

A desert land ethic: aesthetic research

ÁLVARO MALO

*The life of the desert lives by adapting itself to the conditions of the desert
...And so it happens that those things that can live in the desert become stamped after a
time with a peculiar desert character...The struggle seems to develop in them special
characteristics and make them, not different from their kind; but more positive, more
insistent.¹*

SONORAN GEOLOGY

Since arriving in Arizona, the brightness of the morning sky prompts me to get up early. What I do at sunrise is walk around my garden in the Santa Catalinas Mountains foothills — though the notion of a garden here is different, mostly a fence or a wall erected to claim a portion of the desert as it is. Vegetation is sparse, as the perimeter of the root structure establishes the water rights of each and every plant. Yet, it is the quality of the surface that is particularly seductive to the eye, under the low incident rays of the morning sun.

Gravelly or stony *alluvial fans* that spill out of the surrounding mountains through drainages or *canyons* cover much of the surface of the Sonoran Desert. They vary greatly in color and texture, from sandy and porous to rock-hard and crystalline, from white and opalescent to jet black and basaltic — with all the hues in-between. The frequency of igneous and metamorphic rocks gives evidence of a very active volcanic past.

Geology challenges reason and imagination. The notion of time relative to biological cycles, or life spans, becomes fleeting when compared to geological cycles that last millions of years. Equally provocative is the notion of geological space. We wonder, what caused the land to take its present form and what may become of it in the future? There is a definition that I have consigned to hard memory, *tectonics*: the deformation of the earth's crust, the forces involved and the resulting forms.

The Tucson basin is a broad valley at 2400 feet of median altitude, circumscribed by the Santa Catalinas (north), Tucson (west), Santa Ritas (south) and Rincon (east) mountains. Intense heat rising from the earth's core melted the crust into a viscous fluid. This heated zone across Arizona responded to the pull-apart northwest movement of the adjacent Pacific Ocean tectonic plate by forming a huge fault zone. The Catalina detachment was one of several nearly flat faults. Once released by the faulting these mountains rose and arched further due to heat and buoyancy. The detached edges of the Catalina *gneiss* (foliated metamorphic rock) moved a considerable distance, ten miles or farther on either side, forming the San Pedro and the Tucson valleys, in a process that lasted a few million years.²

The lesson for today, as I garden on the foothills of the Catalinas, is derived from the notion of *force*. Intentionally, I forget the canons of beauty, which may turn me into 'a beautician', and go along with the Portuguese poet Fernando Pessoa's suggestion that I may formulate an aesthetic not based on the notion of beauty but rather on that of force.³ Force not understood as violence, but as the transitive event between my body and the material. The search for expression goes directly through the choice of a material. Whether the material is tensile or compressive, the point is that your work must reveal the force—the line of inflection is actualized in the mind but realized in matter—in preference of the Aristotelian sense of *energeia* over the Platonic notion of *idea*.

Once in his life a man ought to concentrate his mind upon the remembered earth, I believe. He ought to give himself to a particular landscape in his experience, to look at it from as many angles as he can, to wonder about it, to dwell upon it...I am interested in the way that a man looks at a given landscape and takes possession of it in his blood and brain.⁴

WATER

The word Tucson is derived from the original *Cuk Son* that in the language of the native Tohono O'odham, also called Papago or "Desert People", means "at the foot of the black mountain."⁵ The black mountain, now called "A" Mountain, is a volcanic lava cone that submerges deep below the surface and intersects the flood plain of the Santa Cruz River at the precise geographical location of modern downtown Tucson. Less than ten miles upstream alongside I-19 is another lava cone called *Wa:k*, which means "the spring" and is located in the Tohono O'odham Nation San Xavier District — where the Jesuit missionary Eusebio Kino built the renowned Mission of San Xavier del Bac. These rocky plugs inflected upwards the vector of underground water flow forcing it to spring to the surface, making of both Bac and Tucson the two places where Tohono O'odham native settlements, and the Hohokam for thousands of years ahead of them, prospered before the arrival of the Spanish conquistadors.

There is an unsettled discussion of the etymology and meaning of the name Arizona. It may have come from two Piman words, *ali* and *shonak*, which mean "small springs." Or the Basque settlers of the region, descendants of Anza the Elder who founded Alta California, may have called the area *arritz onac*, or "rocky places."⁶ Whatever the linguistic origin that bequeathed the name, the phonetic coincidence of many languages seems to fit well most of the attributes of the territory. Today people think intuitively that the name means "arid zone" — they are also right.

Rainfall in the Sonoran Desert averages three inches in Yuma, Arizona, to fifteen inches a year in the Arizona Uplands. The Tucson Valley, located in the latter, gets approximately twelve inches distributed primarily in two rainy seasons: a winter one in December and January, and a summer one in July through early September. Winter rains are typically gentle and steady. In contrast, summer rains can be torrential and abrupt dumping several inches in a few hours — they arrive on the back of the summer winds called *monsoons*, which flow inland from the sea to fill in the vacuum created by rising air heated by the summer sun.⁷

Water is the lifeblood of the Sonoran Desert. The rain that falls in the mountains and foothills and washes down the canyons to the alluvial valleys and aquifers sustains the riparian areas of the Sonoran Desert. The drainage pattern of the Tucson Basin is an infinitely diverse system of hydraulic geometries: deep mountain canyons, shallower foothill arroyos and broad valley washes, further exhibiting the typical wave patterns of horizontal meanders and braids and vertical ripples and ponds.

Excessive pumping of water for agriculture, industry and human consumption in urban areas has lowered the water table well below the native plants' root zone. Cottonwood and willow forests that once lined the riparian corridors of the Sonoran Desert, including the Salt, Gila, Santa Cruz and Rillito rivers are now lost or disappearing.

The aquifer underlying central Tucson has fallen more than 200 feet in the last 50 years. To supplement the deficiency, water from the Colorado River basin, several hundred miles north, has been diverted south by the enormous water transportation infrastructure of the Central Arizona Project.

Pumping fossil groundwater and importing water from other regions has delayed the inevitable need that people migrating into the desert have to moderate their habits of limitless consumption — they continue to reproduce the world that they have fled. The ethical lesson that I am learning from the desert is that my mind is beginning to share nature's intentions. It is a lesson well inscribed in Joseph Wood Krutch's experience, "...the desert is conservative, not radical." It encourages "...the heroism of endurance, not that of conquest." The desert is the last frontier, "...a frontier

that cannot be crossed. It brings man up against his limitations."⁸



1. Echo Cliffs, on the edge of Kaibeto Plateau, near Tuba City, Navajo Reservation, Arizona.



2. Tucson Mountains, Tumamoc Hill foreground, looking east to downtown Tucson, Arizona.

Water, water, water... There is no shortage of water in the desert but exactly the right amount, a perfect ratio of water to rock, of water to sand, insuring that wide free open generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different from any other parts of the nation. There is no lack of water here, unless you try to establish a city where no city should be.⁹

AIR AND LIGHT

My house sits on a ten percent southward incline on the Santa Catalinas foothills. It is a one-story affair of great simplicity: a spatial rectangle with floor to ceiling glass shaded by a sixty by fourteen feet open wood portico running lengthwise the entire southern façade. From this aerie, with my back to the Catalinas, I can see clearly the amplitude of the Tucson Basin framed by mountains on all sides: the Tucsons to my right, the Rincons to my left and the Santa Ritas straight ahead — and I imagine, not far beyond them the Mexican border and the rest of America, all the way south to Tierra del Fuego.

The "deep blue" that overhangs the desert is most intense in the morning before sunrise, a dark blue bordering on purple. By noon it has crossed the spectrum through pale blue, yellowish and lilac. By sunset it has passed again through magenta, rose and orange. After twilight a warm purple veil has returned to envelope all things, seen and unseen.

In the dry and relatively pure desert air, nearby volcanic rocks, blossoming palo verde trees, saguaros and sand verbenas show a remarkable variety of vibrant hues — red, orange, yellow, green. But in the distance, the more the air intervenes, everything here seems to have a bluish glow. Blue skies, blue mountains and blue birds: all seem to compress the aerial perspective into a thin shimmering veil.

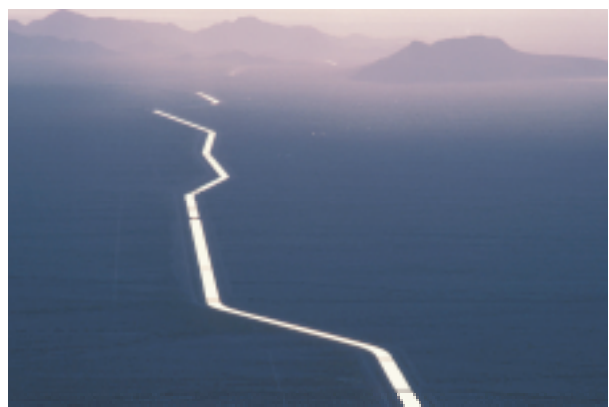
On the mountain ranges, the cooler and more humid regions of the upper elevations are ecologically as well as optically separated from one another. As they seem to float on seas of hot air, uplifted by conjured up "lakes", or arid habitats in the open desert, they are called "sky islands" — both the product of distinct ecological communities and aesthetic reveries. As the night falls, I see the city lights below through the southern glass wall and the image doubled on the northern glass across the room, creating the illusion of a mountain saddle or a sky island of my own.

*With the dawn we face the sunrise.
We face it with all our humility.
We are mere beings.
All we can do is extend our hands toward the first light.
In our hands we capture the first light.
We take it and cleanse ourselves.
We touch our eyes with it.
We touch our faces with it.
We touch our hair with it.*

*We touch our limbs.
We rub our hands together, we want to keep this light with us.
We are complete with this light.
This is the way we begin and end things.¹⁰*



3. Inner gorge of Canyon de Chelly, Navajo Reservation, Arizona.



4. Granite Reef Aqueduct, Central Arizona Project, in the Tonopah Desert, Arizona.

LAND ETHIC ~ AESTHETIC RESEARCH

The Spanish architect Juan Navarro Baldeweg, who is also a painter and begins his projects through painting, has reminded us that the analysis of energies, turbulence, hot air, the sun, light or the wind in landscapes also appears in architecture. They are things that he calls "the coordinates within which we move." The different variables that intervene in the physical situation that surrounds us have a form of expression that through different combinations makes up the order of reality — a reality of which we inevitably become a part.

Vittorio Gregotti advises architects to begin their work on a geographical scale, to ensure that the built frame institutes a network of connections that structure or modify the "shape of the territory." Geography is not just a territory that awaits mapping and subdivision — a *resource* to be developed. It is also a field of forces whose vectors await experiencing — a *source* of sensibility. The Norwegian philosopher Arne Naes opens us up, through his concept of *ecosophy*¹¹, to the notion that we may partake of the nature of the stone in the wash, the brittlebush in the mesas and the falcon that soars in the air currents. Having undergone successive migrations from the Andean highlands of South America, to the lowlands of the Everglades of Florida, to the uplands of the Sonoran Desert in Arizona, I am prepared to say that the vector of inflexion linking geography to geometry internalizes the surface of the land; or, following Spinoza's *Ethics*, rather extends the surface of our body onto the landscape offering a continuity that prolongs the very nature of things.

The 'natural composition' between different things is defined by the capacities for affecting and being affected that characterize each thing. It is a question of "whether relations can compound directly to form a new more *extensive* relation, or whether capacities can compound directly to constitute a more *intensive* capacity or power." On the wake of Spinoza, borrowing the terms from geography we would define a body, neither by its form nor by its organs and functions, but rather by *longitude* and *latitude*. In this schema, longitude is the set of mechanical relations of extension and orientation in space, and latitude is the set of motive, or emotive, forces and intensive states in time. Thus, we may construct a map of the body, "forming a natural geometry that allows us to comprehend the unity of composition of all of Nature and the modes of variation of that unity."¹²

Not unlike the play of tectonic forces on the earth's crust, the primary relationship of my body to the ground is the transaction with gravity. The recognition of gravity prepares the geometrical act of grounding, making the ground ready to raise screens to other forces: light, wind and rain. My experience is that this usually begins, and in most cases ends, with excavation:

*But where is the surface of a hole? I once believed that the surface of a whole is level with the surface of the ground around it. From observation I have come to realize that this is not true...A whole has only sides and a bottom from which it extends infinitely upward, like a shaft of light: and as the earth revolves, it moves with great care and precision between the stars.*¹³



5. Malo House, Catalina Foothills. Tucson, Arizona.



6. Little Colorado River Canyon, looking west toward junction with Grand Canyon, Arizona.

NOTES:

1. John C. Van Dyke, *The Desert: Further Studies in Natural Appearances*. Baltimore: Johns Hopkins University Press, 1999, 150.
2. Steven J. Phillips & Patricia W. Comus, ed., *A Natural History of the Sonoran Desert*. Tucson/ Berkeley: Arizona – Sonora Desert Museum & University of California Press, 2000, 75-85.
3. Fernando Pessoa, *Always Astonished*. San Francisco: City Lights Books, 1988, 70.
4. N. Scott Momaday, "An American Land Ethic", *The Man Made of Words*. New York: ST. Martin's Griffin, 1998, 45.
5. Ofelia Zepeda, *A Papago Grammar*. Tucson: University of Arizona Press, 1997.
6. Thomas E. Sheridan, *Arizona: A History*. Tucson: University of Arizona Press, 1995, 31.
7. Steven J. Phillips & Patricia W. Comus, ed., *A Natural History of the Sonoran Desert*, 10-18.
8. Joseph Wood Krutch, *The Voice of the Desert*. New York: William Morrow & Co, 1954, 221.
9. Edward Abbey, *Desert Solitaire*. New York: Touchstone/Simon & Schuster, 1990, 126.
10. Ofelia Zepeda, *Ocean Power: Poems from the Desert*. Tucson: University of Arizona Press, 1995, 13.
11. Arne Naess, *Ecology, community and lifestyle*. Cambridge: Cambridge University Press, 1989.
12. Gilles Deleuze, *Spinoza: Practical Philosophy*. San Francisco: City Light Books, 1988, 125-128.
13. Richard Shelton, *The Other Side of the Story*. Lewiston: Confluence Press, 1987, 22.

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7. Chollas and brittlebush, Sonoran Desert, Arizona.



8. Ramada House, Catalina Foothills, Tucson, Arizona. (Judith Chafee, Architect)