

The Marika Alderton House

Yirrkala Community, Eastern Arnhem Land, Northern Territory, Australia.

Glenn Murcutt, Architect.

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“To touch this earth lightly” (Coombe, Marika-Alderton House, 1995. URL), the environmentalist philosophy of Glenn Murcutt, is highly developed in his prototype housing for the Australian Aborigines: The Marika Alderton House. Extensive consideration of climate is developed in the Marika Alderton House concerning both specific and large-scale climatic issues. Two primary specific issues surrounding the Marika Alderton House include its immediate cultural and social climate under which it was built and the specific weathering patterns associated with the site. More importantly, in his project Murcutt directly addresses the greater climatic issues of the house, in that it is in a hot, humid, tropical climate with ventilation being the primary concern lying behind the comfort and sustainability of the Marika Alderton house.

The intentions for the Marika Alderton house are product of the immediate cultural and social climate of Northern Australia at the time of its conception. The Marika Alderton house was designed as a sustainable and economical prototype to be used by the Australian authorities to house the Aborigines. The Australian authorities typically tried to house the Aborigines in lit solid masonry boxes, which were poorly ventilated and uncomfortable. In the hot, humid and tropical climate of Northern Australia, these houses were often abandoned or destroyed by the Aborigines, as they were inappropriate and unusable. Frustrated, the Australian authorities would often turn to more forcible assimilation tactics to persuade the aborigines to live inside the masonry box houses. Murcutt, along with his client Marika Alderton, an aboriginal artist, were compelled to tackle the problem of Aboriginal institutional housing and set out to create a new prototype

that would house the aborigines economically, quickly and most importantly, comfortably.

Economically, the structure of the house is made of 6 donated lightweight steel frames from the local steel company BHP and the plumbing and electrical components of the house are centralized to cut down on the cost. The house is also entirely prefabricated and due to its “rigorous repetition of refined details...” (Formonot, Glenn Murcutt: Buildings and Projects, 1995. P.142), it can be assembled at the remote site in just a few days by two local craftsmen therefore cutting down on expense, time constraints and overall energy required to construct the building. Murcutt develops the comfort of the building through his analysis and sensitivity to both the specific weathering patterns of the immediate site and of the greater climatic region.

As a starting point for his extensive climatic research, Glenn Murcutt began to take into consideration the specific surrounding weather patterns of the proposed site for the Marika Alderton house. The site lies in a cyclone zone and due to the high-speed cyclonic winds over the ocean the site is also prone to flooding throughout the year. Taking this into consideration, the steel structure of the Marika Alderton House was designed to be strong enough to resist the cyclonic winds that reach up to sixty-six meters per second. The façade of the building is created without the use of glass, which aids in the ‘cyclone proofing’, which also makes for interesting and unconventional facades. The roof on the structure is raised as to reduce the tendency of it being carried away in the event of a cyclone. The plumbing and electrical elements of the house are centralized in plan for optimum shelter. To counteract the effects of flooding due to the cyclonic winds, the entire platform of the house is raised off the ground significantly and placed on steel stilts.

From the specific weather conditions of the immediate site to architect Glenn Murcutt’s prime climatic concern, the Marika Alderton house evolves into a

completely environmentally aware and sustainable shelter. The Marika Alderton House lies in a hot, humid, tropical climate, and in such a climate, ventilation becomes the dominating factor in creating a comfortable and enjoyable place of inhabitation. Murcutt integrated many ideas and tactics to promote ventilation in the Marika Alderton house through his design of the houses' walls, plan, floor and roofing elements.

The walls of the house are designed so that it "...opens, closes and breathes like a plant." (Coombe, Marika Alderton House, 1999. URL). The exterior walls of the house are constructed of either broad plywood, or are comprised of large manual shutters made from long slats of tallow wood spaced equally with 8mm gaps between the slats. The shutters, which form the walls of the house, lift up on pivots at the top and hang as awnings out into the natural environment. These shutters, which act as an "adjustable diaphragm," (Glenn Murcutt: Marika Alderton House, URL), allow the house to transform from an enclosed, yet ventilated, space, into essentially, a covered breezeway. The shutters tilt down to allow for more shade as needed, they filter percolated light into the space, allow for airflow when open, tilted or fully closed, and create privacy when needed. Also, lining the exterior walls are large protruding fins. These fins, oriented towards the ocean, slow down, capture and redirect the cooling and fragrant ocean breezes into the interior spaces of the house creating an enhanced and more comfortable environment. The vertical wall surfaces on the interior of the house do not go all the way up. These walls stop short of the ceiling, allowing for the heat in the enclosed rooms to rise above the individual rooms, spread out over the ceiling of the house and exhaust out through the roof more quickly.

The plan of the Marika Alderton house is designed so that the sleeping quarters are to the southwest of the house. As a result of the buildings' Southern Hemispheric orientation, in the evening, the southwest corner proves to be the coolest part of the building, which provides for more comfortable sleeping

arrangements. Also to induce a cooler sleeping environment, the sleeping platforms are raised 2m off of the floor so that maximum air circulation underneath the bed can be attained. Following the remaining plan of the house, the living, kitchen and laundry areas are located in the northeast corner so that in the morning, when the residents do most of their laundry, food preparation and work exercises, that end of the house is coolest.

The floor of the Marika Alderton house is raised up off the ground typical of hot humid vernacular architecture so that air can circulate underneath the building and so that the house itself does not absorb into the living environment, any of the heat which radiates from the earth in the evening. In the case of the Marika Alderton house, Glenn Murcutt magnifies this vernacular example of hot humid architecture, in that several gaps between the timber floor decking exist so that cool air from the exterior environment can flow directly up into the house from underneath providing a cooler environment for the inhabitants.

From the floor below to the roof above, Glenn Murcutt paid special attention the heat flow within the house itself when designing passive cooling methods. The roof of the building is raised and pitched with large overhangs which allow for a continuous air flow at the ceiling level and which provide ample shading and protection from the sun and the rain. The roof is made of corrugated metal, which intensifies the sound of the rain, linking one to nature and providing a stronger psychological cooling effect than a typical vernacular roof. No down spouts are used on the building so that the rain pours off the large overhangs in sheets of water onto the land surrounding the house which is planted with indigenous vegetation to prevent soil erosion. From the long sheets of water and the raised roof, the wind, during the rain, can blow right through the 'rain wall' cooling the entire house. During drier times, vents along the underside of the roof and along the roof's ridge allow for an external and internal air exchange similar to the shutters on the wall and the gaps in the floorboards. Also, throughout the house,

pivoting 'Venturi' tubes puncture the roof and allow for and immediate exhaustion of hot air.

The innovative and environmentally aware passive cooling elements integrated into the walls, plan, floor and roof of the Marika Alderton house work together simultaneously and seamlessly to create a sustainable living environment for the Alderton family.

The design of the Marika Alderton house is founded upon a thorough understanding of the cultural context of Northern Australia, the specific location and its meteorological attributes and the climatic region in which it lies. Through numerous passive solar cooling methods, Glenn Murcutt creates a prototype for Australian Aboriginal institutional housing that is economical for the Australian authorities to produce, comfortable for the Aborigines to live in and respectful of the natural landscape in which it is built. This sustainable prototype could easily and successfully be further applied to the Aboriginal housing projects throughout Australia with little orientational variations. Through the success of the Marika Alderton House, Glenn Murcutt continues to evolve in his environmentalist philosophy to "touch this earth lightly."