



ARCHITECTURE
OF THE
MODERN MOVEMENT
IN
TUCSON
1945-1975
CONTEXT STUDY

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INTRODUCTION

Intention

This document is a context study of modern architecture in Tucson, Arizona built between 1945 and 1975. Although these dates were used as guidelines, a few buildings in this study fall outside this time frame. The document encompasses commercial, institutional, and residential buildings that were designed as part of the Modern Movement; the research does not include buildings from the time period that are not considered modern by the definitions established in the study. The intention was to develop a context study that would provide the background information necessary to begin to identify significant buildings from this period and genre:

“A thorough understanding of historic contexts for resources that have achieved significance in the past 50 years is essential for their evaluation. In evaluating and justifying exceptional importance, it is especially critical to identify the properties in a geographical area that portray the same values or associations and determine those that best illustrate or represent the architectural, cultural or historical values being considered. Thus, the first step in evaluating properties of recent significance is to establish and describe the historic context applicable to the resource.” (section II, National Register Bulletin #22 –Preserving the Recent Past)

This document comprises the first phase of the *Modern Architecture Preservation Project (MAPP)—Tucson*, the primary objective of which is to identify the most significant buildings of the Modern Movement and develop resources to have these properties protected and preserved.

Methodology

This context study is a collaboration between the office of *Chris Evans, Architect*, Brooks Jeffery of the University of Arizona Preservation Studies program and the students of *Arch. 497 – Documentation and Interpretation of the Built Environment* in the spring of 2004 and 2005 at the University of Arizona. The methods used to complete this project included:

- literature review of documents on modern architecture: its history, development, character, and its regional interpretations.
- building survey of properties of modern architecture built in Tucson between 1945-75 using existing documentary records and windshield survey methods
- oral histories from long-time Tucson architects and builders
- interpretation and analysis of the building survey, literature review and oral histories to identify modern properties and their significance

Resources are identified in the Bibliography. A peer review board provided feedback on the context study’s analysis and interpretation. The board members were selected based on their knowledge of modern architecture and Tucson modern architecture.

HISTORIC OVERVIEW OF THE RISE OF THE MODERN MOVEMENT

In the early 20th century, a convergence of events in politics, social theory, technological innovation and aesthetic creativity produced a revolution in design now known as the Modern Movement.

“The Modern Movement was an artistic and architectural movement that embodied the unique early twentieth century notion that artistic works must look forward to the future without overt references to historical precedent. Modern design emphasized expression of functional, technical or spatial properties rather than reliance on decoration. Modern design was conscious of being modern: it purposefully expressed the principles of modern design.” (docomomo.org)

What we now think of as 20th century modern architecture evolved out of 19th century events like the sweeping sea changes of the Industrial Revolution and the emergence of democratic and egalitarian ideals in Europe, to much smaller events such as the Chicago fire of 1871. The historical background and contributions to the roots of modernism are far too extensive to comprehensively cover here. What follows is a review of the more immediate history of the creation of modern architecture. (Recommended reading for a more complete review of these influences can be found in Kostof’s A History of Architecture, chapters 26-28.)

At the turn of the 20th century, the primary force driving the development of a modern architecture was the continued technological revolution that was the product of the modern age. Advancements in engineering, materials, and construction techniques were allowing architects to envision the world in a whole new way. New products, such as steel, sheet glass, aluminum and reinforced concrete opened up dramatic new opportunities for design. New manufacturing techniques eventually led to the mass production and pre-fabrication of building construction materials, ultimately reinventing how buildings were constructed.

Democratic institutions had taken hold in much of Europe (where most of the development of modern design philosophy evolved), which led to a fermentation of thought about how architecture should respond to the new human condition. Urban and architectural problems were to be solved by rational thought rather than through the pre-determined models of the past. The first step was to reject historical precedents that were associated with the tyrannies and aristocracies of the past. (This reflected a distrust of existing political and cultural institutions.) The second step was to respond to the needs of the working class and respond to the blight of the industrial city by designing and building more livable environments. This brought about the onset of modern urban design, where architects began to envision master-planned cities and the design of worker housing in a restructured society.

The purveyors of the new rationalism were ultimately reductivists: the excesses of the past were to be replaced by an architectural ethic grounded in providing for the basic needs of the working class. This led to a utilitarian aesthetic, where form followed function and decoration was stripped from design. In the first decade of the new century, Adolf Loos proclaimed that ornament was “a crime,” suggesting that it was misguided to perpetuate the cultural institutions of the aristocracy, and immoral to spend resources on decoration when there were pressing social needs that had to be met. The results were buildings of smooth white plaster with simple window openings located to respond to interior usage. Other

architects, such as Peter Behrens, were willing to look beyond pure functionalism and embrace the aesthetic of the new technologies.

These innovations took place across Europe, but especially in Austria and Germany. Important European architects of the time included Loos and Otto Wagner in Austria, Auguste Perret and Tony Garnier in France, Behrens and Bruno Taut in Germany, and Antonio St. Elia in Italy.

Beginning in 1910-11, these European architects were exposed to Frank Lloyd Wright's work, including the Larkin Building (1904), the Unity Temple (1906), and most importantly his prairie style houses (including the Robie House of 1909). Wright's aesthetic innovation and rejection of historical styles had led to complex geometries, stark forms and often asymmetrical compositions; these concepts became creative models for the Europeans.

World War I brought a halt to most new construction in Europe. After the war, dramatic social changes took place in Germany, the Soviet Union and elsewhere. The moratorium on construction during the war coupled with an explosion in population growth led to an increased demand for housing. The task of building fell to public entities, as the scope of work exceeded the capacity of the private sector. But the limited financial resources required this housing be built cost effectively. Architects of the new modern philosophy seized the opportunity. Responding to this pressing need, architects began to produce housing on a larger scale, creating utilitarian housing blocks that were derived from the functional requirements and the new methods of construction that were available.

The first dozen years or so after the war were an incredibly innovative time for architecture. Modern architecture had come into its own. The leaders of this movement included Walter Gropius and Ludwig Mies van der Rohe in Germany, and LeCorbusier in France. Gropius was one of the founders of the Bauhaus, a newly established school in Dessau focused on the new modern philosophy.

"The students were to be trained both as designers and craftsmen, and imbued with the democratic collectivity of teamwork. Use, not cultural content was to be their guide, and forms were to be derived from what the program and industrial methods of production dictated." (Kostof, p. 702)

Buildings were to be well-crafted "machines for living," reflecting the new machine age. Beauty was to be found through eurhythmy and proportion of pure geometric forms instead of applied decoration. All of the design arts were included in the curriculum, leading to the cross-fertilization of ideas between disciplines.

In France, LeCorbusier focused on a systemic approach to problem solving. His Do-mi-no construction system of concrete slabs provided a flexible solution to pressing housing problems in a war-torn Europe. He also developed an architectural vocabulary based on five points—piloti, free plan, free façade, roof garden, ribbon windows—that allowed for a wide range of formal exploration based on a simple set of rules/vocabulary.

Although LeCorbusier explored the possibilities of improving the living conditions in the modern city, he was, like Mies, also interested in the aesthetic possibility (and problem-solving capacity) of new technologies and this new design methodology. Both reveled in the opportunity to explore form, space and light without the arbitrary limitations of the past or the constraints of socio-political theory.

In the Soviet Union there was a short-lived movement toward an architecture that reflected and reinforced the ideals of the communist revolution. The school at Vkhutemas and the innovative works of constructivist artists like Malevich sought an aesthetic expression of the new optimism of the first years of the Soviet Union. This exploration was quickly halted in the early 30's when Stalin decided to impose a more formal, monumental style akin to a stripped classicism to represent the Soviet state.

While there were distinctive variations within the architecture of the Modern Movement in the 20's, there were several characteristics most of the early European practitioners had in common: *simple, clean design, modern materials and technologies, an emphasis on geometric forms, asymmetrical compositions, functional planning, large windows and an absence of ornamentation.*

In the U.S., modern architecture did not take hold to the same degree, probably because Americans were not experiencing the same upheaval socially and economically. Americans did demonstrate an interest in the promise science and technology held for the future, however. This could be seen in the exhibitions like the Century of Progress in Chicago, the giant skyscrapers in New York, and in the work of visionary engineers like Buckminster Fuller, who pioneered the geodesic dome. In the 20's and 30's the public also embraced the aesthetics of the new machine age, which inspired the curvilinear architectural styles known as Art Deco and Streamline Moderne. Both styles began to integrate the aesthetics of the modern age into the built environment.

Wright continued to work in the U.S. in the 20's, but his designs were distinctive from the Europeans: he was willing to use more traditional materials, was less controlled by function, and integrated some ornamentation into his work. The end product was less radical and more stylized than its European counterpart. Wright continued to build his prairie style houses into the 1920's, and added a few concrete block houses in southern California.

Other than Wright, only a handful of architects across the country were engaging these modern design concepts. These were mostly European immigrants or former students of Wright. Rudolph Schindler and Richard Neutra had both come to the United States independently to discover Wright's work for themselves, and both ended up in Los Angeles after working with Wright (Neutra only briefly). Beginning in the early-mid 20's, Schindler and then Neutra began to produce exceptionally unique and innovative work in relative isolation from the rest of the modernists. Neutra's work strongly reflected the European aesthetic of white plaster forms and great expanses of glass. Schindler had been more heavily influenced by Wright, and was far more likely to incorporate materials such as wood and concrete.

It wasn't until 1932 and the Museum of Modern Art's exhibition of "The International Style" in New York that the Modern Movement had a significant impact on American architects. The exhibition focused on the work of the European modernists such as Gropius and LeCorbusier, but spoke little of its social or political underpinnings.

In the mid-1930's many of the leading proponents of modernism emigrated to the U.S. in order to escape the escalating political turmoil in Europe and the rise of fascism. In the midst of the Great Depression these architects had little impact on the built environment because so little was being built; but many of these architects took prominent positions in educational institutions across the country and within a few years had radically transformed

the landscape of architectural education. Mies went to IIT in Chicago, and Gropius took over at Harvard. The firmly established Beaux Arts model of architectural education was quickly replaced by the new progressive philosophy. International modern architecture came to dominate academia and the professional literature in the U.S. within a few short years. As World War II came to a close, international modernism was poised to explode on the scene in the post-war building boom to come.

(Note: Buildings that strongly reflect the early European theories of the Modern Movement are referred to in this study as “international modern” architecture. This makes reference to the International Style as defined by Johnson and Hitchcock at MOMA’s 1932 exhibit, but intentionally sets aside the term “style” for two reasons. First, the concept of style is less applicable because modern architecture was based on an aesthetic philosophy, rather than pre-determined aesthetic forms. This resulted in a broad range of expression that is difficult to qualify as a single style. Second, the International Style has a specific reference to European models; but in many respects these models were not executed in the same method in Tucson. Quite simply, Tucson modern architecture is not the International Style; it more strongly reflects local values, local architects and a comfort with familiar materials, such as brick.)

CHARACTERISTICS OF MODERN ARCHITECTURE IN TUCSON – HISTORIC OVERVIEW

The aesthetic philosophy of the Modern Movement allowed for a broad range of architectural expression. Architects interpreted and expressed this philosophy through different architectural vocabularies; however, there are threads of continuity that tie these variations/vocabularies together. Observation and analysis of modern architecture in Tucson reveals a finite set of formal concepts or characteristics that (architects employed to) reflect (respond to) the philosophy's guiding principles. These concepts were rarely utilized in the same way, however, and often led to very distinct solutions. In some cases these concepts were responses to functional design problems, and in others they were used primarily (intended) to achieve an aesthetic end.

These characteristics (concepts) are not all-inclusive categories, and are not mutually exclusive; rather any given building can exhibit several of these characteristics, and some exhibit 4 or even 5. (A glossary of these characteristics can be found at the conclusion of this chapter.)

What follows is an historic review of modern architecture **in Tucson**, focused on the characteristics that were prevalent and significant (in the Tucson version of modern architecture) (at the time).

INTERNATIONAL MODERN PHASE

Architectural Context—Late 1940's

Post World War II Tucson witnessed a population explosion: in 1940 the city's population was 35,752; by 1960 the city's population had increased to 212,892. Men who had been stationed at Davis-Monthan Air Force Base or Fort Huachuca in Sierra Vista during the war discovered Tucson for the first time and returned after the war with their families to begin their new lives. The Cold War and the expansion of local military facilities contributed to continued growth in Tucson, as did the growth in the aerospace and mining industries. Recent innovations in air conditioning made the city bearable in the summer, and therefore much more attractive than it had been in the past. The city also became a haven for tourists and retirees who annually sought refuge from brutal winters elsewhere.

Tucson's explosive growth coupled with the moratorium on construction during the war combined to create a severe housing shortage; construction of new housing skyrocketed. The high demand for new construction brought with it a demand for architectural professionals. But there were only a few architecture schools in the west (UCLA, University of Oregon, University of Washington being the most prominent) and only one (albeit non-accredited) in Arizona—Wright's Taliesin West. Someone with an architectural education was hard to come by. To deal with this shortage, local industry began advertising across the country.

And so they came. In the August 1945 Telephone Directory there were just 8 listings for architectural offices. By September 1947 that number had doubled to 17. Tucson drew a disproportionate share of young professionals from the upper Midwest—the University of

Illinois in particular. Illinois and other Midwestern schools in the 40's were influenced by the modernism of the Europeans, but appear not to be as strict in the application of the modern philosophy as schools such as Harvard and IIT. Wright and Mies were both influential in the Midwest, but so were Keck & Keck of Chicago. They were designing modern houses with more traditional materials, and forms that were modern but not alien to their mid-western context. The production of design was less ideological.

So whether it was the appeal of the desert, the severe winters of the upper Midwest or the renewed lure of the western "frontier", young architectural professionals came to Tucson. Their impact on local architecture was dramatic:

"Tucson's architectural expression, which had been previously defined by the revival of historical styles, was being transformed by post-World War II growth and the arrival of a handful of architects...who were trained in the aesthetics of the Modern Movement." (Jeffery, Sakellar Guide to Tucson Architecture Series)

Prior to this shift, there were few architects in Tucson willing and able to experiment with modern design. In the 30's and 40's, two related styles had emerged—Art Deco and Streamline Moderne—and established precedent for the modern architecture to come. Art Deco embraced the flash and flourish of the modern machine age and rejected historical styles; it had a significant impact on commercial storefronts and enterprises seeking to attract passing motorists. Streamline Moderne was inspired by the streamlined aesthetics of the transportation industry, and integrated themes from both nautical and automotive design; it was also distinguished by a lack of applied ornament. In Tucson, only a few buildings were built in each style during the 1940's.

The earliest example of modern architecture in Tucson was a winter residence for Margaret the Countess of Suffolk by Richard Morse and Arthur Brown built in 1937. (Morse's name was on the door, but it is likely that Brown was largely responsible for the design; Brown is credited with Morse in the 1941 publication of the house). The house reflects the early work of the Bauhaus and LeCorbusier with its large expanses of glass and smooth plaster walls. The windows provide excellent views of the Catalina Mountains, and the plaster walls reflect an effort to dissolve the mass and surface of the building; the emphasis is on volume. This house was published in *Architectural Record* in Jan. 1941, alongside the works of Keck & Keck, Alden Dow and Harwell Hamilton Harris.

Modern architecture did not really return to Tucson until after the war.

As the nation emerged from World War II a progressive outlook and optimism took hold of the nation, including Tucson. Modern architecture was perceived as part of the progressive idealism, reflecting a faith in science and technology.

The automobile dominated the city's urban development, with expanding street grids, parking lots and high-speed signage defining the character of the city as much as the architecture. The signs and billboards became so ubiquitous that the city passed anti-billboard legislation in the early 1960's to help curb the problem.

Tucson architecture was heavily influenced by national trends in the 40's and this continued throughout the modern period. Modern architecture dominated the professional literature by

the late 40's; magazines such as *Architectural Record*, *California Arts and Architecture* and *Sunset* were all popular among Tucson architects.

Some of the most significant buildings nationally in the late 40's were the steel and glass houses of Mies van der Rohe, Philip Johnson, and those found in southern California (Los Angeles and Palm Springs), as well as the plastered boxes of Gropius and The Architects Collaborative in New England. Tucson didn't adopt the steel and glass aesthetic, presumably because the severity of Tucson's summer sun would be unbearable in a glass box but also because it was such a radical departure. Instead, Tucson, like much of the inland portions of the country, adopted a "situated modernism" that integrated modern forms with more conventional materials, especially brick.

designers ...experimented with a range of modernist design solutions, but a critical mass of what they built is best thought of as "Situating Modernism": design adapted to specific contextual and programmatic requirements and emphasizing local materials, vernacular traditions, and shaping buildings to the needs of their users. (Gournay and Corbin)

Nationally, situated modernism could especially be seen in the works of Bernard Maybeck and William Wurster in northern California, and Keck and Keck in Illinois. (Note: Yellow Norman brick was especially popular among modernists nationally because it had less history and less color, and yet still had the scale, texture and feel of brick; it had only a minor impact in Tucson however, primarily on commercial and institutional buildings.)

Art Brown established his own office in 1941, and was at the forefront of introducing modernism to Tucson. His business took off after the war. Many of his early works have since been demolished, including the Tucson Biltmore of 1946 and the Rose Elementary School of 1948. The Biltmore included a dramatic two-story circular restaurant that had a huge window wall and a stuccoed roof plane that seemed to hover above. The Rose School was the first solar-heated school in the country.

Many of Brown's residences of the 1940's have survived, including the Rosenberg Residence (1946) and the Clothier Residence (1947). Both houses were published nationally; the Clothier Residence was published on the cover of *Architectural Record* in May 1948, and won a National AIA Award of Merit in 1949. This house and most of Brown's houses during this period fit into the trend of situated modernism; he uses brick and wood and doesn't stray too far from the popular image of "house." On the other hand the living spaces are dramatic, expanding and rising toward large picture windows that open up to exterior spaces or mountain views.

So in the late 40's, modern architecture arrived in Tucson.

Utilitarian

Responding to a desperate need for housing after World War I, the early European modernists looked to functionalism and cost efficiency as their guides. Reacting against the mass and decoration of historical styles (and their associations), architects such as Loos and Gropius were also trying to dissolve the substance of the wall. This resulted in an architecture stripped of unnecessary adornment or materiality; utility became the driving force for the architecture.

Tucson's post-World War II economic climate lent itself to this stripped modernist aesthetic. As a newly developing city, there was not a tremendous amount of established wealth in the community; so utilitarian modern architecture was a reasonable response to the needs of a growing Tucson.

Most utilitarian buildings in Tucson were part of the trend now identified as "situated modernism." Contrary to the work of the Europeans, brick was typical of most early modern work in Tucson. Art Brown was the early and primary purveyor of utilitarian design; buildings such as First Christian Church (1948) and the residence halls he designed for the University of Arizona (epitomized by Graham-Greenlee Hall in 1954) tended to minimize architectural affectation. First Christian Church includes a few "excesses" (note the repetitive angled walls) but far less than one would expect in a place of worship. Except for the requisite brick on the University of Arizona campus, Graham Greenlee is the ultimate in utilitarian design, consisting of nothing more than simple rectangular volumes, ribbon windows, brick and concrete. The only extraneous elements are the shading devices and an entry courtyard.

Most of the elementary schools in Tucson built in the 50's and 60's were also utilitarian. These schools were usually linear brick buildings reflecting a double-loaded corridor, with low-slope shed or hip roofs and ribbon windows. The roofs usually overhang the classroom windows to provide shade, but vertical shading devices were often applied to building exteriors on the east and west elevations to provide relief from the sun's intensity.

(Transamerica title/curtain wall, Tucson House, Browns houses); functionalism???

After the 1950's, utilitarian design lost prominence. (The utilitarian aesthetic is entwined with the basic tenets of modern design--simplicity, lack of ornament, clean lines--so in some respects the character continued to influence modern design.) For example, Cuneen Associates' Tucson Federal Savings (1955) is a simple box and plane, but now the architecture requires something more; so the architect completes the design with a flourish on the street façade of patterned brick. But as an end goal, utilitarianism was no longer held in favor.

Planar

Mies Van Der Rohe's 1929 Barcelona Pavilion was an anomaly in early modern architecture. The design was not based primarily on programmatic or humanistic needs, construction efficiency or new technologies as was most early modernism. The design's primary intent was to define space through the articulation and expression of the flat, rectangular roof and wall planes that composed the form. Aesthetic intention trumped any utilitarian goals. The building was a refinement of the Dutch DeStijl movement of the 1920's and had a huge impact on modern design. The asymmetrical, planar character was emphasized by minimizing the structural columns and using floor to ceiling glass to enclose the space.

In the United States, two houses for Edgar Kaufman set the standard for early planar architecture: Fallingwater by Frank Lloyd Wright (1937) and the Desert House in Palm Springs by Richard Nuetra (1947). Both houses were asymmetrical compositions of horizontal planes and vertical stone piers. Planar floors and roofs were defined by the "cantilever" and the extent to which one could defy gravity; no building did this better than

Fallingwater. Wright's reinforced concrete decks pushed the limits of contemporary construction techniques to cantilever outward over the water 15 feet. Low ceilings made the visitor acutely aware of the horizontal and planar character of the space. The rough stone and concrete of Fallingwater was unrelated to the steel, glass and polished marble of the Barcelona Pavilion, but both were seeking to define space through planes.

More related to Mies' work, Nuetra's Desert House was a continuation of the light and airy steel (wood) and glass aesthetic that came to be associated with southern California modern architecture in the 50's. The metal-faced roof planes articulated the horizontal line and sheltered light-filled, glass-enclosed spaces. The glass enclosure walls were retractable, blurring the line between interior and exterior and further articulating the roof plane.

A modern architecture with a planar character began in Tucson with Scholer Sakellar Fuller's Tucson Clinic in 1953. The building is a composition of horizontal roof planes buttressed by brick volumes of varying sizes. The primary roof plane on the building's west façade cantilevers out over a wide expanse of glass.



Figure 1

Another early and unique example of the use of planes to define form can be found at the Victoria Apartments complex (2811 e. 6th st.; date and architect unknown). The roof planes are not differentiated from the rest of

the building in materials or color, resulting in a building that appears to have something of a striped quality, similar to earlier Streamlined Moderne works. The building's rectilinear character clearly distinguishes it from that style, however. (The building also appears to have some relationship to some of Rudolph Schindler's work.)

Two buildings that raised the bar for planar modernism in Tucson were the College Shop of 1956 by William Wilde (demolished 2003), and the Paulin Motors Showroom (2121 e. Broadway) by Ragnar Qvale in 1957. The College Shop was a great example of high-end modernism in the Tradition of Mies: Wilde used polished stone, steel, glass, and exceptional detailing. The Paulin Showroom was rooted more in southern California modernism (Qvale was from Los Angeles) with simple floating planes and floor-to-ceiling glass akin to Nuetra's Kaufman House. The floating roof planes accentuated the "display case" aspect of the showroom, and contrasted the rough native stone walls that provided the backdrop to the space.

One of the few Tucson residences defined by a horizontal roof plane was Art Brown's Altaffer Residence (1958). Designed around a courtyard, the long horizontal roof plane unifies the separate wings of the house and the courtyard into a single form. The courtyard is enclosed by glass on the front elevation and acts as an entry space. (Note: this roof differs from most of Brown's previous residences in two fundamental ways. First, the roof is horizontal rather than a shed roof. Second, the rafter tail ends are no longer exposed and

are instead hidden behind the linear metal fascia.) Brown pushed this aesthetic even further with his McInnes Residence (1959) where he twisted the roof plane into a hyperbolic paraboloid, giving it greater structural stability.

Other buildings were more subtle in the use of planes, such as Friedman/Jobusch's Electrical Contractors Hall of 1962 (750 s. Tucson Blvd.). The roof plane is again expressed, but this time as a much thinner profile, reducing its significance in the overall composition. The brick walls are also articulated as planes.

Planar architecture slipped into a utilitarian aesthetic in the 1960's with the increased use of pre-cast concrete slabs (or lift-slab technologies) to build large scale buildings. The Tucson House of 1962 (Sakellar and others) epitomized the planar aesthetic of multi-story towers. Exposed balconies for the residences allowed for the recess of the enclosure system, which resulted in the articulation of floors and structural walls. This style became prevalent in beach communities like Miami and Honolulu, where the goal was to create spectacular views while producing buildings quickly and cheaply.

Nick Sakellar's Wilmot Library (1964) was a radically different approach to planar design. The library was an early example of Sakellar's effort to create a more sculpted aesthetic; as might be expected of a transition building, Sakellar integrated two separate characteristics—the sculptural quality was balanced by the roof's long horizontal roof lines and clerestory ribbon windows. Because the building is monochromatic and monolithic the roof plane is not set off from the rest of the building (as in previous planar buildings) and instead becomes part of the sculpture.

There was a shift in planar architecture in the late 60's away from the lighter aesthetic of floating roof planes, and toward walls as the primary planar elements. This may have reflected the dominance of wall construction in the Tucson region's historic construction, but was also surely a reflection of the late 1960's expressionist emphasis on mass (see "Brutal" characteristic below). John Mascarella's Randolph Recreation Center (200 s. Alvernon, 1967) utilized brick wall planes at varying angles to define several independent buildings in a campus-like setting. Two other planar buildings of note by Bob Swaim include the Swaim Residence (1968) and the Orchard River Townhomes (1972). The Swaim Residence emphasized the mass of cast-in-place concrete planes contrasted by large glass openings. The Orchard River Townhomes incorporate parallel planes of concrete masonry to provide privacy and definition to the individual townhome units; slump block was used to approximate the mass and feel of adobe.

How to identify--other characteristics/categories for:

early houses of Brown
Catalina high school
lerner building—volumetric?
faith Lutheran

EXPRESSIONIST MODERN PHASE

Architectural Context—Early 1960's

By 1960, the Modern Movement dominated Tucson architecture among commercial and institutional buildings; its impact on residential architecture was much more limited. Tucson was now an expanding city defined more and more by the ranch house and urban sprawl. The city's economic base continued to expand, making more money available to invest in architecture.

About this time, a shift began to take place in American architecture. Architects began seeking to imbue modern architecture with new life and greater energy than could be found in the limited palette of international modernism. Mies' dictum "less is more" was set aside to allow for greater experimentation; the exploration of design possibilities and a more personal expression ensued. The result was greater variation and an expanded range of architectural aesthetic. Reduction and restraint were replaced by articulation and exuberance. Ornamentation began to gain acceptance if it was abstract and integral to the building (rather than applied). Form was now less determined by function and utility, and more by aesthetic intention. (In Tucson, this may have been partly the result of the increase in money available for construction.) New characteristics emerged to define this new modernism. And as designers became more adept, they began to integrate these various characteristics to create buildings of even greater complexity.

As modernism had developed, function had become part of the aesthetic. So a more elaborate design required challenging one of the basic tenets of modernism: functionalism.

Tucson architects were not far behind national trends; the increase in circulation of architecture magazines increased the speed with which new ideas were disseminated across the country. The early phase of expressionist modern architecture focused on creating a more vibrant, energetic architecture with greater visual interest. In the late 60's and early 70's, some expressionism sought monumentality, with an emphasis on scale and mass.

Sculptural

The most significant challenge to functionalism came in the form of highly sculptural structures that were about art and appearance first, function second. This unabashed form-giving was an extension of cable-supported parabolic structures, such as long-span suspension bridges. Buildings such as the North Carolina State Fair Arena (1952, Nowicki, Deitrick) had incorporated parabolic tensile technologies to provide long spans for large public facilities. The sculptural possibilities of parabolic forms increased with the inversion of parabolic forms and the use of concrete structures in compression; the double-curvature of forms like the hyperbolic paraboloid further extended the possibilities for modern design. In the early 1950's, Felix Candela of Mexico began experimenting with thin shell hyperbolic paraboloids, as did Eduardo Catalano in North Carolina.

There were several architects on the national stage that began to engage architecture as sculpture in the mid 1950's; Eero Saarinen was the most prominent and prolific (designer of sculptural architecture) in the United States. To achieve this new sculptural quality, Saarinen began using steel-reinforced thin-shell concrete structures. Saarinen's Kresge Auditorium at MIT in 1955 utilized a thin-shell concrete dome that had been sliced vertically to create what

was essentially a three-point vault. Thin-shell construction had been used prior to Kresge, but its use had been limited primarily to military installations and airplane hangers. With Kresge, Saarinen brought this construction technique into mainstream modern architecture.

Saarinen's greatest achievement in using thin shell concrete was the TWA Terminal at JFK International Airport. Built in 1962, TWA incorporated a complex, free-form doubly-curved structure to achieve the flight imagery Saarinen sought.

In 1956, Minoru Yamasaki designed the Lambert Field Airport Terminal in St. Louis, successfully transitioning his use of thin-shell concrete from the utilitarian (airplane hangars) to the sculptural.

Frank Lloyd Wright also used concrete to achieve more sculptural forms in the late 50's, most notably with the Marin County Civic Center and the Guggenheim Museum (1959). The Guggenheim's spiraling ramp and walls were a dramatic departure from anything Wright had done before. LeCorbusier, one of the early international modern masters, also began to explore the sculptural possibilities of concrete in the 1950's. The most notable results can be found at Chandigarh and the chapel at Ronchamp. Even LeCorbusier's lone American work, the Carpenter Center at Harvard University (1964), is composed of two curved volumes bisected by a sinuous ramp.

The one early precedent of sculptural modern design in Tucson was Scholer Sakellar Fuller's Catalina High School in 1955. Although the building tends toward a utilitarian character in the classroom wings, the building uses steel to achieve sculptural roof forms in some of the larger spaces. A second Sakellar building, the Saddle and Sirloin on Miracle Mile (date?) was constructed of thin-shell reinforced concrete, but has since been razed. (breck dodge at speedway and country club; cantilevered hyperbolic paraboloid; oct. 60; john beck architect?)

It was into this context that architect Charles Cox designed a hyperbolic paraboloid for the sanctuary of Tucson's Catalina Baptist Church in 1960. The church's pastor had seen hyperbolic structures on a trip to Germany and sought to achieve something similarly dramatic for his congregation's new sanctuary. The result was an upward thrusting concrete shell, balanced on two small sidewalls. Glass infill between the floor and shell resulted in a dramatic and brightly-lit space. Though small in scale, the building was a significant departure from anything that had been previously built in Tucson. (It should be noted that Art Brown also used a shallow, steel-framed hyperbolic paraboloid for his McInnes Residence of 1959; However, Brown used it primarily for its structural efficiency rather than its sculptural potential.)

Other sculptural buildings were constructed in Tucson in the 1960's, although no other achieved the purity of form that Cox did with the Catalina Baptist Church. The Walter Douglas Elementary School (Shaver Co., 1961) utilizes thin-shell concrete roofs on the circular classroom pods. The roofs are dramatically fluted (not unlike a clamshell) for structural stability, and for visual effect. Brown's AAA Office (1960) was similar in form to Walter Douglas, but utilized a folded plate rather than a scalloped shell. The Mettler Dance Studio (1963, Howe) was a Wright-inspired composition of curvilinear walls and circular spaces; the primary studio space has a shallow dome. Wilde used sinuously curving glu-lam beams in his State Hardware (1963) to achieve a dramatic, undulating roof form. The

O'Reilly Chevrolet Showroom of 1965 (Qvale) applied subtle curvature to a simple post and beam structural system. (Wilmot medical bldg—Scholer and Fuller, Lockard)

Nick Sakellar also continued to explore the sculptural potential of modern architecture in the 1960's. His sculptural work was usually characterized by a monolithic quality, directing the focus of his buildings to the carving of forms. These buildings included the Wilmot Public Library (1964), the Academy Medical Offices at 310 n. Wilmot Road (1970), Cholla High School (1966), and the Arizona Trust Office Building (1969). With the exception of the Arizona Trust, these buildings are not characterized by the dramatic single gesture seen in Saarinen or Wright's work; instead the sculptural character is defined more by a series of smaller sculptural moves using geometric angles and subtle curves.



Figure 2

Sculptural experimentation in Tucson modern architecture culminated with three mid-town bank buildings in 1971-72: the Valley National Bank (now Bank One) at Broadway and Country Club by Friedman/Jobusch; the Western Savings (now Bank of America) at El Con Mall by Sarmiento Architects; and the Union Bank (now Compass Bank) by Ivan Sarkiss and Associates at Grant and Park.

Valley National is a complex composition of curved walls that create a series of interior and exterior volumes. The raised plinth and entry columns establish a formal facade, but the

asymmetry, curved plaster forms and monochromatic white paint reinforce the sculptural qualities of the architecture. This is one of a handful of buildings in Tucson that incorporates abstract bas-relief into the architecture (see also Az. Dept. of Public Safety on s. Tucson Blvd., and Podiatrist Office on e. Broadway), and the only building to do so that is sculptural in three dimensions. The sculptural surface applications reflected a movement in the 60's and early 70's toward integrating art into architecture.

W.A. Sarmiento was a St. Louis-based architect who produced a number of significant bank buildings all across the western United States. In several buildings, including the Western Savings in Tucson, Sarmiento combined curvilinear forms with dynamic patterns and structural gymnastics to create unique and complex buildings. The Western Savings is a single volume defined by two convex curving walls (the building looks like a football in plan). The primary facade contains two layers: a series of pre-cast concrete elliptical structures aligned to create a curvilinear structural screen and a layer of glass behind. The thin concrete roof cantilevers over the entrance 15 feet or more.

The Union Bank appears to be a continuation of the curved concrete aesthetic first expressed in the Alley Theatre in Houston, Texas (1968, Ulrich Franzen). The building is a composition of elongated concrete cylinders that, like Valley National, define both interior and exterior spaces. The gray concrete street façade has virtually no windows, resulting in a brutal appearance.

One final building of note is the UA Law School, by Terry Atkinson (1977). The building is defined by angular geometry, exposed aggregate panels, and dark glazing. The walls protrude from the base and taper toward the top; the horizontal roof forms (also exposed aggregate) also taper upward. The primary volume of the building is rectangular in plan; the secondary volumes on the north side of the complex are more varied and angular.

(Bob Swaim's inverted pyramid for Western Savings (1979) was a late contribution to sculptural modern design, though the singular gesture and reflective glass suggests it to be more of a transition building into corporate modernism; see "Properties that Anticipate Future Directions in Modern Architecture" below)

Structural

The early European modernists of the 20's had looked upon structure as necessity: a means to a programmatic end. As a result, structure was often hidden behind walls of glass or plaster. Mies Van Der Rohe moved away from this orthodoxy after relocating to the United States in the 1930's. His early structures in Europe, such as the Barcelona Pavilion, had subjugated structure to space. But in his American work, Mies embraced the mass production of steel to create an aesthetic that was the beginnings of structural expressionism. At the IIT Campus beginning in 1939 (including Crown Hall, 1950-56), he exposed columns and beams on the exterior of the buildings; the building forms were defined by structure.

After the war, other modern architects began to look to structure for inspiration. LeCorbusier used concrete to create massive pilotis to support his more massive constructions. His cast concrete structures in Asia, such as Chandigarh, are nothing but structure and space. P.L. Nervi took a more flamboyant embrace of structure; his buildings flaunted the beauty of structural logic and engineering. And several Japanese architects created "superstructures:" dominating, over-scaled buildings that embraced pre-cast construction and articulated columns and beams for aesthetic effect.

It was pre-cast concrete construction that had the most significant impact on Tucson. One of the earliest pre-cast concrete buildings in Tucson was Brown's Faith Lutheran Church (1951). The roof is composed of overlapping hollow-core concrete planks that create a texture to the building surface. While the structure is exposed on the interior of the sanctuary, the exterior gives little clue to how the building is supported.

Structural exhibitionism didn't really arrive to Tucson until the early 60's. In 1963 William Wilde designed an addition for State Hardware that was a radical departure from Tucson architecture. Exposed, glue-laminated beams had become more prominent in large span buildings such as grocery stores (note: AJ Bayless); but Wilde embraced the flexible nature of glu-lam beam construction to create a spectacular, sculpted undulating roof.

There were three significant structures all built in 1964; the most exuberant of these is Wilde's Supreme Cleaners (now Finishmaster). Again, Wilde embraced the idea of structure as form generator; the building is composed of pre-cast T-shaped columns, and T-shaped concrete roof beams, with an enclosure infill of CMU and glass. The masonry and glass are set back from the columns several feet, and the roof beams cantilever out beyond the columns 15 feet or more; both moves accentuate the robust structure.

CNW's Asarco Corporate Office (1964) articulates structure by pulling the structural elements to the exterior of the building and recessing the enclosure systems behind. The round-posts and rectangular-beams are constructed of cast-in-place concrete, as are the sun-shades that emphasize the horizontal slabs.



Figure 3

A third significant building of 1964 is Sakellar's Broadway-Kelly Building. The building components, including columns and enclosure panels, are pre-cast. The verticality of the structural columns is articulated by the introduction of ribbed edges; this ribbed character is carried throughout the building's exterior expression. While the building's structure is articulated, that articulation is subservient to Sakellar's greater goal of creating a highly patterned building; but the building's overall pattern evolved out of the vertical structural elements.

Several other buildings in the 60's and early 70's by CNWC continued the emphasis on structure, including the Cherrybell Post Office (1972) and CNWC's own offices (1974). Like CNW's earlier Asarco Building, the Post Office is defined by a traditional post and beam construction. The structure is again emphasized by recessing infill panels of glass and metal, but exaggerates the structure by greatly increasing the scale of the spans and structural components.

At the CNWC Office (now Seaver/Franks) the structural steel trusses are left exposed to the interior and exterior. The structure is further articulated by the contrast of the delicate black steel truss components and the minimalist white plaster wall surfaces.

Exploration of structural expression came to a conclusion with Friedman/Jobusch's UA Main Library (1977). The library articulates structure by utilizing double posts, creating reveals between structural bays, and by differentiating the color between the primary structural concrete and the concrete enclosure panels. The cast-in-place construction allows Friedman/Jobusch to substitute a two-way concrete slab for the more traditional beams. The spandrel of the slab is exposed to further emphasize the structure.

One other building to note is the T-Pac Building on the I-10 freeway frontage road north of Ruthrauff. Designed for the manufacturer of pre-cast concrete forms, the building is pure structure: two one-way ribbed slabs form the floor and roof, and sandwich the glass infill and ribbed concrete enclosure panels.

Note: Emily Gray jr. High.

Patterned

The mass-production and prefabrication of construction elements was a 20th century phenomenon, and it had a significant impact on the early modernists. It was Mies who most effectively began to use these prefabricated elements as part of a composition. Crown Hall at IIT epitomized Mies' use of steel and glass, but it also demonstrated the patterning that was possible when using repetitive elements in series. The large scale structural girders created one pattern on the facade, and overlaid upon this was a smaller pattern of steel window mullions that were much more closely spaced together. The end result is a building that is patterned to create a rhythm in the horizontal reading of the building.

A patterned aesthetic grew out of structural expediency: columns and beams, spaced at regular intervals, created a pattern. As the patterns became a recognized part of the building's aesthetic, architects began to investigate pattern for itself, and not just as a by-product of structure.

The expansive surfaces of early curtain wall construction (such as the Seagrams, Pan Am and United Nations buildings) also lent themselves to the application of pattern as a primary aesthetic.

There is little international modern architecture reflecting Mies' work in Tucson, and even less that is patterned in metal and glass. The exception to this is found in the curtain wall construction of the Transamerica Title Building (1962) and the Tucson Federal Tower (1965). (note also 149 n. Stone). The curtain wall construction of Transamerica Title creates horizontal banding, while the aluminum window mullions and the applied yellow fins are emphasized vertically to create a multi-directional reading of the building. For tall buildings, patterns were often used to emphasize verticality. The Tucson Federal Tower uses vertical gold aluminum mullions that contrast with the dark glass façade to accomplish this.

The prefabrication and patterning of concrete had much greater impact on Tucson architecture than the curtain wall (this may have been a result of the difficulty the severe solar intensity would create for buildings constructed of steel and glass). In the 1950's LeCorbusier had also embraced pattern as a defining character in his architecture, although his work had less to do with prefabrication (note *Unite' de Habitation*, *La Tourette*). One of the most influential patterned buildings in the U.S. was the Air Force Academy Chapel (1956-62, SOM) which was defined by the repetitive sculptural forms that evoked airplane imagery. Buildings such as Boston City Hall (Kallman McKinnell Knowles, 1963-68) embraced the aesthetic of repetitive pre-cast concrete elements.

There were two early precedents for patterned architecture from Art Brown: the sawtooth windows at the First Christian Church and the horizontal lines of Faith Lutheran Church. In both cases, pattern was secondary in the definition of form.

Another early pattern of note could be found on the south façade of the Tucson Federal Savings at 3333 e. Speedway (Cuneen Co., 1955). The projecting, stacked-bond brick pattern and zigzags were an attempt to create greater visual interest for the large wall surface. Friedman/Jobusch achieved a similar effect by recessing bricks on the façade of the Temple E-Manuel (1961). These surface treatments were uncommon for the modern period.

While patterned and sculptural characteristics emerge from disparate sources across the U.S., ironically it is the repetitive use of sculptural elements that leads to the earliest

patterned architecture in Tucson. Three buildings built in 1960-61 use repetition of a sculptural element to create a composition. The first two of these, Walter Douglas Elementary (Shaver Co., 1961) and the AAA Office (Art Brown, 1960), incorporate a scalloped roof or folded plate form that is rotated about a central point to define a circular (polygonal) building. The repetitive up-and-down of the roof lines creates a pattern that is the primary expression of each building. The third building, the Arizona Bank of 1961 by Friedman/Jobusch (902 n. Stone, now Bank of America), repeats a bulbous roof form throughout the grid of the building's entry canopy. Here, the pattern is the square grid, and the sculptural form is plugged into that grid.

A fourth building is Robert Maasen's office building at 40 n. Swan (1963). The building is a complex composition of several patterns, the foremost of which can be found in the sculptural form of the columns on the west façade. The columns are each composed of 4 individual steel posts that flare outward at the top; the columns appear to open up into the roof plane. Distinct patterns can be found in the relationship between these individual steel elements, the rhythm of the columns, the alternating rhythm of the brick and windows, and the mullions on the windows themselves.

William Wilde's Supreme Cleaners at Stone and Grant (1964, now Finishmaster) was also one of the earliest buildings in Tucson to fully embrace pattern as part of its aesthetic. The T-shaped concrete columns and the regular interval of the expressed T-shaped concrete roof slabs create multiple patterns. The building has a staccato rhythm in its horizontal reading, and the desert sun creates deep shadows to accentuate the patterns.

The Tucson International Airport (1963) was one of a number of buildings Terry Atkinson completed that utilized a repetitive pre-cast concrete element on the fascia. Two characteristics contributed to the patterned effect: the repetition of the pre-cast element created one rhythm, and the alternating reveals in the concrete created another.



Figure 4

Nick Sakellar did not utilize pattern as part of his palette often, but the one building he did give a patterned character was exceptional. The Kelly-Broadway Building (1964, now the Continental Building) was a two story, elevated building that was all about the patterns created by the structural concrete columns and the intermediate vertically-oriented pre-cast concrete enclosure panels, with articulated fins that provided a framework and shade for the windows. There is a tertiary, alternating pattern between solid and void created by the windows and solid panels. The multiple patterns create depth and complexity in an otherwise

simple rectangular form. (Like most other patterned modern buildings, the building has a staccato rhythm in its horizontal reading; the sun emphasizes the pattern.)

An emphasis on 2-dimensional patterning on the surface of simple rectangular volumes emerged on the UA campus in the mid-1960s. Architects such as Blanton and Cole,

Atkinson, and Wilde all built structures that created narrow slit vertical windows aligned from floor to floor and often articulated by vertical fins that run the full height of the building. The best of these is Wilde's Astronomy Building (now Space Sciences) of 1965. Wilde uses concrete to define the vertical windows, and in fact the concrete may be structural. The simple rectangular volume is offset by the angled entry tower, which is a glass-fronted volume that defines the vertical circulation.

Friedman/Jobusch designed several other buildings that integrated pattern. The Arizona Bank (1968) they designed at Stone and Alameda (now Housing and Urban Development) was primarily defined by the tightly spaced pre-cast concrete fins on the upper story that is perceived almost as a uniform texture to the building. Friedman/Jobusch also used a similar concept to Atkinson with a repetitive fascia pattern for the Arizona Materials Lab (1966), although the patterns they created were in aluminum.

Art Brown produced a few patterned buildings, the most notable and significant was Tucson General Hospital (1963-70, demolished 2004). The solar shading screen on the southern façade is an intricately designed aluminum latticework applied to what is otherwise a fairly straightforward volumetric international modern building. The grid of aluminum provides the framework for diamond-shaped aluminum shades.

An exceptionally unique contribution to patterned modernism in Tucson is the Valley National Bank addition (now Bank One, 1972; Swan and Speedway) by Blanton and Co. The sculptural depth and intricacy of the brick-faced western façade is achieved through the regular pattern of deep recessed openings offset by smaller, irregular projecting volumes. The late afternoon sun accentuates the patterns by casting sharply angled shadows on the angled surfaces of the recesses.

One of the last patterned modern buildings in Tucson was the Western Savings at El Con Mall (now Bank of America, 1972), by Sarmiento. Also sculptural, the bank has a series of pre-cast concrete elliptical structures aligned to create a curvilinear structural screen. While the building is a continuation of the concrete patterns by Sakellar and Friedman/Jobusch, it may be the only structure in Tucson that uses curvilinear concrete elements to create a pattern and employs that pattern onto a curvilinear surface.



Figure 5

Textured

The evolution of modern architecture continued at smaller scales as well. Surface variation and texture were introduced to address the severity of international modernism. (The use of texture was a departure from the Bauhaus effort to dissolve the surface of the building.) In an effort to create greater visual interest, Edward Durrell Stone incorporated small scale,

intricate patterns (much smaller than those identified above) that created the appearance of texture on the surfaces of his buildings. These repetitive patterns typically had no single orientation (multi-directional) and were often used in screen walls to create a layered effect. The surfaces of buildings had the appearance of depth. The screen concept appears to have evolved out of Stone's embassy work in Asia, where Islamic screens were commonplace in vernacular architecture. (Note his U.S. Embassy in New Dehli, 1954). This concept of texture carried over to his later American work in the late 50's and early 60's, including the Kennedy Center for the Performing Arts.

In Arizona, Phoenix architects enthusiastically adopted the screen aesthetic as a technique to moderate the severe desert sun. In the late 50's, large expanses of concrete block or metal screens were integrated into commercial and institutional buildings, and an entire industry evolved to meet the demand. Screens had less of an impact in Tucson in the 50's, although decorative concrete block was widely used in residential work as a decorative accent (rather than as a surface treatment).

There was one early precedent of textured modern design in Tucson. Sakellar's Neubauer Surgical Clinic of 1954 incorporated a decorative concrete block into the building's façade to reduce the impact of the intense western sun on the glass entry. The decorative block is abstract in form (using simple geometric patterns), and the repetitive use creates a uniformity across the surface of the wall. The building won a Western Regional AIA Award.



Figure 6

(Ambrose and Swanson, date?) the Psychology Building at the UA (Blanton and Cole, 1966) and the Arizona Materials Laboratory (Friedman/Jobusch, 1966).

Latticework was much more variable: unlike the blocks, the metal could be designed in a variety of configurations that were not confined to the square or rectangular form of a concrete block. Large scale latticework occurred primarily on commercial or institutional buildings. The Tucson Federal Tower (1965, Place and Place) uses an aluminum lattice to create a screen on the west elevation of the tower, providing visual interest and shade for the western-facing glass. (The south elevation of the tower is faced with multi-colored decorative tile, a unique installation for the time period. Tile in this use was not seen again until post-modern architecture in the late 70's and early 80's.—texture or pattern?)

A separate and later trend in textured modern design did not involve screens. Architects began to apply texture to concrete surfaces as well to create greater visual interest. It was an effort to bring depth to the scale-less surfaces of concrete. Nationally, this effort could be seen in the work of Paul Rudolph, who used variegated concrete textures in his Yale Art and Architecture Building (1962). The rough-hewn texture gave the building greater mass and a more rugged appearance. In Tucson, Wilde used a variety of concrete textures, including fluted (bush-hammered) (Tucson Museum of Art, 1974), and exposed aggregate (Tucson Police Department, 1974?). CNWC produced an exquisite and uniform concrete surface for the downtown Federal Building (date) using pre-cast, sandblasted colored concrete. Two University of Arizona buildings built in 1977 also used exposed aggregate: the Main Library (Friedman/Jobusch) and the Law School (Terry Atkinson). Another concrete treatment of note involved using narrow formwork, or the use of form liners that approximated narrow formwork. Examples of this include the Union Bank (Sarkiss and Assoc.) and the Cherrybell Post Office (CNWC), both built in 1972. Kirby Lockard used raked horizontal masonry joints in CMU to create another kind of texture on several residences and on the Dove of Peace Church (1969).

Regional

There were several national and regional developments in modern architecture that were leading toward a regional aesthetic. On the east coast in the late 40's and 50's, Marcel Breuer was incorporating stone and wood into what were otherwise pure Bauhaus creations. Edward Larrabee Barnes was incorporating abstract vernacular forms and materials into his New England houses as well. Alvar Aalto incorporated wood into much of his 1930's Finnish work; his American work was also characterized by contextual materials, including traditional brick for his Baker House at MIT. And in California, architects like Harwell Hamilton Harris were creating sleek modern designs in wood.

In Arizona, the arrival of Frank Lloyd Wright in the late 1930's had a significant impact on architecture. The application of Wright's organic philosophy led to the development of Taliesin West, a sprawling compound of concrete, native stone and wood in the desert. The intent was to integrate the structures into the desert. Wright built other buildings in Arizona, but the school at Taliesin West became a destination for students of architecture, and therefore had a significant impact on the development of architecture in the region. Many of these students would choose to stay and practice in the Phoenix area after completing their training with Mr. Wright.

Another significant development in modern architecture in Arizona occurred in 1957 with the completion of the Chapel of the Holy Cross in Sedona. Designed by Anshen and Allen of California (along with the original owner, Marguerite Staude), the building is a testament to the complementary possibilities of colored concrete with the earthen landscapes of the desert. The building is strikingly modern—a bold, dynamic form, with clean lines and no ornamentation. But the building was something more. The design sought to fit into its site and context; the exposed aggregate colored concrete reflected the deep red hues and rugged surface of the Sedona rock, and the building had been carved into the rock rather than imposed upon it. The building became a part of the site. (The building received an AIA honor award.)

In the 1960's, an unease with the severity of international modern design became more prominent. A shift was taking place towards a "post-modern" architecture that was, according to its proponents, more human. Robert Venturi's *Complexity and Contradiction in Architecture* was a significant event in this shift. Venturi sought a more meaningful architecture, and suggested several methods of achieving this. One of these was to look to context. This approach was epitomized by Charles Moore in northern California with Sea Ranch (1965), a sprawling condominium complex on a windswept cliff overlooking the Pacific Ocean. Sea Ranch in many ways was a modern building, but the building was also a direct response to the site. The abstraction of vernacular forms and materials (reflecting the wood barns of the region), the orientation of the building to consider climate conditions, and the attempt to integrate with the site rather than dominate it were all significant shifts in modern architecture.

There were several early precedents in Tucson for a regional aesthetic. Ironically, one of the earliest of these was made by an architect out of Los Angeles; Ragnar Qvale Associates incorporated native stone into the design for the Paulin Automotive Showroom (2121 e. Broadway) in 1957. The massive walls are used as a foil or backdrop for the sleek modern glass boxes and planar roofs. The use of stone in southern California was not new in the late 50's; architects such as Richard Neutra had used stone construction in the 30's and 40's for residential works in the Palm Springs desert (note the Kaufman Desert House of 1947).



Figure 7

In 1963 John Howe, a former student of Frank Lloyd Wright, designed the Mettler Dance Studio at Ft. Lowell and Cherry Ave. The building clearly reflects Wright's expressionist work (the geometry is very sculptural, with arcs and circles combined to create dynamic forms and spaces); it also exhibits Wright's influence in its relationship to the desert. Like Taliesin West, the dance studio does not attempt to dominate the site, but rather attempts to nestle into the landscape; the existing desert is left undisturbed, and earth berms surround portions of the building.

The building is an aggregation of forms, which breaks down the overall scale of

the building to a more human dimension. Perhaps more importantly, the aggregation of forms creates a "reciprocity" between building and landscape that allows the desert to grow integrally with the building; the edge between landscape and building is blurred. The most striking departure from other modern buildings, however, is the use of materials and colors to blend with the landscape. The concrete block is colored to replicate the colors in the earth, and the gray-green trim is almost identical to the color of the desert plants.

Another precedent was the Tucson International Airport, also built in 1963 by Terry Atkinson (modified). TIA also used construction materials that reflected the desert, namely desert stone for the walls and earth-toned colored concrete. Atkinson's stone reflected Wright's work but attempted to achieve a cleaner appearance with tight grout joints and true masonry

construction. The concrete fascias utilized an alternating diagonal pattern for the length of the terminals to create a rhythm in the horizontal direction. This was in keeping with the other patterned buildings of the early 60's. The form was primarily functional, although the bi-lateral terminals created an unavoidable symmetry.

CNW took another approach to regional design when they incorporated copper into the Asarco Corporate Offices (1964). Asarco's primary business was mining copper, but copper was also a primary contributor to Tucson's financial and cultural resources. Thus copper was a regional material in its cultural connotations, and its' color complemented the earth tones of the desert. This was followed in later years by other copper buildings, most notably McKale Center (Sam Redwine of Place and Place, 1977) on the UA campus.

(One other early contributor to a regional modern architecture in Tucson is less obvious, but perhaps equally important. For years, Art Brown had been challenging convention by designing buildings that responded to the severe desert climate. Beginning in the late 40's, Brown was applying solar strategies and devices that would passively heat and cool his buildings. While his architecture did not appear to be regional in materials or color, his work was providing the early skeleton framework for the forms of buildings to come. See "Solar Response" below.)

After the early experiments by Howe, Atkinson, CNW and Qvale, the onset of a regional modern architecture seems to occur around 1968. Materials and colors used in modern design begin to reflect the desert context, and building forms tend to emphasize the heavy mass of concrete or masonry walls. And as energy costs began to rise, architects began to more consciously examine and respond to climate conditions.

Architects such as Bob Swaim (Orchard River Apartments, 1972) used concrete masonry as a regional material. The 4x8x16 slump block approximated the size and shape of adobe, and the stark gray block responded to the colors of the desert.

John Morrison of CNWC made a significant contribution to regional modern architecture with his designs for the Tucson Music Hall and Little Theater (date). The complex of buildings utilizes a split-faced colored concrete block that reflects the rugged terrain of the Sonoran Desert. Even in an urban setting, it is an effort to contextualize modernism.

In 1973, Caudill Rowlett Scott of Texas produced the Pima Community College Campus in collaboration with several local firms. The building is brutal in its character, but also regional. The massive, earth-colored concrete walls respond to the earthen tones and rugged massive forms of the surrounding desert. CNWC's Federal Building (date) utilized pre-cast exposed aggregate colored concrete for a similar effect.

In the early 70's, Judith Chafee began a series of regional modern houses that received national attention, including the Johnson House, the Ramada House, the Jacobsen House and culminating with the Blackwell House in 1979. These houses utilized modern materials such as concrete and concrete block to achieve a rugged mass appropriate for the desert. The houses are sensitive to site and context; the buildings are rugged but delicately situated on the site, often responding to the topography. The houses also play off the contrast created by the sharp light and heavy shadows of the desert. The primary color of these houses was typically gray, which reflected the "grayed" colors of the desert.

The shade structure of the Ramada House (1975) was a unique and innovative response to the desert sun. A rectangular wood lattice on telephone poles provides shade for the irregular house below, which was constructed of mortar-washed slump block that approximated adobe. The lattice appears to be a modern interpretation of Native-American ocotillo shade structures, but on a larger scale.

Construction Expression

In the late 50's and 60's, Louis Kahn designed a series of buildings that diverged from the slick lines of international modernism and the exaggerated and affected qualities of most expressionism. Kahn sought a modern architecture that was human-scaled, warmer and that emphasized the materiality and craft of construction. The result was a subtle complexity that expressed structure, enclosure, materiality, and process. Kahn's compositions of "discrete parts, bluntly combined" (Kostof) always integrated a minimum of three primary materials, and emphasized balance and beauty rather than focus, strength or movement.

Kahn's Richards Medical Center (1960) at the University of Pennsylvania was the first of these buildings to receive national attention. The primary building materials were brick, concrete and glass. The concrete floor structures of the 6-story building are expressed, but subtly, and not to the exclusion of the other building components; the brick and glass are used as infill between floors. This is a subtle articulation of structure, rather than more overt attempts to distinguish architecture through structural expressionism. The more significant articulation is between the primary volumes and the secondary volumes that provide support for the primary functions. This was Kahn's concept of "servant and served," and it served to further break down the scale of what was otherwise a very large structure.

Other significant buildings by Kahn included the Salk Institute in La Jolla, California (1965), and the Kimble Art Museum in Ft. Worth (1972). Both buildings were part of his exploration of the beauty of concrete and the processes of construction. Concrete formwork and form ties were emphasized rather than hidden or ignored, reveals were utilized to articulate construction joints, and finishes were thoughtfully considered. The result was a construction aesthetic.



Figure 8

The one early Tucson precedent for a construction aesthetic was Art Brown's First Christian Church (1948). The layered expression of concrete lintels and bond beams on the otherwise brick building was 10 years ahead of its time.

Kahn's influence began to be felt quickly in Tucson, primarily on the University of Arizona campus. Buildings such as the Arizona-Sonora Residence Hall (Friedman/Jobusch, 1963) and the Math Building (CNWC, 1970?) adopted the Richard's Medical Center aesthetic of an articulated concrete floor structure, with brick and glass infill. In both buildings, the brick reads as a

“panelized” construction, and may in fact have been constructed as prefabricated panels. Friedman/Jobusch further break down the scale of the 9-story Arizona-Sonora by incorporating Kahn’s servant and served concept, differentiating vertical circulation and community spaces from the dwelling units.

The construction aesthetic can also be found at the Randolph Recreation Center, designed by John Mascarella in 1966. The complex is in many respects an international modern building, with planar walls and a thin horizontal roof profile. But the use of brick for wall construction, exposed glue-laminated beams, and steel and glass infill panels creates a balanced composition, and an emphasis on materiality rather than form. There were expressive tendencies with the beams and walls, but none of the building systems dominates the others.

Kirby Lockard’s articulation of masonry construction by using deeply raked grout joints at the Dove of Peace Church (1969) demonstrated this shift toward an emphasis on construction methods. Lockard also embraced the servant and served concept; the Church’s sanctuary is buttressed by supporting spaces at the perimeter of the building.

The University of Arizona Main Library (Friedman/Jobusch, 1977) was the last major building in Tucson that had tendencies toward a construction aesthetic. The building is constructed of three primary materials: cast-in-place concrete, pre-cast exposed-aggregate colored concrete panels, and glass. The cast-in-place concrete structure is expressed, but is balanced visually by the pre-cast exposed aggregate infill panels and the multi-bay organization of the building. The infill panels establish their own pattern, are darker in color, and are located flush with the floor and roof spandrels rather than recessed (as is more typical with structural expressionism) to offset the visual significance of the structure and to emphasize the construction methodology. The concrete columns are recessed from the building surface and subservient to the multi-bay organization. Reveals in the concrete identify the lifts in cast-in-place construction.

The library design incorporated many of the characteristics of the expressionist period, including structure, pattern, texture, brutal and regional. The variety of characteristics and the complexity of the composition suggests a construction aesthetic; the characteristics are not hierarchical (with one dominant characteristic), but rather coexist in a balanced state. The library also reflects Kahn’s servant and served concept by differentiating the stair towers from the rest of the building.

Formal

In the 1950’s and 60’s, several American architects who were uncomfortable with the severity of international modernism sought to make connections between modern architecture and more traditional forms. (Mies himself had started this move, perhaps unintentionally, by organizing buildings like Crown Hall axially.) Nationally, Edward Durrell Stone looked to classical design for inspiration. Stone, trained in the Beaux Arts tradition, designed a series of Embassies for the U.S. State Department that established a formal posture. This was accomplished by emphasizing formal entries, elevated plinths, symmetry, colonnades, and simple rectangular geometry. These elements were abstracted from classical form so that they could be integrated into modern design. The primary building materials were still steel and glass, but Stone was not adverse to including more ornate

materials, especially polished marble. Stone would incorporate metal lattice screens that produced a filtered, crystalline light quality on the interiors, and created a more ornamental, delicate quality to the exteriors.

Lincoln Center (1966 Abramowitz, Harrison, Johnson) was another building complex that incorporated classical forms. Johnson's building was symmetrical and had a formal entry. The entry arcade had its roots in the stripped classicism of the 1930's, although the elongated arches are exaggerations of classical form. Kahn's emphases on formal organizations (such as the Salk Institute's axis) and historical references (like the Kimble Art Museum's barrel vaults) were also influential.

The formal aesthetic had a limited impact on a handful of buildings in Tucson. An early precedent was Gordon Luepke's reinterpretation of the column capital on the University of Arizona's Modern Languages Building (1965). Luepke and Terry Atkinson used arches and colonnades for their collaboration on the Pima County Administration Complex and Tucson Electric Power Complex (date?). The arches were not truly integral to the design, but appear to be applied to the surface of the building. The arches were also truncated at an unusual depth (parabolic?), further distancing the design from true classical form. Colonnades provided shelter for pedestrian use around the perimeter of the site (much like a pergola), independent from the buildings. The building forms vary in size, but each individual building is symmetrical; the TEP complex is organized axially.

CNW's design for the First National Bank (1966, now Chicanos por la Causa) more effectively integrated traditional forms into modern architecture. The brick building has an arcade with shallow, subtle arches on the south façade, creating a pedestrian space for the building entrance. The arches are actually the exposed ends of a series of shallow barrel vaults that span the interior space; they are uniquely designed to minimize sound reverberation. The street level is recessed and completely glazed on the street fronts, creating the impression of an elevated mass above. A large brick volume on the east end of the building offsets an otherwise symmetrical rectangular form. The building is constructed of brick, and uses corbelling to create a projecting cornice at the top of the building. Otherwise, the building is devoid of ornament. (CNWC's Tucson Water building (date) down



Figure 9

the street at Alameda and Grande uses a similar aesthetic, with corbelling and articulated brick columns; however, the explicit use of an applied, non-structural archway to mark the entrance suggests this building to be a transitional or an early post-modern building.)

The office complex at 4400 e. Broadway (Mascarella Assoc., with McCaleb, 1965-69) has its aesthetic roots in Saarinen's CBS Tower in New York; the vertical character of the building and triangulated posts around the perimeter are almost identical to the CBS Headquarters, albeit truncated. What establishes the building's formal character is the symmetry of the

complex, the articulation of the roof, and the colonnaded pergolas that wrap the buildings. The two smaller outer buildings balance and focus the composition on the center tower.

The Valley Bank (1971, now Bank One) at Broadway and Country Club has hints of formal intentions. The raised plinth, wide stairs and entry colonnade create a formal posture for an otherwise sculptural building. The use of formalism is not surprising for the Evergreen Cemetery Mausoleum (1970, Tucker) and the somber nature of death and burial. The building is symmetrical, has a formal organization, and semi-circular arches; the monochromatic white color lends the building a sculptural quality.

Ultimately, all of these formal buildings were precursors to post-modern architecture, a trend that would take hold in the late 70's and 80's.

Brutal

As architects continued to explore the possibilities of modern design, it was inevitable that the exploration would lead to the creation of bolder, more dramatic and monumentally scaled architecture. It was a natural evolution of human ego toward statements of significance--importance was equated with scale. The increase in scale was a move away from modern architecture's humanistic roots. The increase in scale, coupled with heavy massing and dramatic forms resulted in architecture of a severe, or brutal character. Paul Rudolph's work was at the forefront of this in the United States. The Yale Art and Architecture Building (1962) was a 7-story, architectonic composition of large concrete volumes. Continuing the monumentality of LeCorbusier and the superstructures of Japan, Rudolph increased the scale of construction components from the post and beam to the tower and wing. The use of textured concrete created a rugged monumentality in mass that steel and glass could not achieve. (Note: there has been some suggestion that security issues played a role in the development of brutal architecture; however, the aesthetic emerged prior to the emergence of security concerns in the late 60's, and many buildings that did not require security utilized the aesthetic as well. If security played any role, it was a minor one.)

Nationally, the brutal character for modern architecture continued through the 60's with buildings like the Boston City Hall (Kallman, McKinnell, Knowles 1968). But most of the brutal modern architecture in Tucson was built in the early 70's. Wilde was foremost among local architects to integrate the more severe expression into his designs. There are hints of monumental aspirations in his Supreme Drycleaners (1964), and in fact a brutal expression was often tied to an expression of structure. But the individual posts and the pattern of the roof structure break down the scale of the otherwise severe building. His first truly brutal building was the Tucson Police Department (1974?). The structural system was concrete, as were the pre-cast exposed-aggregate infill panels. The building was not dramatically over-scaled, but the size of the building, the lack of surface depth, the severity of the concrete and the small window openings combined to produce a brutal appearance.

Wilde also designed the Tucson Museum of Art in 1974. The building was built at the intersection of an historic neighborhood and the city's governmental complex. The residential scale of the historic neighborhood is dominated by the huge over-scaled roof

of the building. The roof is a single plane perhaps 3' tall and 60-80' in length (with a recessed clerestory) hovering over the museum and adjacent buildings. The fluted concrete walls have no penetrations, in essence creating an urban void on the street.

Wilde was also involved with the Pima Community College campus in 1973. Caudill Rowlett Scott were the primary architects, along with local architects Wilde and Friedman/Jobusch. Located on a remote desert site, the complex is defined almost entirely by concrete (floors, walls, roof) with glass infill. The campus is composed of rectangular forms elevated on the site, but the composition is irregular. Massive concrete walls, elevated volumes, over-scaled concrete overhangs, and the monolithic character of the complex combine to create a severe, monumental quality.

Friedman/Jobusch's UA Main Library (1977) also has brutalist tendencies in the massive concrete and large scale. This is tempered somewhat by the extensive use of glass, the pattern of the solar shade devices, and the articulation of structural bays.

CNWC's Cherrybell Post Office (1972) is a hugely over-scaled expression of structure. The Post Office is defined by a traditional post and beam construction, but the architects exaggerate the structure by greatly increasing the scale of the spans and structural components.



Figure 10

A unique contribution to brutalist modernism can be seen in the former Western Savings at 3002 n. Campbell Ave. (Sawyer, 1973). The bold form is composed of an elevated, cantilevered second story mirrored-glass box, which rests on a receding first story defined by concrete retaining walls, ribbon windows and earth berms. The mirrored glass creates a scale-less anonymity akin to mirrored sunglasses, and elevating the form elevates the significance and the inaccessible nature of the form.

One other building of particular note is the Union Bank (Sarkiss Associates, 1972, now Compass Bank) at Grant and Park. The building's scale is not overwhelming, but the absence of windows on the stark curvilinear concrete façade (the entry is on the back side) creates the perception of anonymity and results in a bunker-like pill box appearance.

(Judith Chafee's Blackwell House (1979; demolished 1998) was severe in its exterior expression; the stark concrete block walls had few penetrations and were the only elements visible from most exterior locations. This was contrasted by the interior experience, where large glass openings brought the desert into the house. The brutal character was the only perception the general public had of the building, leading many to see it as an eyesore; this perception eventually contributed to the building's demise.)

Solar Response

The solar intensity of the Sonoran Desert had a significant impact on the development of modern design in Tucson. Prior to the introduction of active cooling systems in the 1930's, building design had been severely limited by the severity of the climate. Historically, vernacular buildings responded by utilizing massive walls and minimizing window openings. Modern architecture's emphasis on large windows and lightweight construction, however, posed a difficult problem; and the new active cooling systems were not equipped to counter the full brunt of the desert heat to create comfortable environments. This required architects to devise innovative responses to the severe sunlight and accompanying heat gain. In the modern period it was rarely the primary determinant of form, but it had significant impact nonetheless.

A conservation ethic had evolved through the Great Depression and World War II, when resources were limited or rationed. But the prevailing trend after the war was towards embracing the modern advancements in creating and using energy, rather than seeking methods to conserve. (Early solar energy houses in the 1950's sponsored by major magazines had little impact on how Americans valued energy.)

Art Brown's efforts were well ahead of national trends to develop energy savings in modern building design. Brown had been designing buildings that responded to the severe desert climate. The primary goal was to keep out the severe sun in summer and take advantage of solar gain in winter for passive heating. Beginning in the late 40's, Brown applied solar strategies and devices that would passively heat and cool his buildings. His efforts included structures such as trombe walls (Rosenburg Residence, 1946), fixed and moveable shades (Ball/Paylore Residence, 1952), and simple strategies such as thermal mass and building orientation (Graham-Greenlee Hall, 1954). While his architecture did not appear to be regional in materials or color, his work was providing the early skeleton framework for the forms of regional buildings to come.

Another early precedent of passive solar design was Sakellar Scholer and Fuller's Neubauer Surgical Clinic of 1954. The building incorporated a decorative concrete block screen wall into the building's façade to reduce the impact of the intense late afternoon western sun on the glass entry. (This effort may have been in response to solar issues in SSF's Tucson Clinic of a year earlier, where there is no vertical shading for the large expanse of glass on the western façade.)



Figure 11

The patterned and textured aesthetics that were prominent in the 1960's lent themselves to passive solar response. The additional layer of architecture that was the inevitable result of texture or pattern was often used to provide shade for the buildings. In most cases the driving force of the texture or pattern appears to be the aesthetic quality (see Arizona Bank downtown, Kelly Broadway Building, Western Savings at El Con); in a few cases the texture or pattern appears to be a direct response to solar issues (see Asarco Building, Valley Bank Tower, Tucson General Hospital).

The Mettler Design Studio (Howe, 1963) integrated an earth berm into the building construction, utilizing the thermal mass and more consistent temperatures of the earth to help reduce energy fluctuations. In 1964, CNW was explicit in the use of concrete solar shades for its Asarco Corporate Office.

In the late 60's and early 70's, energy costs began to rise significantly, and so did interest in passive solar design. The regional and brutal aesthetics were having a significant impact on the products of modern design--the heavy mass of both characteristics also had the perhaps unintended consequence of creating thermal mass to store energy. Tucson architecture was particularly suited to this new aesthetic, because the local climate lent itself to take advantage of the thermal mass created by thick concrete or masonry walls; it was a tried and proven technology long used with adobe. The denser material of concrete however posed a new difficulty, and insulation was usually still required to minimize heat transference.

The RGA Building, by John Morrison of CNWC (1974), utilized a traditional southwest building form to address the severity of the desert—the courtyard. The 2-story high courtyard walls provide significant shade for the courtyard and the building, thereby creating a much more habitable interior and exterior environment.

Judith Chafee integrated a regional aesthetic with passive solar design to the point where one was indistinguishable from the other. Her Ramada House of 1975 was a direct response to the southwest's solar intensity. A wood trellis hovers above the building, shading the house in the summer months; in the winter, the low angle of the sun projects beneath the ramada to provide solar heating. Chafee's also utilized passive solar design at the Blackwell House (1979; demolished). The heavy thermal mass of concrete block walls and concrete floors, north-south orientation, deeply shaded openings and an innovative solar flue all contributed to making the house more habitable and energy efficient.

DEFINITIONS/GLOSSARY OF OBSERVED CHARACTERISTICS OF MODERN ARCHITECTURE IN TUCSON

General Characteristics of Modern Architecture (observable)

- simple, clean design
- modern materials and technologies (steel, glass, concrete, pre-fabrication, mass production)
- emphasis on geometric planes, forms, spaces, volumes (rather than surfaces)
- no applied ornamentation
- large windows and extensive daylight
- functional planning
- usually flat roofs (except sculptural)

International Modern Phase

Utilitarian

building form and layout on site determined by use, program and modern production methods, with an emphasis on efficiency of resources

example: Graham-Greenlee Residence Hall

Planar

use of linear, planar elements to create building composition; roof (and sometimes walls) is usually articulated; typically horizontal orientation, rectilinear, and usually asymmetrical composition

example: Tucson Clinic (now Sebra)

?

Expressionist Modern

Sculptural

dramatic expression of form or space ; usually curvilinear or angular, carved or additive volumes; building usually perceived as a “whole”, or sculptural composition

example: Catalina Baptist Church

Structural

articulation or expression of structural elements for aesthetic effect; usually as a pattern to create primary image of building

example: Supreme Cleaners (now Finishmaster)

Pattern

use of repetitive elements in structure or enclosure system; typically creates staccato rhythm in horizontal reading of building; often a function of the mass production or pre-fabrication of construction elements

example: Kelly-Broadway Building (now Continental Building)

Texture

usually repetitive pattern (at smaller scale than *pattern* above) that creates appearance of texture on surface of building; surface often has the appearance of depth; pattern typically has no single orientation; often used in screen walls of masonry or metal; also includes articulation of concrete surfaces with various textures, including exposed aggregate

example: Transamerica Title Building Garage; Pima Community College

Regional

use of colors, materials, textures and forms that respond to Tucson's environmental and historical contexts

examples: Mettler Dance Studio; Ramada House

Construction Expression

articulation or expression of components of construction and the integration of these systems for aesthetic effect; usually requires minimum of three primary construction materials; construction methods and connections between various components are usually articulated; emphasis on balanced compositions; "craft-like care for construction."

example: Arizona-Sonora Residence Hall; UA Main Library

Formal

emphasis on symmetry (or axial organization), colonnades, formal entry façade and formal posture; simplicity of overall form—typically rectangular; building may be set on raised plinth; includes abstraction of classical forms

example: First National Bank (now Chicanos por la Causa)

Brutal

bold and/or severe expression of (typically) concrete surfaces; typically large/over-scaled or scale-less experience of building; architectonic expression of structure; emphasis on "presence" or drama

example: Pima Community College

Secondary Characteristics:

These characteristics do not seem to be primary form-givers like the characteristics identified above; they tend to take a secondary role. Characteristics below generally do not contribute to a building's categorization (placement in international modern or expressionist phases) although most are found in usually just one phase.

Solar Response

emphasis in structure, enclosure, or orientation to provide relief from (or take advantage of) solar intensity

example: Tucson General Hospital

Elevated

removal of (some or all) volume on the first level to create the appearance of the upper level(s) having greater volume and floating /suspended above lower level; also accomplished by cantilevering upper floors(s) out beyond first floor; enclosure system is

typically recessed deeper on the first level and articulated differently from upper levels;
structural columns are often articulated on the first level

example: Kelly-Broadway Building

White (monochromatic) Color

use of monochromatic materials such as concrete, CMU and plaster, or materials that
are often painted white to create uniform/monolithic appearance

example: Wilmot Public Library

(note: architects such as Brown used a mortar wash on brick buildings to emphasize
mass, volume and surface uniformity; this was also an attempt to achieve monochromy;
example: First Christian Church)

Curtain Wall

the use of glass, spandrel glass and aluminum frames over (outside) the structure of
multi-story buildings; the expression of enclosure to the exclusion of structure

example: Transamerica Title Building; Tucson Federal Tower

Mirrored

use of mirrored glazing, which creates a more severe or anonymous appearance;
emphasizes volume rather than depth (only 2-3 bldgs; transitional characteristic into late
modern)

example: former Western Savings at 3002 n. Campbell (now offices)

Servant/Served

the articulation of spaces or volumes to differentiate function; typical distinction between
spaces such as stairways, elevators, mechanical systems, etc. that provide support to
primary spaces; often used to break down the scale of institutional buildings

example: UA Main Library

Screen

use of metal or decorative concrete block to create layers of space (usually) at the
perimeter of the building; typically related to *texture*

example: Transamerica Title Building Garage

Pod

series of repetitive geometries that define functional units; typically used with schools

example: Walter Douglas Elementary

Art--bas relief

sub-category of texture—use of sculptural bas-relief to create texture on concrete/plaster
surfaces

example: Valley National Bank at Broadway and Country Club (now Bank One)

other possibilities:

Angular Geometry

use of non-rectilinear geometry or angular forms to define form or space; typically in
plan, but also in other dimensions (part of sculptural)

example: Cholla High School

Volumetric

use of single (typically geometric) form for clarity of effect, with little surface articulation

example: former Western Savings at 3002 n. Campbell (now offices)

Additive Form

creation of building composition through the aggregation of discrete parts (rather than through single gesture)

example: Mettler Dance Studio

Functional

building form and layout on site determined by programmatic requirements of building

example: Catalina High School

Window Characteristics

- . window wall
- . ribbon window
- . picture/punched window
- . slot window
- . infill panel

Landscape Characteristics

- . object in space/plaza
- . courtyard
- . campus
- . integrated Landscape
- . urban site

PHASES OF MODERN ARCHITECTURE IN TUCSON

The phases of modern architecture in Tucson identified below were determined in part by reviewing the building survey and identifying the time frame in which the various characteristics were predominant.

International Modern (1946-70)

primary characteristics:

- utilitarian
- planar
- volumetric

secondary characteristics:

- situated modern
- solar response
- additive form
- elevated?

window type: ribbon, curtain or window wall

dominant material: brick

Expressionist (1960-79)

primary characteristics:

- sculptural
- structural
- patterned
- textured
- regional
- construction exp.
- formal
- brutal

secondary characteristics:

- solar response
- elevated
- monochromatic (white) color
- additive form
- servant/served
- mirrored glass
- screen
- planar

window type: ribbon, curtain or window wall, infill frame, slot

dominant materials: concrete, concrete masonry

note: secondary characteristics occur within a phase of modernism, but are not the primary contributor to the character of the building

MAJOR ARCHITECTS

Arthur Brown

Brown's work emphasizes the utilitarian nature of architecture; his innovative design work was always intended to solve a problem or meet the needs of a client. This is distinguishable from Sakellar or other major architects of the period in Tucson who were more likely to explore the sculptural or artistic end of the architectural spectrum. Even his passive solar innovations were the result of his problem-solving. This functional and budget-conscious ethic may have been attributable to Brown's experience of providing for a family during the depression. It was also probably the result of his clients in the early post-war years, when Tucson was still a young town with little established wealth in the area. As a result, capital investments like architecture had to be cost-effective.

Brown's work spans the length of the modern period in Tucson, and was largely responsible for introducing modern architecture to the city. The work is primarily of the international modern period, though he does have a few significant expressionist buildings. His most influential and most successful works come in the late 40's through the early 60's, although he continues to work with his son into the early 1980's.

Brown was extremely productive for 40 years, and produced hundreds of commercial and residential projects.

education:	Ohio State
major buildings:	Rosenburg Residence
	First Christian Church
	Faith Lutheran Church
	Graham-Greenlee Residence Hall
	McInnes Residence
	AAA Offices
	Tucson General Hospital

Nicholas Sakellar

Sakellar was a designer's designer—he emphasized creating dynamic forms and spaces and pushed the boundaries of the modern aesthetic. His early buildings in the 1950's (most done while in partnership with Scholer and Fuller) all foretold future architectural trends. His primary focus in the 1960's was on architecture as sculpture. What was extraordinary was the range and adeptness of his aesthetic experimentation: his designs were often vastly different in character, yet were always deftly executed.

Like Brown, Sakellar's career spanned the modern period, and he too worked with his son late in his career. Sakellar's most influential work was his commercial and institutional buildings of the 1950's and 60's. He also produced a few buildings outside of Tucson that are worthy of recognition, most notably the Francisco Grande Resort and Spring Training Facility in Casa Grande.

Sakellar's reputation brought many young architects to Tucson, and his office was a primary training ground for the next generation of modern architects.

education: University of Michigan
major buildings: Tucson Clinic
Catalina High School
Broadway Kelly Building
Wilmot Public Library
Francisco Grande Resort (Casa Grande)
Cholla High School
Academy Medical Offices

Judith Chafee

Chafee focused on the integration of modern architecture and the Sonoran Desert. The result was a “rugged modernism” that hinted at the massive buildings of the region’s past. Her work created unparalleled precedent for the strongest continuing track of modernism, namely regional modern architecture (which resurfaces again in the late 80’s). Chafee had grown up in Tucson, but had moved to the east coast where she studied architecture at Yale. She worked for some of Modernism’s biggest names, including Eero Saarinen and Edward Larrabee Barnes. In 1970, Chafee returned to Tucson. Chafee’s respect for the desert setting of her residences was unusual for the modern period; this ethic perhaps emerged from Chafee’s own history in the area, but may have also been influenced by her experience working with Barnes in New England. Chafee’s primary work is residential rural, which provided more opportunity to explore this aesthetic/ethic.

Chafee’s career in Tucson begins in 1970, and by 1980 she had completed most of her significant works. Modern architecture lost favor in the 1980’s, which perhaps contributed to her limited production.

education: Bennington College, Yale University
major buildings: Johnson Residence
Ramada House
Jacobsen Residence
Blackwell Residence
Centrum House
Rieveschl Residence

Friedman/Jobusch

While Friedman/Jobusch produced a few international modern buildings in the 50’s and early 60’s, the office was the most productive (and perhaps most significant) architect of the expressionist period in Tucson. For roughly 20 years Friedman/Jobusch produced a range of formal exploration that touched on all of the observed characteristics of the period. They produced a number of excellent buildings that can be held up as examples of various expressionist characteristics. This work culminated in 1977 with the UA Main Library, which successfully integrates a broad range of these characteristics into a single building.

Jobusch’s in-house engineering may have contributed to the firm’s ability to explore such a wide range of possibilities. The number of designers who worked for the office over the years may have also contributed to the range in production--Friedman was more hands off in the

office than other designers, and although usually provided the initial direction for a project, allowed those who worked for him to explore possibilities.

education: Friedman--University of Illinois
major buildings: Arizona Bank (902 n. Stone)
Temple E-Manuel
Arizona-Sonora Residence Hall
Arizona Materials Lab
Arizona Bank (160 n. stone)
Valley National Bank (3033 e. Broadway)
UA Main Library

William Wilde

William Wilde was born in the Ukraine in 1904. After participating in the Bolshevik Revolution, he fled Czarist troops by escaping into western Europe. He received his earliest architectural training in Europe before immigrating to the U.S. in 1923. He moved to Tucson after World War II.

Wilde goes through three distinct phases in his design work that parallels the phases of modernism. His early work is his best; Wilde's (international modern) designs in the 50's expressed a purity of form and simplicity that required a rigorous execution. With more money available to put into the architecture (note his national clients), these buildings establish the apex of international modern design in Tucson. (Unfortunately, several of these have been demolished). The second phase of work in the early-mid 60's focuses on the early characteristics of expressionism, namely structure, pattern and texture. Finally, his third (and least successful) phase is his exploration of architectural significance through mass and scale—brutalism.

These phases and the dates of his work suggest Wilde to be more of a trend follower than a trend setter, although his exuberant structural expressions pre-date most other Tucson buildings. Although his later work can be seen as truly monumental, all of his work sought significance through scale, drama or intensity. In addition, Wilde's attention to detail was exceptional.

education: Rhode Island School of Design
major buildings: Lerner building
College Shop
Kitt Peak Dormitory (Kitt Peak)
State Hardware
Supreme Cleaners
UA Space Sciences
Tucson Police Department
Tucson Art Museum

Cain Nelson Wares Cook (CNWC)

CNWC was a partnership of architects where various designers were responsible for the work that was produced. The office came to prominence in the mid-1960s. Their work epitomized

the characteristics of the late expressionist period (brutal, formal, regional, construction expression). With a few exceptions, CNWC's designs tended to be conventional in form, but more expressive in materials, structure and construction.

CNWC's work had limited impact, probably because trends in architecture were moving in different directions. Their work does suggest a future trend towards an emphasis on materials and construction that begins in the mid-1990s.

education?

major buildings: Asarco Corporate Office
Arizona Western College (Yuma)
First National Bank
UA Math Building
Cherrybell Post Office
TCC—Music Hall and Theatre
CNWC Office

Architects from Outside Tucson

While modernism was in its prime in the 50's and 60's, specialization within architectural design was in its infancy. A few firms began to be known for their work in a particular typology, which often led to projects throughout the country. A few buildings in Tucson were designed by specialists from outside of Tucson, and these architects and their significance are briefly identified below.

W.A.Sarmiento

As director of the Bank Building and Equipment Corporation of America (BBC), and later in private practice, Sarmiento was responsible for a significant number of bank buildings across the west. Based in St. Louis, the BBC was a leading designer and builder of bank facilities. The post-World War II economic expansion led to a boom in the banking industry, which sought to rid itself of the staid images of its past. Architects were asked to create innovative modern buildings to reinvent the institutions. Sarmiento was equal to the task, having worked for Oscar Niemeyer. (Sarmiento was born and trained in South America). His work with the BBC began in 1953.

In 1972 Sarmiento designed the Western Savings (now Bank of America) at El Con Mall. The building is a fluid and integrated design that demonstrates a maturity not found in Sarmiento's earlier works. However, recent modifications to the building have brought the building's integrity into question.

Other Sarmiento banks have recently been threatened, including projects in Los Angeles, Phoenix and Washington.

Ragnar Qvale

Largely known as a professional renderer, Qvale (pronounced 'kah-vah-lee') produced two automotive showrooms in Tucson for Paulin Motors and O'Reilly Chevrolet. His family was involved in automotive imports and distribution, and this is probably how he got connected to do design work for local automotive dealers. Such showrooms had to be modern and distinctive showcases for the modern technologies they displayed.

Qvale was born in Norway, and immigrated to Seattle in 1928 at the age of 13. He attended the University of Washington, where he studied architecture. He moved to Los Angeles to become an actor in 1939. He made a few movies before becoming a pilot in World War II. After the war he went back to architecture and established his own office in Los Angeles. Other projects of note included the Sahara Hotel in Las Vegas (1952), the Wilshire Country Club, and Hughes Research in Malibu.

Caudill Rowlett Scott (CRS)

The partnership of CRS established a reputation as an innovator in design for educational facilities in the early 1950's, based especially on the research and writing of Caudill. The focus of their work was to better integrate the needs of students and teachers in order to better facilitate the learning process. CRS partnered with local architects Wilde and Friedman/Jobusch to facilitate the execution of Pima Community College in the early 1970s. CRS's belief in the collaboration and the team concept probably led to the partnership with local architects.

Ralph Haver

Haver was one of the premier modern architects in Phoenix; he was prolific, and demonstrated a broad range of aesthetic experimentation. His design for Barrows Furniture (1968?) was a follow up to his work for Barrows in Phoenix, and was one of his more subtle designs.

Shaver Co.

Salina, Kansas;
designed the Walter Douglas Elementary School

Victor Shill

Mesa, Arizona;
designed churches for LDS Church throughout Tucson

PROPERTIES THAT ANTICIPATE FUTURE DEVELOPMENTS IN MODERN ARCHITECTURE

After the early 70's, modern architecture began to lose favor with the public. This perhaps reflected a discontent with the scale-less and impersonal character of much late modern architecture, the disconnect between modern architecture and historical contexts, and a nostalgia for the quaint, more picturesque imagery of past architectural styles. It was also surely a function of cost; the exuberance of design in the 60's could not be matched in the economic turmoil of the 70's. (Note that two of the tracks of late-modern architecture identified below—corporate and monolithic—appear to make modifications to modern architecture out of economic necessity; in the case of post-modernism, surface applications were often less expensive than substantive construction materials.)

Architectural design split into two divergent paths: Post-modernism and historical revivals on the one hand, and late-modernism on the other. A preliminary assessment of late-modern architecture of the 70's and 80's suggests modern architecture evolved into three variations. Descriptions of these and properties that appear to have anticipated these new developments are listed below.

corporate modern

Many of the commercial buildings of the 1980's were the result of speculative construction. Fewer and fewer building owners were occupants; profit margin dictated the end product for developers, and they were less willing to invest money into architecture. This resulted in very simple forms with little attention to energy concerns. There was also an effort to create formal buildings to establish a corporate presence that would attract business occupants and their clients.

attributes:

- . boxes-- very simple forms; formal pose (formal; iconic)
- . building roof becomes a "hat"—stuccoed box caps masonry building (reduces masonry and lintel costs)
- . less emphasis on pattern and texture
- . less "depth"—simple volumes
- . mirrored/polished stone cladding
- . emphasis on square and rectangle as opposed to lines and planes
- . tends to become a "type"—corporate

early precedents:

- . RGA building (box, formal corporate presence)
- . City Hall (roof hat)
- . Western Savings 3002 N. Campbell (simple volume, mirrored)
- . Jewish Family and Children's Services (simple volume, masonry walls with stuccoed hat)
- . Himmel Park Library (stuccoed roof hat)

monolithic stucco

The trend toward monolithic stuccoed buildings allowed for some sculptural expression without using concrete, which had grown increasingly expensive to use. The sculptural forms tended to be wood frame or CMU construction beneath stucco. Spanish Lace stucco became prominent because it was a low-cost technique that was effective in hiding the inevitable cracking that occurred with wood frame construction.

attributes:

- . all non-glass surfaces plastered
- . uniform/monolithic appearance
- . emphasis on uniformity rather than material, texture, structure or construction
- . simpler geometry; carved box
- . lower cost
- . servant/served
- . sculptural potential with significant cost savings over concrete

early precedents:

- . Campus Christian Center (monochromatic, stuccoed)
- . Wilmot Public Library (monolithic, monochromatic, sculptural)
- . Valley National Bank (3033 e. Broadway) (monochromatic, monolithic, sculptural)

regional modern

regional modern continues into late-modern architecture, but the resulting forms are significantly different. Commercial buildings begin to incorporate split-face colored concrete block. After Chafee, there appears to have been a lull in regional residential work until the late 80's with the onset of work by Line and Space.

attributes:

- . emphasis on materials and colors that respond to desert
- . regional forms
- . split-faced block
- . emphasis on interior-exterior relationship

early precedents:

- . Mettler Dance Studio (colored concrete block)
- . TCC—Music Hall/Theatre (split-face colored concrete block)
- . Pima Community College (regional mass and color)
- . Blackwell Residence (concrete block, deep shadows, interior-exterior relationship)

TYOLOGY

Building type played a much less significant role in modern architecture than it had in previous architectural styles. This was in part because modernists perceived modern architecture as a set of universal principles, applicable to any given situation. It was also because architecture moved away from traditional forms, instead embracing progress and innovation. Pre-war types were also made obsolete by the new-found prominence of the automobile.

Modernism thrived on the blank slate—the freestanding building unfettered by an immediate context. The building was to be perceived in three dimensions, and not just as a front façade. The new dominance of the automobile also led to the new prevalence of the parking lot as context for the three-dimensional object in space. But the modern principles were also adaptable, and allowed for innovative interventions even among dense downtown blocks. (note: First National Bank and Arizona Bank downtown).

Within this broad vision for architecture, certain trends did emerge among certain building uses that are identifiable. Some of these trends were solutions to modern problems. Commercial enterprises tended to embrace the modern aesthetic in order to convey a progressive image for their companies. Innovative designs also were eye-catching for passing motorists. Institutional buildings—like public schools—tended to be more conservative and utilitarian in their use of modernism; the architectural character was less about conveying progress and embracing the future, and more about providing a cost-effective, respectful image for the institutions.

These trends are identified below:

Banks –moved away from the stogy institutions of the past and embraced modernity; architectural forms were more exuberant to attract home-buying clients; rather than an emphasis on permanence and security, there was a new emphasis on progress and accessibility

Schools – most early modern schools were strictly utilitarian: linear, brick buildings reflecting the double-loaded corridor, with low slope shed or hip roofs and ribbon windows. In the 60's, schools began to take on new forms; modern schools began to incorporate the “pod” concept, where classrooms were clustered together around shared resources. Theories of education suggested (briefly) that windows allowed for distraction, so window openings were often minimized.

Religious Institutions – churches and synagogues embraced the sculptural possibility and form-giving potential of modern architecture and the new technologies to provide inspirational spaces and forms for their congregations.

Multi-family Residential (mid-sized) – apartments were being designed around landscaped courts and marketed as “garden apartments.” Complexes were generally small, typically containing 6-20 units, each with views and access to the green landscape or pool. Parking was relegated to the back of the complex.

Multi-family Residential (large) – multi-story housing blocks were usually organized linearly around a double-loaded corridor, that repeated itself from floor to floor.

Single-family Residential – in most houses there was an emphasis on establishing privacy from the public street. The back, private side of the house usually opened up to a view, landscape, or patio. In the 1950's, the public face of the house often tried to hide the modern-ness of the building; most reflected a ranch-style influence. Carports were common in the 1950's, but garages became more prominent in the 60's and 70's. Brick was the primary construction material in the 50's; CMU became prominent in the 60's and 70's.

Roadside Attractions – innovative forms were utilized to attract the passing motorist to hotels, restaurants, etc.

SIGNIFICANCE

Assessing Significance

Emerging and continuing threats to modern architecture create some urgency to the process of assessing significance and determining eligibility for preservation. The National Register has established a 50-year guideline to insure proper perspective in determining what should be deemed significant. But the National Register has also provided guidelines for identifying and justifying the importance of buildings that have been built within the past 50 years. (Another reference for determining significance is DOCOMOMO—see below.)

Some of the buildings of the modern period have reached 50 years of age; quite simply, however, many of the best buildings from this period will not survive 50 years without public recognition. This project therefore requires two separate inquiries: first, as a matter of public urgency, buildings of *exceptional importance* need to be identified, so that efforts may immediately go forward to preserve these first-tier modern buildings. Second, a list of buildings needs to be developed that would identify *significant* structures that would probably meet requirements for preservation when the buildings reach 50 years of age (and for those that already have).

A review of the National Register Criteria (from Bulletin 15) suggests that this preservation effort will largely be a function of Criteria C: Design/Construction. “To be eligible under Criterion C, the properties under review will need to meet at least one of the following requirements:

1. Embody distinctive characteristics of a type, period, or method of construction;
2. Represent the work of the master
3. Possess high artistic value; or
4. Represent a significant and distinguishable entity (district) whose components may lack individual distinction.”

Modern Buildings of Exceptional Importance

Buildings of this caliber will likely meet more than just one of the 4 criteria identified in Category C (eligibility requirements for significance under Design and Construction; Bulletin 15). Determination of “exceptional importance” shall result from the analysis of a variety of contributing factors:

- is the building an exceptional representative of one of the building characteristics identified in the context study
- does the building display multiple characteristics from the period
- is the building innovative or unique; or was the building an early precedent
- is the work exceptional, possess high artistic value or quality
- is the building the work of a master
- does the building represent a significant and distinguishable entity (district)

An assessment of the buildings of the associated survey can be found in the building matrix, which identifies relevant characteristics, time period, innovation, and 3 criteria of Category C (embodies distinctive characteristics of type, period, method of construction, represents the

work of master, possesses high artistic value). An assessment of significance has been made based on the factors above. The weighting of these factors varies depending on the building and was not based on a straight mathematical formula; the assessment includes the interpretation and judgment of the authors of this study, and the feedback from a peer review board. The peer review board members were selected based on their knowledge of Tucson architectural history and modern architectural history.

Modern Buildings of Significance

The threshold for these buildings to achieve historic status will be lower, and based primarily on the relative age and representative quality of the modern period. From section V, National Register Bulletin #15 –How to Apply the National Register Criteria for Evaluation:

“In order to decide whether a property is significant within its historic context, the following five things must be determined:

1. the facet of history of the local area, state, or the nation that the property represents;
2. whether that facet of history is significant
3. whether it is a type of property that has relevance and importance in illustrating the historic context
4. how the property illustrates that history
5. whether the property possesses the physical features necessary to convey the aspect of history with which it is associated.

...If the property being evaluated does represent an important aspect of the area’s history and possesses the requisite quality of integrity, then it qualifies for the National Register.” (section V, National Register Bulletin #15 –How to Apply the National Register Criteria for Evaluation)

DOCOMOMO (DOcumentation and COnservation of the MOdern MOvement) is an international organization dedicated to the preservation of significant modern architecture around the world. For reference and comparison, DOCOMOMO’s criteria for identifying significance were also given consideration in establishing the methods of assessment for Tucson’s modern architecture.

DOCOMOMO has established Selection Qualifiers and 6-point criteria for evaluating modern sites. The following criteria can be applied to a building or landscape to evaluate its significance. The six categories listed below are meant to offer a set of appraisals that analyze the building or landscape through different lenses, each of which is an attribute of modern design. A site does not have to qualify under all six categories, but typically is rated more significant the more categories it satisfies.

1. Technological merit:

Does the work employ innovative modern technology to solve structural, programmatic, or aesthetic challenges

2. Social merit:

Does the design reflect the changing social patterns of 20th century life?

Did the designer attempt to improve either living or working conditions, or human behaviors through the work’s form or function?

3. Artistic and Aesthetic merit:

Does the work exhibit skill at composition, handling of proportion, scale and material and detail?

4. Cannonic merit:

Is the work and/or architect famous or influential? Is it exemplary work?

5. Referential Value:

Did this work exert an influence on subsequent designers as a result of one or more of its attributes?

6. Integrity:

Is the original design intent apparent? have material changes been made which compromise the architectural integrity of the structure or site?

(A third list of buildings shall be identified with recommendations for restoring integrity to buildings that could be significant. This will be addressed later in this study).

STRATEGIES AND GUIDELINES FOR RENOVATION AND ADAPTIVE REUSE

The following are recommendations for the renovation or modification of modern architecture in Tucson. Note that these are general guidelines, and may not always be applicable. For additional information, reference the Secretary of the Interior's Standards for Rehabilitation. The strategies outlined below are intended to help further the preservation of significant modern properties and retain the integrity of these properties through the course of renovation, adaptive reuse or expansion.

Form

Modern architecture differs from previous styles because it is based primarily on an aesthetic philosophy rather than prescribed rules or conventions. In some respects, this provides greater flexibility in how renovations or additions may occur—the philosophy creates opportunities for various solutions, whereas prescriptive rules more severely limit the range of possible acceptable solutions. However, this wider variation presents a greater challenge in directing owners and architects to appropriate solutions.

The primary preservation goal for the renovation and adaptive reuse of significant modern buildings should be to protect and reinforce the original intention. An analysis of the building should be made to determine the original salient, form-giving characteristics of the property. For example, if the building's structural system is articulated, new construction should avoid modifying the structural columns. (It should be noted that the free plan of modern architecture lends itself to adaptive re-use.)

The preservation goal for additions is less clear, but again, any new construction or modifications should seek to retain, and if possible reinforce, the original intention. In general, modern design principles should be utilized to add to modern buildings. (The ornamentation of historical revival styles and post-modernism will compete with the original building and will tend to shift focus away from the modern construction. Older historical styles will also confuse the perceived timeline and conceptions of old and new.) These modern principles can be interpreted to reflect contemporary conventions, including regional and sustainability concerns.

When possible, avoid modifications or additions that add significantly more visual intensity and energy than exists in the original building; this will help to keep the focus of perception on the original. This suggests that the simpler forms of international modernism would generally be appropriate in an addition to expressionist modern buildings, and that alternatively, expressionist additions to international modern buildings may want to be avoided (Valley National Bank at Swan and Speedway is an exception). An expressionist addition to international modern may be acceptable, but requires care. Avoid adding different expressionist characteristics to a building that already has other, distinct expressionist characteristics.

There are four general strategies for adding onto an existing modern structure:

1. faithful execution or extension of the original systems, characteristics or intent; seek to achieve a unified composition akin to the original
example: UA Law School 2nd Story Addition

2. contrast--articulate between old and new
distinguish between mass and transparency, patterned and smooth surfaces, etc.
example: UA Main Library--metal/glass addition to massive concrete building

3. use existing materials in new ways
example: Valley National Bank (now Bank One) at Swan and Speedway

4. use new materials to upgrade the design
example: UA Annex , 2504 e. elm st.--replaced wood fascia with copper

New construction should seek “dimensional stability” with the original building; the scale or dimensions of the new construction should be within the range established by the original construction. If the dimensions of the addition are too small (+/- <0.6x), it will appear as an attachment and out of place. If the dimensions of the addition are too large (+/- >1.7x), it will overwhelm the original. This may require breaking down large additions down into smaller, aggregate parts.



Figure 12

If the original building is an aggregation of forms, consider using similar forms and similar scales for the new addition (unless contrast is an intended goal).

Sculptural modern buildings pose a unique problem for additions; they tend to be the most difficult to add on to because sculptural buildings tend to be iconic, complete “wholes.” Be wary of competing forms; consider reinforcing the original construction by creating buildings that can provide a backdrop or foil for the original sculpture.

Materials

Recommendations for material selection for renovation, additions or adaptive re-use:

when adding to brick, use:

- . matching brick (take care to get accurate match in size and color)
- . CMU (smooth face only)
- . concrete
- . metal
- . glass

when adding to CMU, use:

- . matching CMU (take care to get accurate match in size and color)
- . concrete
- . metal

- . glass

when adding to concrete, use:

- . concrete (texture may vary; subtle variation in color only)
- . metal
- . glass

when adding to metal, use:

- . metal
- . glass

when adding to stucco or plaster, use:

- . matching stucco finish and color (minimal or no texture; absolutely no Spanish Lace texture; texture emphasizes surface, but smooth plaster was generally intended to make the surface disappear.)
- . metal
- . concrete
- . glass

Generally, materials that have less visual interest than the original construction will be more likely to integrate successfully with the original. Note that glass is the “universal donor” in modifying or adding to modern buildings. However, there are some limitations on how glass should be used. Mirrored glass should only be used in buildings where it was already in use. When modifying glazing for solar control, use glazing that most approximates the light transmittance of the original glazing. Also, avoid using extremely dark bronze glazing with silver or gold aluminum mullions unless the precedent is already set; as an alternative, consider solex or grey tinted glass.

Avoid stuccoed additions to buildings constructed of more substantive materials, like concrete, brick, metal and CMU. Also, avoid using different metal colors in similar situations; for instance, if the original window mullions are silver aluminum, the addition should also use silver aluminum mullions.

Color

Paint colors are easily changed, and therefore are likely to be modified eventually. Whites and grays are prevalent with modern properties, and generally contribute to a building’s modern character. Modern buildings tend to be monochromatic; for some buildings, this is a critical contributor to the property’s significance (note Sakellar’s sculptural work). If necessary, consider light grays (cool gray is preferable, warm gray can be ok) as a substitute for white. Avoid bright colors as primary building colors, avoid trim or detailing paint, and avoid painting exposed concrete. One of the goals of early modern architecture was to dissolve the surface character of the building; bright colors and trim paint tend to emphasize the surface.

The exposed materials of modern architecture on many modern buildings have been painted over to create more surface interest. Removal of paint is often critical to restore building integrity. Refer to the Department of the Interior’s recommendations and limitations for the removal of paint.

Case Studies

The following modern properties have been modified, and have successfully retained integrity as modern buildings:

- Valley National Bank (now Bank One, swan and speedway)—seamless brick match; uses subtle shift to pattern to create new visual interest (expressionist addition to original international modern building)
- Child and Family Services (2800 e. Broadway)—adaptive reuse/free plan
- UA Annex (2504 e. Elm)—replaces wood fascia with copper (upgrade)
- Office Building (2777 n. Campbell)--(paint color/bronze windows) ??
- UA Law School—seamless concrete and glass match (faithful execution of original intent)

The following modern properties have been modified; these modifications are less successful and may have adversely affected the historical integrity:

- HUD (stone and Alameda)—added brick to concrete; multi-color brick is unrelated to monochromatic building; brick color and texture breaks up monochromatic nature of building
- Bank of America (El Con Mall)—post modern addition to modern building; competing goals; goals of new do not match original intent; additions do not reinforce original sculptural/patterned intentions materials are incompatible (split-faced block, exposed steel)
- Lerner Building (Stone and Congress)—complete modification
- Carpet Giant (Speedway and Rosemont)—hides structure
- Alltel (4380 e. Broadway)—post modern addition; focus now on entry, symmetry, pediment; surface decoration competes with original building
- Randolph Recreation Center (S. Alvernon)—gymnasium is “decorated,” materials do not coordinate with/complement original, and addition pushes the limits of dimensional stability (however, new building’s location gives the impression that it is not integrated with original, so original may retain integrity)
- Priest Residence (6301 S. Gila Ave.)—exposed architectural materials have been painted and trim colors have been added; a small, incompatible addition has been made to the southern face of the building.

INTEGRITY

Recommendations

This is a list of buildings that may be significant, but that have questionable issues of integrity; included with each building are recommendations to restore integrity.

- Bank of America 3480 e. Broadway
- . remove roof mounted equipment (or provide screening that integrates with the building)
 - . remove concrete block addition, red and blue steel
 - . remove yucca/aloe plants along curved façade; restore grass
 - . remove/reconfigure stuccoed screen walls for parking

- Housing and Urban Development 160 n. Stone
- . remove all brick; patch and repair concrete surfaces

- Cadillac Showroom (no longer in use)
2121 e. Broadway
- . replace glass
 - . replace fascia with aluminium
 - . remove split face addition?

- Alltel 4380 e. Broadway
- . remove entry columns/pediment

- Greyhound Terminal e. Congress
- . remove paint/reveal original concrete block



Figure 13

The following buildings are significant but have questionable issues of integrity.

- Sebra Building 116 n. Tucson Blvd.
- . window mullion color has been modified

- Continental Building 2343 e. Broadway
- . building has been painted a color other than white; accent color also used

- Office Building 2221 e. Broadway
- . building has been painted a color other than white; accent color also used

- Randolph Recreation Center 200 s. Alvernon
- . split-faced block gymnasium addition

- Bank/Office 3333 e. Speedway

- concrete block screen wall

Academy Medical Offices 310 n. Wilmot

- building has been painted in two tones, making a distinction between the top and the base of the building; building should be painted monochromatically in the original white

The following buildings are not significant, but recommendations below are for improvements that would strengthen the modern character of the building:

CONCLUSION

Threats to Modern Architecture

“The preservation of significant buildings and sites presents a demanding economic and physical challenge. The continued life of both the icon and the ordinary as elements in an economically driven world depends first, upon a shared recognition of their cultural and social value, and second, upon their continuing economic viability.” (Docomomo-us.org)

Tucson, like many American cities, has recently seen the loss (or loss of integrity) of several significant modern buildings to two emerging trends: 1) There is a lack of recognition and appreciation of modern architecture, leading developers to try and hide or obscure the modern character of their buildings (recent examples include the former Lerner Building, the HUD Building downtown, and the Bank of America at El Con Mall); and 2) Land values are outpacing construction costs, placing a premium on location rather than building type. This has led developers to tear down existing buildings to obtain prime locations. Two recent events--the razing of the modern Citibank on the northwest corner of 5th Street and Alvernon to make way for a non-descript Osco Pharmacy, and the demolition of the College Shop on Park Avenue to make way for a new large-scale commercial project-- demonstrate that this trend has arrived in Tucson. For buildings that have significant historic value, this can mean losing an important contributor to Tucson’s urban character. This problem is so pronounced that the National Trust for Historic Preservation recently listed “tear downs” as one of the 11 most significant preservation issues in the country.

Examples of buildings lost, modified or threatened in the past 5 years:

building	status
College Shop – n. Park Avenue	demolished
Citibank – n.w. corner of 5th and Alvernon	demolished
Tucson General Hospital	demolished
Former First National Bank – Stone and Speedway	demolished
Tucson International Airport	modified (unrecoverable)
Lerner Building – n.e. corner of Stone and Congress	modified (unrecoverable)
HUD Building – Stone and Alameda	modified
Bank of America – El Con	modified
Greyhound Bus Terminal	threatened
Wilmot Public Library – n. Wilmot	threatened

As a result of these two trends, many significant examples of modern architecture are unlikely to survive the 50 years typically required by the National Historic Register to be eligible for preservation.

Addressing Threats to Modern Architecture

The primary efforts to address the threats to modern architecture should focus on the following:

- . identify significant modern architecture of the recent past (1945-75)
- . identify significant properties that may be endangered

- raise public awareness about modern design and the significant properties to reduce the probability of losing properties of exceptional importance
- create opportunities and identify incentives for property owners of significant properties to have their properties protected and preserved
- develop preservation goals to assist long-range strategic planning.

This context study document takes the first steps in addressing these threats by identifying significant modern architecture and significant properties that may be endangered. A second phase must focus on generating public awareness for the general public, community leaders and --most significantly -- building owners. The variation, simplicity and often utilitarian nature of modern architecture can make it difficult for the public to distinguish between good and bad examples. Public recognition and historic designation are critical to garnering public support. Finally, building owners need to be made aware of the significance of these buildings, and support systems put into place to assist owners in restoring, maintaining and adapting their buildings, especially in the face of adaptive re-use/economic ramifications of preservation.
(identifying incentives)

BIBLIOGRAPHY

- Arthur Brown: Architect, Artist, Inventor*. Compiled by Kathryn M. Wayne. Tucson: College of Architecture Library, University of Arizona, 1985.
- "A Desert House Revives its Region's Traditional Forms," *Architectural Record*, February, 1979, p. 107.
- Boothby, Thomas E., and Rosson, Barry T., "Preservation of Historic Thin-Shell Concrete Structures," *Journal of Architectural Engineering*, March 1998.
- "Clothier Residence," architect: Arthur Brown, p. ____ and cover photo; *Architectural Record* May 1948.
- DOCOMOMO-- DOcumentation and COnservation of buildings, sites and neighborhoods of the MOdern MOvement, <http://www.docomomo-us.org> website of the organization
- Evans, Chris, and Jeffery, R. Brooks, interview with Kirby Lockard, January 2004.
- Evans, Chris; interview with Kirby Lockard, November 2004.
- Frampton, Kenneth, *Modern Architecture, A Critical History*, Oxford U. Press, 1992, 3rd Ed.
- Frampton and Futagawa, *Modern Architecture, 1857-1945*, Rizzoli, 1983.
- Goldin, Greg, "Bank Statements—Los Angeles, California –Bank Buildings Designed by W. A. Sarmiento," *Los Angeles Magazine*, June 2001.
- Gournay, Dr. Isabelle, and Sies, Dr. Mary Corbin, "Researching the Modern Movement in Maryland," an overview of "The Modern Movement in Maryland: Research, Context, Issues and Methodologies," paper submitted for DOCOMOMO Conference 2004.
- Hitchcock and Johnson, *The International style*, W.W. Norton, N.Y., 1966.
- The International Style and Passive Solar Regionalism in Southern Arizona Deserts (1969-1982)*, Report prepared for the Arizona State Historic Preservation Office, 1995.
- Le Corbusier, *Towards a New Architecture*, Dover Publication, Inc., New York 1931
- Jones, Edward M. "Arthur T. Brown Talks to Edward M. Jones [interview]" *Triglyph* 9 (1989-1990 Winter):2-9.
- Jeffery, Brooks, *Nicholas Sakellar, FAIA*, Guide to Tucson Architecture Series, Arizona Architectural Archives, University of Arizona College of Architecture, 1995.
- Jeffery, R. Brooks, and Nequette, Anne M. *A Guide to Tucson Architecture*. Tucson: University of Arizona Press, 2002.

Jeffery, R. Brooks, Tucson Architecture Oral History Project: interview with Kirby Lockard, Ned Nelson, Bernie Friedman, ----, date.

Kostof, Spiro, A History of Architecture, Oxford University Press, New York, 1985.

Lambin, Jeanne, and Fine, Adrian Scott, "Rallying Support for Resources from the Recent Past," *Forum Journal*, Professional Journal of the National Trust for Historic Preservation, Summer 2004.

Lockard, Kirby, "Nicholas Sakellar F.A.I.A.". Sakellar Associates. 11 Feb 2004
http://www.sakellar.com/Nick/in_memory_v2.htm website of the firm.

National Register of Historic Places Bulletin No. 15—"How to Apply the National Register Criteria for Evaluation," National Park Service.

National Register of Historic Places Bulletin No. 22—"Preserving the Recent Past," National Park Service.

Pevsner, Nikolaus, Pioneers of Modern Architecture: From William Morris to Walter Gropius, 1960, Revised Edition.

Phoenix Commercial Architecture: 1945-1975 A Preliminary Architectural Context.
Ryden Architects, Report prepared for the City of Phoenix Historic Preservation Office, Sept. 2002

"Record Houses of 1970: Twenty Exceptional Houses and Eight Multi-Family Projects Selected for the 1970 Awards of Excellence for Design," *Architectural Record*, May 1970, p. 66.

Regan, Margaret. "Designs in the Dust." Tucson Weekly Apr 22-28, 1999. Tucson Weekly Wire. DesertNet. 11 Feb 2004.

Regan, Margaret. "Master Builder: Architect Judith Chafee Melded Sleek Modern Design to the Sonoran Desert." *Tucson Weekly* 7 Feb 2000. Tucson Weekly Wire. DesertNet. 11 Feb 2004.

Recent Past Preservation Network <http://www.recentpast.org>. Online network dedicated to preserving modern architecture.

"Residence for Margaret, Countess of Suffolk," architects: Richard Morse and Arthur Brown, p. ____ *Architectural Record*, January 1941.

Saarinen, Elliel, Search For Form: A Fundamental Approach To Art, Reinhold, 1948.

Scully, Vincent, 1991 Modern Architecture, The Architecture Of Democracy, Braziller, 1974, revised edition.

Spring, Paul. "The Architecture of Arthur Brown." Fine Homebuilding 11 (1983 Dec.):34-35.

“Secretary of the Interior’s Standards for Rehabilitation”, U.S. Department of the Interior
<http://www.cr.nps.gov/hps/tps/tax/rhb/stand.htm>

William Wilde Obituary, *Arizona Daily Star*, 20 November 1984, Section B, Pages 1,4.