Reviews...

Earth Architecture

By Ronald Rael

RRP $90. ISBN 9781568987675
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Distributed in Australia by Books@Manic
208 pages, 21.6 x 22.9cm, hardcover
Colour illustrations

REVIEW BY ROB HADDEN

Ronald Rael has his feet firmly planted in the present with this book on the current state of play with earth buildings from around the world. The front cover picture immediately indicates that he is concerned with the 'state of the art' of earthen building practices, as do the many detailed examples of projects presented in this book.

This is not just a book of pretty pictures, but is a meticulously researched document that goes to great lengths to explore the historical antecedents of each style. A lot of this information was new to me and filled in many gaps in my knowledge of historical developments of the medium.

Consider this – it is estimated that between a third and one half of all humanity, spread over six continents, live in some kind of earthen structure. India alone contains more than 80,000,000 dwellings of earth. China boasts some 100,000,000 people living in earth homes, and France also has at least 15% of its rural buildings constructed from the ground we walk on.

The technology of earth building has become extremely sophisticated and has evolved and adapted itself to every country across the globe and responded to climatic conditions according to locality. For people who have considered this the medium of poor impoverished countries – what do you make of the extraordinary nine storey high skyscrapers of Yemen and the gigantic mosques of Mali? Structures like these lead the way to understand where earth architecture is heading now, by way of opening the mind to new uses of the medium and new ways of utilising it that reflect the current state of our western world.

Rael has split the book into four chapters covering the basic and most well known of earth technologies – rammed earth, mud brick, compressed earth block and moulded earth. The bulk of the book is taken up with a wide variety of case studies. If I was to offer any criticism of the projects showcased, it would be that there is too much emphasis on rammed earth and not enough of the less well known methods, such as espoused by Gernot Minke and the German use of highly sophisticated technology. But that is a mere trifle and should not detract from this excellent tome.

Rammed earth has been around from at least 2600–1900 BC. The technology spread throughout the Middle East and was introduced to Europe via the Phoenician trading empire. The methods they used are still essentially the same today, but now we have better formwork, pneumatic rammers and machines to mix and move the earth around with ease.

Increasingly, architects are using rammed earth as a modern material that is durable, adaptable, and responds to growing environmental needs. It is undergoing a strong resurgence in France, China, Australia and Germany and is increasingly being utilised as cutting edge technology with contemporary styling and much use of minimalism. The examples in the book are all very contemporary – sharp and angular, open spaces, lots of glass and many with surfaces that are curved, inclined away from the vertical and most of them leave the surface *au naturel*. This, to me, imparts some of the brutalist attributes of concrete architecture. Australia features well in this section and also contains a Glenn Murcutt design for good measure. If your predilection is for highly refined design, this section will cater for your every need.

While the mud brick chapter utilises a less precise and more organic material, it too has been dragged into the 21st century. Those original builders of the Stone Age city of Sesklo in Greece (5300 BC) would, I am sure, be bemused to see just how the humble brick is used today to create stunning modern buildings; from small dwellings to huge wineries and even a small *Prada* store in the middle of nowhere in Texas, USA. The ease with which mud brick can be used and the fact that it does not require complex formwork will allow most people to achieve the results they see here. This book will blast away the cobwebs and give you a whole new perspective of the architectural possibilities of mud.

The following chapter using compressed earth blocks features much of the same only the bricks are more precise and give a sharper line to the form.

The final chapter on moulded earth covers such diverse activities as cob, wattle and daub, poured earth and a small bit on extruded earth. A classic British cob house that looks quite, well, normal is turned on its head when you see it from the other side; modern, lots of glass and open plan living but presenting a traditional front to the street. A case of having your cake and eating it too! A sensational wattle and daub house in Chile is two storeys high and has some walls canted inwards. Based around a steel and woven mesh frame (coated to prevent corrosion) it is light and very contemporary looking. A Steiner building in Germany is particularly arresting and so too is the work of Nader Khalili.

For students of earth architecture, owner builders and professionals, this is a must have book on contemporary earthen building techniques. Even if you do not like modern building concepts, you have to admire the directions they have taken the 'art' in. ■

Ed's note: Although we do not keep this book as a stock item, it can be ordered in.

EXTRACT COURTESY EARTH ARCHITECTURE BY RONALD RAEL FOR PRINCETON ARCHITECTURAL PRESS, 2008

ARCHITECTURE FIRM
Rick Joy Architects

LOCATION
Tucson, Arizona

DATE
1998

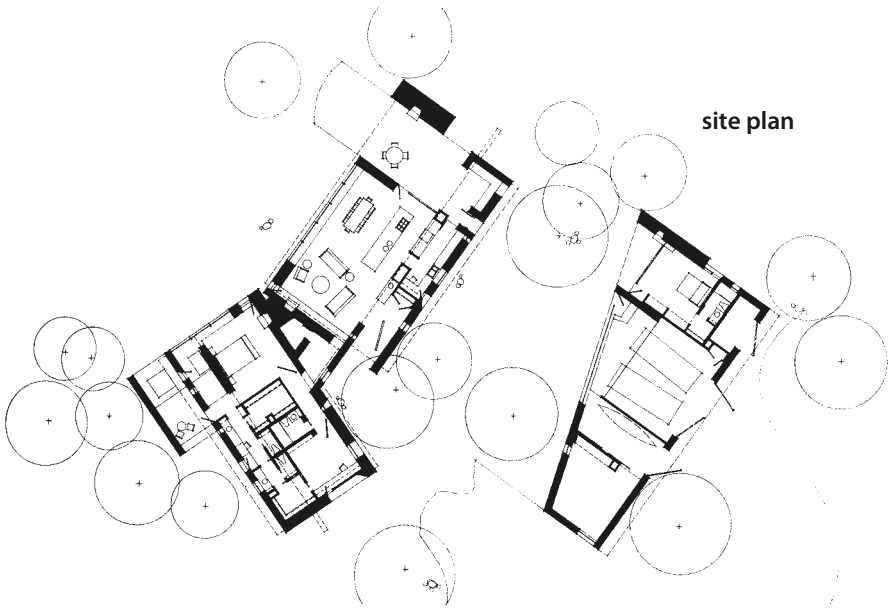
Good desert architecture often blends seamlessly with its context while possessing expressive and responsive form. For example, the ruins at Mesa Verde in Colorado can be seen as a series of individual structures and as a seamless extension of the cliff itself. Taos Pueblo in New Mexico, well known for its multistory earthen building rising from the landscape, blends seamlessly with the surroundings because of its materiality, while shade and shadow articulate the building's massing.

Palmer-Rose House

The influence of these buildings on Tucson architect Rick Joy's work is evident in the Palmer-Rose House, which blends with and is almost hidden in the landscape while simultaneously leaping forward from its desert environment—a dynamic expression of architectural form. These qualities of the house make it particularly exemplary as a modern building, but the contrasting relationships between interior and exterior, exquisite details, its contextual responsiveness, and the juxtaposition of modern and traditional materials result in an architectural tour de force.

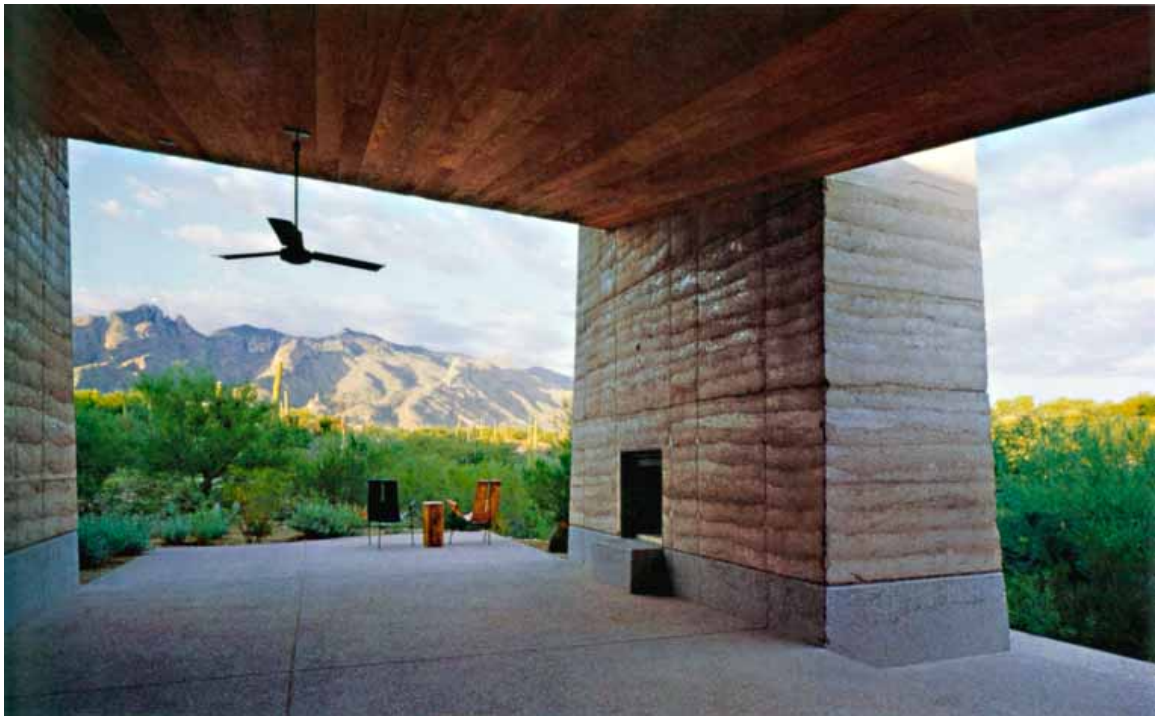
The house is situated on a 4-acre site surrounded by native vegetation at the edge of a large arroyo. As a response to the native vegetation and the grandeur of the nearby 7,000-foot-tall Santa Catalina Mountains, the architect nestled the house 25 feet below the elevation of the road, allowing the house to maintain a low profile, and carefully sited it so that no trees or cacti were destroyed in the construction

top: Large expanses of tinted insulated glass buffer direct sunlight and keep out heat.



site plan

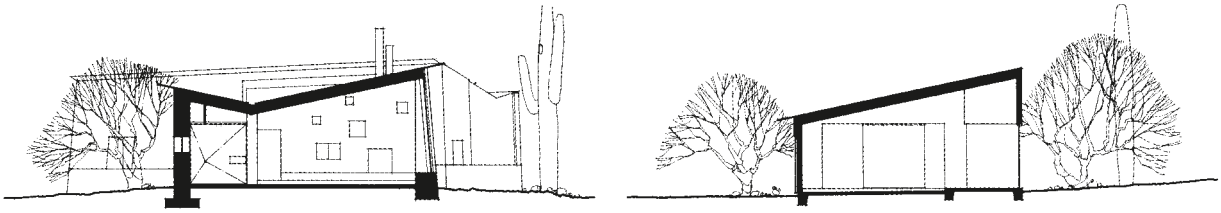
RAMMED EARTH



top left: A skylight washes down the rammed earth wall, revealing the texture and layers left by the formwork that are part of the process of construction.

top right: The house, carefully sited so that no trees or cacti were destroyed in the construction process, is surrounded by native flora at the edge of a large arroyo.

bottom: A fireplace is embedded into one of the massive rammed earth walls that enclose the outdoor terrace and frame views of the Santa Catalina Mountains.



elevations

process. The combination of these two factors makes the house almost completely hidden from view.

The 2,800-square-foot private residence comprises two rectangular rammed earth volumes that define the public and private spaces. The two segments join at a point, creating a hinge that emphasizes the main entrance to the house. From here the more public section of the house is revealed, which contains an open living room connected to the kitchen and adjacent prep kitchen. The space, shaped by an inverted gable roof, gestures towards a panoramic view of the Santa Catalina Mountains only a few miles away, framed by a floor-to-ceiling wall of structural glass along the entire north facade. The interior also extends outdoors to a 500-square-foot covered patio enclosed by rammed earth walls; a fireplace is embedded in one of them.

The more private wing of the house, which houses the bedroom, study, bathrooms, and storage, is slightly askew to the living wing, aligned with the morning sun to bring eastern light into the bedroom. Like the living room, the bedroom opens up to views through an uninterrupted structural glass wall. This glass wall system is a two-layer system custom-designed specifically for the harsh desert environment. On the exterior, the 1-inch-thick insulated glass has a tinted coating to reflect direct and indirect sunlight; and on the interior, ¼-inch clear tempered low-emissivity glass controls heat transfer.

In contrast to the delicate, almost invisible quality of the glass, the rammed earth walls are massive elements that shield the rooms from the psychological and physical effects of the desert sun. So massive are the walls that their weight, including the foundation, is estimated to be 500 tons. Three different local soils were used in the rammed earth mixture, each with different amounts of clay, sand, and gravel, and mixed with portland cement and the pigment iron oxide to achieve the desired erosion resistance, structural integrity, and color. The soil was compacted atop a reinforced concrete foundation in reusable formwork that imparted the memory of the individual panels and the layering process in the wall. Quarter-inch-thick plate steel welded to steel tubing and gusset plates was used to create lintels for doors, windows, and niches in the thick walls, giving the effect of clean and precise incisions into the earth. To help lower the temperature of the walls during periods of extreme heat, an evaporative cooling system blows humid air over them, preventing heat gain and further cooling the interior of the house.

In strategic locations, structural steel columns embedded in the rammed earth walls support long spanning steel beams that comprise the inverted roof. Consistent with Joy's desire to contrast the heavy earth with other materials used in the house, the rusting corrugated metal roof reads as thin, structureless leaves floating above the earthen walls, extending at times up to 4 feet beyond the top of the wall. Not only does this create a dynamic relationship between the ground and the sky, it is also a necessary condition to protect the battered earthen walls. The shape of the roofline drains the water toward a single gutter that cantilevers far past the house to create a waterfall announcing the desert rain during the rainy season. ❖

The Architecture of Yemen

By Salma Samar Damluji

RRP UK£50. ISBN 9781856695145
Published by Laurence King Publishing (2007)
304 pages, 32.8 x 24.8cm, hardcover
600 illustrations

Taking a giant leap backwards compared to the previous book is this luscious tome on a little known section of Yemen's historical mud brick building. We have all seen the usual picture books on Yemen, but Salma has been granted the rare permission to document and record in sensitive areas all but totally off limits to foreigners. This is a big book, in size, weight and the number of pages, as well as for its academic content.

This is an extraordinary and very attractive book (purchased at the National Gallery of Victoria bookshop) and covers not only mud brick, but also stone and shale constructions. Mostly colour photos, it also contains many lovely line drawings, black and white plan views and sections through some buildings.

Complete with a glossary of all the local terminology and nomenclature, it also has interviews with master builders from the differing regions who share their knowledge and techniques. As with any country, there are different ways of building along with varying customs and beliefs. This, of course, is what imparts such variety and animation along with decoration to the buildings of any region and identifies it as belonging there.

Salma has recorded all aspects of these buildings and has left no stone unturned in her survey work as she records all the nuances of these dwellings. Cultural and religious beliefs are imbued as well as just the plain practicalities of everyday construction. The use of lime is a constant, but now is being threatened by that ubiquitous invention, cement. When one sees the sensuous use of mud and stone and the sculptural qualities, it does rather make our plain and bland walls seem, well..., plain and bland. If nothing else, this book will open your eyes to the myriad possibilities that mud brick construction can offer to you beyond four vertical walls with windows shoved in.

I can't recommend this book highly enough. It's expensive, but worth every cent. ■

Ed's note: National Gallery of Victoria may be able to order the book in (approx. $120), or you can order online direct from the publisher – www. laurenceking.com