

Framing a Tectonics of Place: The Arizona School

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ABSTRACT: *This paper will present a framework for studying how the best architecture of this region – including the work of the so-called Arizona School – has been, and continues to be, influenced by the tectonics of place: thoughtful in the use of local labor and techniques, creatively exploiting materials and architectural detailing, and informed by a varied and unique cultural history; all in response to a harsh and relentless (yet beautiful!) environment.*

KEYWORDS: Architectural Tectonics, Arizona Architecture, Arizona School, Critical Regionalism, Place

INTRODUCTION

In the winter of 1928, Frank Lloyd Wright made his first pilgrimage to Arizona to consult on the design of Albert Chase McArthur's Arizona Biltmore Hotel and was captivated by the natural beauty of the (mostly) unspoiled grandeur of the Sonoran Desert. He made several more trips to the Phoenix area in the following decade to live, work, and recuperate, eventually constructing Taliesin West in the early 1940s. This western edition of the Taliesin compound echoed the qualities of the desert. The materiality of the concrete walls, redwood frames, and "luminous canvas" panels provided a protected oasis perfectly situated to survive the ever-present harshness of the desert environment (Levine 1999).

Sixty years later, journalist Lawrence Cheek wrote an article for *Architecture* entitled "The Making of the Arizona School." In this text, Cheek ruminates on the past and current states of the built environment of Arizona. He speaks of the philosophies of Wright and their similarity to those of the indigenous peoples who have inhabited the region for centuries, focusing on the establishment of a graceful relationship between building and landscape that has been carried on by a lineage of Arizona architects. Cheek (2002) postulated that these influential individuals contributed to the emergence of an Arizona School of architecture "that now persists in the work of a scattering of modernists" practicing their craft in the heat and sun of the Sonoran Desert.¹ One of these architects, Jack DeBartolo 3 of DeBartolo Architects in Phoenix (2021), argues:

Place is the most influential element in our work. ... [P]eople change, criteria change. Places, however, tend to be pretty consistent. We ... think it's important that we respond to climate and to culture and to all the other facets of place. This is not just a philosophical attitude. The architect has a responsibility – a moral mandate – to respond to place. It's an irresponsible act to ignore the place of the work and to somehow think that you can – through cleverness, or through a material approach, or through some technological advantage – overwhelm or overcome the realities of place.

The logic of place, however, is complex, defined not only by the surrounding context, but also by cultural traditions of making, building, and living; political and societal influences; the systems at work within the ground; and the environmental impacts of the yearly climactic cycles. Place is not just a point on a map, and it is not simply scenographic; it is a composite environment, a quantitative and qualitative totality which cannot be reduced to any singular property (Norberg-Schulz 1976). Place accounts for the realities of the present, but it also refers to the traditions of the past and anticipates future trajectories. Place is messy; it is a complex endeavor that holds significant sway over what and how we build, what we build with, the temporal expectations of construction, and the connectivity of architecture, and in turn people, to its/their surroundings.

This research reflects on the proposition of an Arizona School, making the argument that, unlike other named Schools of architectural thought, it is not a stylistic or intellectual construct, but, instead, a tectonic one that specifically grounds the best work of the Sonoran Desert in the natural characteristics of this environment.² Informed by interviews with dozens of Arizona practitioners, this avenue of inquiry positions place as the foundational tectonic catalyst of architecture, informed by a lexicon of characteristics that shape the relationships built between people and place and, in this particular case, between architecture and the characteristics of the Sonoran Desert.

1. ARCHITECTURAL TECTONICS

1.1 Tectonic origins

In the mid-1800s, tectonic theory developed in Germany as a response to contemporary architectural practice. Neoclassicism, amongst other styles, was building a strong following in architectural circles and aesthetic appearance carried great weight in the evaluation of the built environment. Tectonic theory, championed by Gottfried Semper and Karl Bötticher amongst others, challenged the predominant assumption that what lay below the surface of a building was secondary to its ornamented cladding. It sought exterior expression for the mechanics that facilitate the development of our spaces of inhabitation. In this era, tectonics involved

building a relationship between the underlying technical necessity of architecture and its outward expression in the building's artform. As such, this theory began as one of ornamentation and was often disconnected from any notion of place. Many of Semper's and Bötticher's ideas were bound to their adoration of the ancient civilizations of Greece and Rome, creating a situation where architectural principles were not tied to one's own place, but instead to a place located remotely via distance, culture, and time.

1.2 Contemporary manifestation

Over a century and a half has passed since Semper and Bötticher wrote their manifestos on architectural tectonics. Cultural change and technological advancement have necessitated a constant evolution of the built environment, shifting the theoretical underpinnings of architectural tectonics as well. Its soul, however, remains: the belief that the construction of architecture – the ontological core of the built environment – is worthy of being expressed in the design of architectural space. Definitions of tectonics written around the turn of the last century illuminate the changes that have occurred in its contemporary interpretation:

The concern of tectonics is threefold. First, the finite nature and formal properties of constructional materials, be those timber, brick, stone, steel, etc. Second, the procedures of jointing, which is the way that elements of construction are put together. Third, the visual statics of form, that is the way by which the eye is satisfied about stability, unity and balance and their variations or opposites (Porphyrios 2002, 135-6).

Contemporary thought has shifted the definition to put more emphasis on the "revealed ligaments of the construction" (Frampton 1998) not just through representational means, but through their literal revealing. Tectonics is still concerned with the outward presence of a building, but more so with regards to the overall understanding of stability and balance than the surface application of ornament. The focus has also shifted to understanding the constructional logic of a building and the use of detailing and materiality to convey the qualities of the architecture and its spaces. Additionally, the historicism that grounded the early iterations of tectonic theory have all but disappeared, allowing a wide range of factors to exert a more significant influence over the reading of tectonic architecture.

Tectonic theory is integrative and its evolution over time means that no single definition exists that is inclusive of all its various interpretations. Within the context of this study, however, the exploration of tectonics in architecture is centered on understanding how the ways we construct impact the resulting spatial experiences. Per the late architect and educator Charles Vallhonrat (1988, 135):

Above all, we cannot build without the sense that the way we build is an active ingredient of the compositional strategies by which we try to achieve the ideal, or the idea of bound, sequential, and delineated spaces.

1.3 Tectonics and place

There are three primary realms of influence place has on architectural tectonics: the ground, the culture, and the environment. Buildings must deliver load to the ground thanks to the ever-present force of gravity on this planet. The significance of that intersection is often determined by the relative permanence of a structure. Regardless, though, weight must eventually return to the ground and the means employed to do so have a significant influence on the tectonic presence of architecture and the sense of stability that is critical to the development of that presence. We are hardwired to innately understand gravity's pull to earth and, as such, we read stability in the world around us as well. The plane of the ground – flat or sloped, rough or smooth – is, quite literally, foundational to our basic understanding of the tectonics of building.

The marking of the earth is the beginning of our taking possession of the land. Those who see the ground as a malleable substance that will change and develop with the integration of architecture will treat it differently than those who see it as a condition to be preserved. The second architect may find an ideal construction that integrates with the existing landscape, deriving a concept from the resulting relationship. The first architect, however, is more likely to start with a concept and derive a means to support it through the physical manipulation of the place, potentially creating conflicts between technology and topography (Berlanda 2014). The results of this conflict between the realities of the ground and human intent for the built environment occur often, sometimes resulting in the development of placeless architecture. The tectonics of place rallies against the spirit of universalism that facilitates the building of the same product anywhere.

Along with the ground, environmental conditions – heat, light, wind, weather, disasters – comprise the fundamental characteristics of place, which necessitate certain responses from our built environment to ensure that human comfort and safety are maintained. These factors were early components of tectonic theory, especially in the work of Semper who identified that cultures in warmer climates developed different building typologies than cultures living in cooler climates. Technological progress, however, has prompted some to ignore traditional practices in favor of technologies such as air conditioning which can be seen as "the main antagonist of rooted culture" when used "irrespective of the local climatic conditions which have a capacity to express the specific place and the seasonal variations of its climate." (Frampton 1998, 30) In fact, it can be

argued that evolutionary changes to tectonic theory have allowed not just gravity, but also climactic forces to contribute to the expression of a project and inform the underlying realities of architecture in a meaningful way.

Materials also play a key role in building a tectonic relationship between architecture and place. Vernacular buildings have material responses that are closely tied to both performance and availability: locally sourced, more familiar to the local labor force, and more resilient in the face of the regional climate. Semper linked the material language of architectural tectonics to the tectonics of craft – enclosure and textiles, framework and carpentry, earthwork and masonry, and the hearth and metallurgy and ceramics. Within these associations, he builds connections between materials and culture, effectively tying craft and architecture into the larger narrative of place. Additionally, materials can carry with them deeper meaning and, at times, both a lengthy history within a particular place and an evolutionary trajectory to come. While our current global society has allowed for an incredibly diverse knowledgebase to proliferate across the planet, it is our responsibility to ensure that while this diversity is opening possibilities, it is also acting in response to contextual conditions.

Building a relationship between place and current societal values is an emphasis of the theory of critical regionalism first proposed by Alex Tzonis and Liane Lefaivre and later developed by Kenneth Frampton. In the words of Arizona architect and educator John Meunier (2021):

Critical regionalism focuses on two things very well. The first is that we need to create buildings that are of our time, reflect the values of our time, and represent the aesthetics of our time. Hence the term critical. The second is that we need to do buildings that respond and contribute to the place where they are.

The goal is to create architecture that is respectful to the history of a place without nostalgically recreating vernacular imagery. In fact, tectonically centered architecture does not favor a particular architectural style; instead, it finds synergy in the “constantly evolving interplay of three converging vectors, the topos, the typos, and the tectonic” (Frampton 2001) or the place, the people, and the ways in which we construct spaces for their engagement.

2. PLACE

2.1 The Sonoran Desert

Deserts are most often defined first by their extreme aridity, but, in contrast to the prototypical image, when rains come, water “furiously pours from the sky” creating ephemeral pools and streams that momentarily replenish the desert and its inhabitants (Magrane and Cokinos 2016). The Southwest United States hosts four deserts: the Great Basin Desert, the Mojave Desert, the Chihuahuan Desert, and the Sonoran Desert. The Sonoran Desert, which exists primarily in Arizona and northern Mexico, is currently divided into six sub-biomes based primarily on the different types of flora that inhabit each, two of which – the Lower Colorado River Valley and Arizona Upland – are found in Arizona where the winters are mostly mild allowing for considerable biodiversity in what is considered the lushest desert in the world (Magrane and Cokinos 2016).³

Survival in the Sonoran Desert means adapting to an extreme environment and conforming to “Liebig’s law of the minimum, which simply states that the growth of a plant varies with the nutrients (including water) it is provided, and when the plant is deprived of nutrients, it cuts back.” (Shoumatoff 1999, 57) This reality does not mean, however, that life is struggling to survive in the Sonoran Desert. The flora and fauna there have adapted to live in this environment, evolving to integrate with the place to the point where many species require the arid environment for survival. Rather than the Sonoran Desert being a place of competition for scarce resources, it is often a place for mutualism to develop, a condition where interactivity between species benefits both equally, promoting a stronger ecosystem (Dimmitt, Wentworth Comus, and Brewer 2015).

Humans have lived in the Sonoran Desert for around 13,000 years. The first major civilization to thrive in the region was the Hohokam, who had their height in the 1300s and 1400s CE. Despite continual inhabitation since that point, the fact remains that of all the biodiversity in the region, it is humans who “are among the most poorly equipped animals for dealing with desiccating heat.” (Shoumatoff 1999, 65) In order to survive there, we need to carefully study the strategies that have proven successful for those best suited for the Sonoran Desert and use that knowledge gained to overcome our poorly adapted physiological makeup. We also must not abuse the very place we wish to inhabit as the greatest challenges to the Sonoran Desert are all man-made: global warming, habitat destruction, drought, and extreme wildfires. Our interventions must, now and into the future, be more respectful of place than the majority of what has been built there in the past.

2.2 Characteristics of a Place

Hassan Fathy (1986, xx), the late Egyptian architect, spoke extensively in his writings about the need to develop “an intimate knowledge of how to live in harmony with the local environment.” To effectively respond to this charge, however, we must be keenly aware of the characteristics of the place we are developing. Some of these characteristics are foundational elements of the natural environment – light, heat, water, earth, and air. In Fathy’s model, all other characteristics – the flora and fauna, the culture and spirit, the materials and

techniques used to build – respond to these natural characteristics, which exist virtually anywhere in one configuration or another. The following sections will briefly illuminate how these characteristics manifest within this particular place – the Sonoran Desert region of Arizona – and will provide concrete examples of their influence on the tectonic makeup of a handful of regional projects designed with a responsive attitude.

2.3 Light

Light defines our world and the shape and form of the objects in it. “Shadow is light’s counterpart” and it is “the gradation between lit surfaces and surfaces in shadow which supplies information about the three-dimensional form of a body.” (von Meiss 2014, 125) Light in the Sonoran Desert is a truly phenomenal force and can primarily be noted for its intensity, falling “fierce and hot as a rain of meteors ... the one supreme beauty to which all things pay allegiance.” (van Dyke 1918, 4) During the day, the brightness washes out character and color, but when the sun shifts low on the horizon, you can begin to understand the richness of the desert environment. The intensity of the sun in the region eliminates the need for substantial amounts of glass to achieve appropriate lighting within a building and reflected light is tremendously important because it has lost its intensity and a lot of its radiant heat and damaging infra-red and ultra-violet rays (Meunier 2021). Perhaps more so than in any other climactic region, understanding the path of the sun and shaping a building around that path are essential for designing responsibly.

Shadows in the desert are equally as intense; crisp and clean, almost as if they were cut by a razor blade (Weber 2021). “Desert light magnifies any little imperfection in a surface,” (Trzebiatowski 2021) allowing facility to play a crucial role in the expression of a project. These shadows stand in stark contrast to the ethereal qualities of the light of the sunrise and the sunset which shift the intensity, the color, and the value of the light considerably. As we consider light as a characteristic of place that can significantly alter the tectonic makeup of architecture, how does the best work of this region receive, resist, reflect, refract, exploit, or embrace desert light? How can the intensity of the light be handled as one shifts from outside to inside and back? What roles can shadow and shade play in the development of space in the desert as well as in the definition of form, detail, and tectonic expression?

One project that explores the use of shadow play is Temple Kol Ami [Scottsdale, 1994, Figure 1]. Will Bruder designed irregularity into the masonry walls by creatively misusing the methods of construction. He directed the contractor to “add a half-inch to the normative guide width dimension for a CMU wall” and when the blocks were dropped, if they landed between the strings, they were not to be adjusted (Weber 2021). The resulting walls have a texture that changes continually with the light, allowing for a play of shadow on the façade that varies throughout the day and throughout the year. In the Arroyo Residence [Tucson, 1990], Les Wallach was interested in managing the intense glare of the desert sun. Building on lessons learned from Judith Chafee about the use of a “big hat” to shade a project, a roof about three times the size of the house extends outward to capture exterior space. Along the southern exposure, the roof is specifically perforated to create a transition of light when looking from the dark spaces of the interior to the intensely bright exterior (Wallach 2021).



Figure 1 (left): A masonry wall at Temple Kol Ami by Will Bruder (Author, 2022); Figure 2 (right): The Prayer Pavilion of Light by DeBartolo Architects (Author, 2022)

2.4 Heat

With the light of the sun, comes its heat. While the control of light in architecture can impact human comfort, the control of heat through architecture can be responsible for maintaining human life. Phoenix, sitting at the northern end of the Sonoran Desert, has the hottest summer temperatures of any city in the Northern Hemisphere and, at an average daily high temperature of above 87°F, is one of the hottest cities on the planet

(Gammage 2016). Although the introduction of the home use air conditioning unit after World War II transformed the desert southwest into a place that could provide “comfortable” year-round living, responsible architects, and in turn responsible architecture, should rely on passive strategies to start the process of shaping comfortable space in Arizona, often through the adaption of time-tested, traditional practices. “You can tune the walls in a building...using different amounts of insulation based on orientation. Mass walls can absorb the heat, passing it through and releasing it in the building overnight.” (Wallach 2021)

The temperature of the southwest is significant, but it is also rising, especially in the cities, where the high temperatures have risen ten to fifteen degrees in the past several decades (Sydnor 2021). These rising temperatures, while partially due to climate change, are also a symptom of more immediate human-induced conditions such as the heat island effect and increased humidity caused by the addition of so many sources of open water. However, while it is assumed (correctly) that the Sonoran Desert region of Arizona is hot and relatively arid, intense heat does not always define the region. Outside of the summer months, the Sonoran Desert has a milder climate that encourages outdoor living. As we consider heat as an influence on the tectonic makeup of architecture in the Sonoran Desert, we must understand how a project resists and otherwise handles the intense heat of the desert, but also adapts to the yearly and daily shifting of temperature. How can performance carry equal weight to aesthetics in order to avoid “building the equivalent of the Farnsworth House in the desert”? (Wallach 2021)

With the Prayer Pavilion of Light [Phoenix, 2007, Figure 2], DeBartolo Architects explored, instead, if it would be possible to responsibly develop a glass box in the desert, one designed to resist heat infiltration. The enclosure of the building is composed of two glazing layers separated by a five-foot thermal chimney space. The interior skin is triple glazed while the exterior skin is laminated, fritted glass with a film in the center that shades the interior skin. The resulting construct provides light infiltration while mitigating the heat of the desert during the summer months (DeBartolo 2022). The Vali Homes Prototype project [Phoenix, 2014] provided coLab Studio with an opportunity to explore passively bringing better heat management to a prototypical single-family residence. The cladding mimics the vertical vents of a saguaro cactus, allowing moisture to breathe out, and a gap between the exterior metal siding and underlying layers allows thermal venting, also reducing heat gain. The 12-inch-thick, double stud walls are filled with 100% recycled cellulose for an R-value of 42. Additionally, EPS insulation around the edges of the slab allows the shaded ground to act as a heat sink and cool the house naturally (LeFevre 2019).

2.5 Water

Life on earth is water centric. Water is a critical component for sustaining life and a catalyst for human settlement patterns. It is also a universal symbol for life, rebirth, tranquility, peace, reflection, and power. The Turkish playwright Mehmet Murat Ildan wrote, “In the empire of desert, water is the king and shadow is the queen.” [3] Historian Thomas E. Sheridan (2012, 5) believes that a better metaphor in the American West might be “that of a feudal society of competing warlords held together by a weak king” who can deliver the precious resource of water. In the Sonoran Desert, “[t]he absence of water has largely determined the behavior and morphology of not only individual species... but entire cultures.” (Shoumatoff 1999, 9)

The state of water in the Sonoran Desert, however, has shifted dramatically with the influx of human settlement over the past 200 years. “A century or two back, water... in these deserts was no rarity.” (Cheek 2000) The aquifers lay close to the surface and the Santa Cruz River in Tucson and the Salt River in Phoenix were active waterways. The current condition, however, involves moving water to the people using massive infrastructural conveyance systems – the Salt River Project and the Central Arizona Project – that Marc Reisner refers to in his book *Cadillac Desert* as “a palpable mirage as incongruous a spectacle as any on earth: a man-made river flowing uphill in a place of almost no rain.” This “replumbing of Arizona” has allowed the metro areas of the region to exist, but the potential for cotton fields and golf courses has silenced many natural systems that depend on rivers for their lifecycles (Gammage 2016). Combined with dwindling resources, Arizona now has “an existential crisis of water, which they seem perilously oblivious to” (Kroloff 2021) at times.

While the organization of water resources is a guiding force in Arizona, the poetics and tectonic impacts of water in the desert are most often rooted in its delivery from above. The monsoon rains are fierce, but fleeting. A brief deluge of water transitions the desert to a world of torrid washes and roadways for the inundation of surface water seeking a home. Rainstorms in the desert are majestic events that bring additional resources to be coveted and, if possible, stored for later use. How can a project be tectonically configured to capture, store, and disburse water? How can architecture provide shelter from the driving monsoon rain? How can water be used to responsibly hydrate the dry air? How can we use wastewater productively? How can architecture “make sacred and visible the path of ephemeral water,” (Ten Eyck 2022) putting it front and center for all to see?

Marlene Imirzian shaped the Bob and Renee Parsons Leadership Center [Phoenix, 2017, Figure 3] – a camp facility for the Girl Scouts of America – around water in a variety of ways. Initially, Imirzian worked with landscape architect Christy Ten Eyck and civil engineer Leslie Kland to analyze the watershed of the hillside on which the center is located. Ultimately, the watershed was restored and protected by raising the entire complex off the ground, separating natural processes below from the camp’s activities above. The Center is also designed around clusters of cabins, each designed to collect water using a sculpted roof that channels it to tanks for reuse, visibly demonstrating the principles of responsible management to the campers (Imirzian 2021).



Figure 3 (left): The cabins and main walk of the Bob and Renee Parsons Leadership Center by Marlene Imirzian (Author, 2022); Figure 4 (right): The entry court of the Arabian Library by Richârd Kennedy Architects (Author, 2022)

2.6 Ground

As was mentioned above, the ground is, has been, and will continue to be the literal foundation of architecture. “The act of grounding – of fastening what we build to the earth – separates architecture from other acts of design.” (Kieran and Timberlake 2008, 57) The ground, however, is not a static, uniform mass. It is, instead, a palimpsest of layers that are unique to a particular place, a stratification of different natural and, sometimes, man-made substances. As was true with water, the cultural interpretations of the ground are also important as it serves as a symbol of fertility, growth, strength, stability, the afterlife, and timelessness for many. The ground can also be read either as a surface – one separating above from below, as is often the case when referring to topographical shifting of its topmost plane – or as a mass – acknowledging the strata, built up over ages, as a primary building material instead of an abstraction. Regardless of the interpretation, the building and the ground must engage in a negotiation, an “unavoidable encounter [that] constitutes an integral part of the design and is intimately connected to the attitude one holds with regard to the site and with the relationship between artefact and nature.” (Berlanda 2014, [1]) A building can occupy a site in three primary configurations: in the ground, on the ground, or above the ground. While most buildings start with an excavation to establish appropriate structural foundations, tectonic engagement with the ground can extend beyond issues of stability to the deeper meanings of the earth discussed above.

The landforms of the Sonoran Desert – rugged mountains, intimate canyons, wind sculpted dunes, winding arroyos, and vast expanses of open space – are varied and bold. The soils in the desert also range extensively, from expansive clay to rock-hard granite to caliche, a soil that is cemented together by calcium carbonate. At the surface, parts of the “desert floor [are] made up of cryptobiotic crusts that take centuries to regenerate when they’ve been damaged or disturbed.” (Winters 2021) In other parts of the desert, desert varnish, a thin coating of clay, iron, and manganese, is baked onto the surface of stone in the arid environment. Because of these conditions and others, scars on the Sonoran Desert’s surface – large or small – take an enormous amount of time to heal, requiring careful and thoughtful architectural engagement. Some projects touch the ground lightly to protect the desert floor and minimize impact, but there are valuable reasons to embed a building into the ground in the desert as well: thermal regulation and a reprieve from the desert heat. How else can a building take advantage of, burrow into, hover above, mimic, or otherwise respect the terrain? How else can it use the ground for protection or refuge? How can architecture be tectonically inspired by the colors, the textures, and the forms of the desert’s landscape?

The Arabian Library [Scottsdale, 2007, Figure 4] by Richârd Kennedy Architects takes its formal and tectonic inspiration from one of the most iconic landmarks of Arizona: Antelope Canyon. The building welcomes visitors through an entry sequence of tilted, corten steel clad walls reminiscent of the wind and water eroded slot

canyon. The building can be read as a geological outcropping, supported by a canted steel structure that is expressed throughout the building. Will Bruder's Deer Valley Rock Art Center [Phoenix, 1994] also draws inspiration from the ground. The building is situated across the primary relief outlet of Adobe Dam, intimately nestled up against the massive, man-made landform and serving as a bridge for visitors to view the petroglyphs that dot the adjacent hillside. The building is composed of tilt-up concrete panels encrusted with copper slag – a waste product of copper mining – serving both as a link to the history of mining in Arizona as well as to the concept of the desert varnish that made the creation of the petroglyphs possible via etching into the patina.

2.7 Air

Above the ground is a space filled with a mixture of gases essential for sustaining life on earth. It reaches upwards towards the atmosphere, which wraps and protects the planet. The desert air, according to John van Dyke (1918), is typically dry, thin, and clear – perhaps not quite as much in the current era – but often picks up particles of dust and sand. With particles in hand, wind, while often providing relief from the heat, can take on another role, that of the sculptor. “Granite and porphyry cannot withstand them, and in time they even cut through the glassy surface of lava. Their wear is not here nor there, but all over, everywhere. The edge of the wind is always against the stone.” In the desert, the earth is shaped by the movement of the air.

Gazing upwards, the sky – open and dematerialized, a symbol of freedom, lightness, vastness, and, to some, a spiritual home – sits in opposition to the solidity of the ground. The sky is the upper threshold of our existence on this planet and brings to us both our weather and a significant experiential component of our lives. In the Sonoran Desert, the sky serves as a vast canvas, exquisitely painted each day. The makeup of the air at a given place and given time has a significant impact on our impression of that sky, its coloring, and the particularly significant weather events it carries through the desert during the monsoon, events that bring with them the promise of renewal. How can a project tectonically relate to the vast expanse of the desert sky, the sunrise, the sunset, the weather, and the quality of the air? How can architecture redirect the movement of the air to help create comfortable spaces throughout the year in the Sonoran Desert?

Casa Caldera [Rural Southern Arizona, 2015] by DUST Architects is designed for providing this redirection. It is a three-bar scheme with the central bar serving as an open-air channel, typical of the zaguan typology found in Mexican architecture. Providing inside/outside connectivity and a sheltered patio, this central space, along with specifically located operable windows, is also aligned to channel cooling winds through the building during the warmest parts of the year, allowing the building to be fine-tuned by the occupants throughout the day (Hayes and Robles 2021). In the Palo Verde Library and Maryvale Community Center [Phoenix, 2006], Wendell Burnette drew from the qualities of the desert light and the color of the sky, referring specifically to the writings of John van Dyke in his writings on the project. The building is clad with a skin that absorbs the light of the desert sky, changing in tone and color throughout the day as the sky transforms from sunrise on the entry façade of the building through the warmth of the colors of sunset. This strategy is also reminiscent of the early tectonic theories of ornamentation, with the expression on the cladding here telling the story of the forces acting on the building rather than those acting from within.

CONCLUSION

“The Arizona School is a group of architects united in their pursuit of an appropriate modern architecture for desert inhabitation – one that is sensitive to the physical, technological, and cultural characteristics of life in an arid climate.” (Kroloff 2021)

As a part of this research, interviews were conducted with over fifty architects and other design professionals who have engaged significantly with the practice of architecture in Arizona. These interviews produced a wide variety of thoughts on the validity and composition of the Arizona School. Some architects who were a part of the original article believed it to be an accurate construct, others felt it to be a far looser association than had been described by the authors. Some architects felt their association with the School was constraining and had distanced themselves from it; others held a deep appreciation for their inclusion. Some interviewees felt that the selection of architects in the article was not inclusive enough at the time, and others acknowledged that the School would be much more extensive today with the significant rise in the overall quantity of quality firms that had taken up residence in Arizona in the past two decades. There was also sentiment expressed in some of the interviews about the appropriation of an Arizona School image by agents of mass production, reducing it to a material appearance of weathering steel and rammed earth – a style – without the associated intent or deeper meaning. Despite the lack of a singular voice, there was a clear sentiment expressed within the architecture community that there is an undercurrent of connectivity in the best architecture in Arizona that centers on a respect, if not reverence, for the desert. The relationship that has been developed goes beyond an image; it strikes at the heart of building, through the tectonic development of architecture, a meaningful, experiential, and sustainable relationship between the desert and the people who call it home.

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END NOTE

- ¹The term Arizona School was first coined by architect, educator, and writer Reed Kroloff, who was serving as the editor of *Architecture* at the time this article was published. He contributed significantly to the conceptual framework of this argument in its original configuration.
- ²While this research engages with both the natural and the cultural characteristics of place, this paper focuses only on presenting the natural characteristics of the Sonoran Desert and their connection to the best architecture of the region.
- ³This quote was mentioned by Brian Farling in my interview with him. (Farling and Farling 2021)