study and evaluation. Importantly, this thesis has identified the tools and techniques used to create the indoor-outdoor relationship, providing a foundation for a better understanding of the relationship, how it is constructed, how it functions and how it can be manipulated. This information will be invaluable to both architects and landscape architects, as well as homeowners. It is the sincere hope of the author that this thesis will spark interest in further research on this topic, as well a general enthusiasm for the application of the principles outlined herein.

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