Living Outside with the Sun

A Reflection on Outdoor Living Space Design in New Zealand

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Abstract: *This paper reflects upon the history of design of outdoor living spaces, a typology that blends interior directly with landscape. In Australasia, outdoor living is a symbol of contemporary life style but it must adapt to the danger of over-exposure to the sun's ultraviolet rays. Tempering openness to the summer sky is not just a choice but rather a survival strategy.*

The relationship of European descendents to the Antipodean sun has fluctuated over time. In Victorian times, hats, copious clothing and villa verandahs protected prized pale complexions. Tanned skin branded the labouring classes and the native population. In the 1920s, the ancient Greek practice of heliotherapy was hailed as beneficial for the treatment of tuberculosis. Concurrently architecture clipped verandahs and proposed open sun terraces, sometimes scantily clad by a pergola. The negative consequences of this sun-worship were not known until the 1980s when the relation between ultraviolet rays and skin cancer was made and the recognition that one in three Australasians will be affected. Living outside with the sun therefore requires modification. Sunscreen is prescribed for application every two hours; hats, clothing and sun-glasses protect the body but hinder communication between people and their surroundings. Traditional solid shade shields direct rays, but deny the warmth of the sun, which is often so welcome in temperate New Zealand. Open shade sails fail to acknowledge the fact that ultraviolet rays scatter. Living well outside is not simple.

Keywords: *outdoor living, ultraviolet, sun-shade structure*

Introduction

This paper seeks to understand changes in design of New Zealand outdoor living spaces with regard to social attitudes towards the health effects of sun exposure, to gain a better understanding of local climates and new material technologies.

Firstly, the paper reviews key New Zealand architectural texts and selected international design precedents for examples of and references to outdoor living spaces; spaces open to the fresh air and relating strongly to the surrounding landscape. This time-line is then discussed alongside general historical references to health and the sun. Recent research findings into UVR over-exposure and the design of shade as a means of protection are

presented. Finally, in light of this understanding, successful solutions for living 'outdoors' with the sun are identified.

Maori traditions

The Maori, who migrated to New Zealand around 800 AD, were accustomed to the very high ultraviolet levels encountered near the equator and therefore, their skin offered good protection for the lower levels experienced at more southern latitudes. The principal family dwelling of the Maori was the *whare*, a low single roomed gabled structure of wood and thatch. It is an example of an adaptation to climate. The dark interior, illuminated by a single window opening, opens to a *mahau*, a deep porch at the gable end. This is accessed via a sliding door. The *whare* opens to the east to welcome the sun, but this orientation is also pragmatic as it allows the morning sun to warm the earth floor of the *mahau* and give comfort for the remainder of the day. Cooking is done in the open or, during wet weather, in a lean-to made of *manuka* frames thatched with *raupo*. Food was never consumed inside any *whare*, but in wet weather it could be taken in the porch (Shaw, 2003, p13). The *mahau*, therefore, is a practical day-time living space, sheltered from the wind and rain, and open to the daylight.

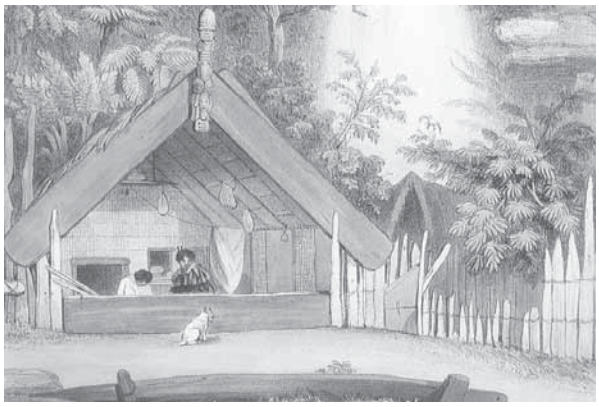

Figure 1: A lithograph of a mahau *by J.W.Giles (1822–86).*
(Photography: Auckland City Art Gallery Collection)

Early European imports

The first European settlers of the early nineteenth century imported sunshading philosophies in their architecture with mixed success. The deep verandahs wrapping three sides of the *Mission House*, Waimate North (1831) were styled on the architecture found across the Tasman,in Sydney. These styles were based on the English Georgian vernacular of the late

eighteenth century (Toomath, 1996, p. 14), but tempered to suit the hotter climate with the addition of deep verandahs, often on three sides. This design was well suited to the sub-tropical climate in Northland. However, in the south of New Zealand, Scottish and English settlers drew on their cultural heritage and built plain cottages devoid of eaves so as to capture all the sun for the interior. This design provided no shade from the hot 'Mediterranean' climate of the central South Island. As settlers gained wealth, verandahs were commonly added to a simple cottage as a display of style.

Alberton, a house located on the slopes of Mount Albert, Auckland, was initially built as a two-storied gabled farm-house in 1862. Then, in 1870 the architect Matthew Henderson added elaborate verandahs which wrapped around three sides (Shaw, 2003, p. 41). These copious verandahs were to reflect status rather than provide amenity.

Figure 2: Elaborate verandahs of Alberton (1870). (Photography: Robin Morrison)

Figure 3: The verandah of this house in Mt Eden, Auckland, c 1895 addresses the street. (Photography: Auckland Museum)

The design of the verandahs of Victorian villas were based on United States west coast precedents – standard plans which included narrow six foot wide verandahs with a variety of highly decorated extras (Toomath, 1996, p. 133). Irrespective of the sun, the verandah faced the street. Along with lace curtains, timber blinds and copious drapery, the verandah became another layer to ensure privacy of family life. The resulting shady interior was welcomed, as exposure to sunlight was considered unhealthy and tanned skin regarded as a branding of the lower working class.

New overseas fashions

After 1910, the villa was usurped by the Californian bungalow. Verandahs were brought under the main roof or reconfigured as a porch; usually the front porch where location and thoroughfare frustrated use for outdoor living. In this era, the architects of the wealthy often

traveled to the homeland Britain and to America for inspiration. W. H. Gummer's design for the grand *Tauroa* (1916) includes both square columned balconies and pergola verandahs reflecting an interest in Edwin Lutyens's neo-Georgian houses and in Californian Spanish domestic architecture. In Gummer's own house, Stoneways (1927) 'the subtle Spanish inflexion is again used; the architect obviously realized its appropriateness to the New Zealand indoor-outdoor lifestyle' (Shaw, 2003, p. 91).

Figure 4: W. H. Gummer Tauroa *(1916) Havelock North.*
(Photography: Robin Morrison)

No allowance was made for outdoor living in the first State-commissioned houses built by the 1935 Labour Government and designed in an English rural cottage style. This policy may have been an economy measure, or perhaps reflected a perception that an outdoors lifestyle was considered a luxury for the idle rich and not for the working majority. One outcome was that living room interiors were orientated to the north for sun and light (Shaw, 2003, p. 132).

Modernism

In Europe, sun-bathing for health was well established, when in his *The Manual of the Dwelling* Le Corbusier recommended for a bathroom: 'One wall to be entirely glazed, opening if possible on to a balcony for sun baths' (Le Corbusier, 1927, pp. 114–115). No outside relationship is prescribed for the living space. However, in the *Villa Savoye* (1929), Le Corbusier not only introduced the interpenetration of outer and inner space, now regarded as a *locus classicus* of Modernism, but promoted an open roof terrace. The adjacent interior living space, by the opening of large sliding doors, is effectively transformed into a verandah onto the roof terrace.

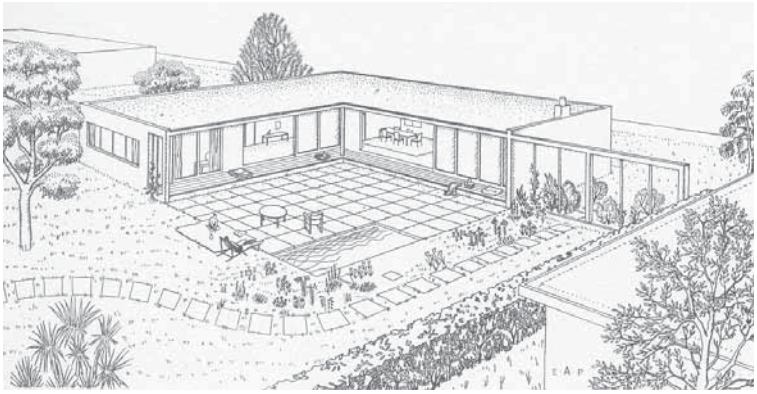

Figure 5: Ernst Plishke Model house (1947).
(Reproduced in Plishke, Design for Living)

In 1937 architect/academic Richard Toy designed the first communal roof terrace to be built in New Zealand – for the *Berrisville Apartments*, Auckland. Unlike the traditional pitched roof, the Modernist flat terrace roofs invites occupation. Returning from overseas, architect Humphrey Hall designed an open sun-deck for the Corbusian style villa, *Park Lane* (1938), Timaru. It was accessed from the upper level bedrooms, creating a private sun-bathing spot (Lloyd Jenkins, 2004, p. 77). Following European health trends, sunbathing was promoted by *The Sunlight League* of New Zealand (Saleeby, 1934). These examples of European appropriation of life style and design, failed to consider that ultraviolet levels in New Zealand were over twice as intense as in Europe, thus limiting the summer use of open terraces.

The case for Modernist architecture was also promoted by an influential group of European architects seeking refuge from anti-Semitic and Fascist Europe. In a New Zealand Government publication, Ernst Plishke condemns the traditional verandah as a 'show piece' that 'tak[es] all the light away from the living room' (Plishke, 1947, p. 38). In Corbusian style, the living room of his model modern house faces north, opening with full-height glass windows and generous sliding doors onto a garden court. The facade is sheltered by a substantial eave and a seating-width ledge at floor level. The perspective indicates outdoor furniture suggesting that sun-bathing was actively advocated. In parallel, fashion of this time also opened up to the sun; for example, swimwear, which covered the body, now exposed it and sun-tanning became 'almost an ideology in its own right' (Warpole, 2000, p. 48).

Local style

During the 1930–50s, a group of New Zealand born architects sought to design a Modern house using a local vernacular style. A typical example is Vernon Brown's style of simple low

pitched shed-like forms with 'cut-out' patios and porches. At 1.8 metres deep, the outdoor living space of the verandah of Brown's own house in *Arney Road*, Auckland (built in 1939) was little different to the *Villa Savoye* verandah discussed at the beginning of this paper (Shaw, 2003, p. 146). However there were distinctions: the up-tilting roof and large areas of glass permitted much more light to the interior, and the living area opened to the verandah with glazed doors. The verandahs of the firm, *Group Architects*, who took the barn and the *whare* rather than the *Villa Savoye* as their starting point, were of similar proportions. Their *Second House* (1950), nick-named the *Pakeha House*, placed a verandah along the gable end of its whare-like form. However, the proportions of their *mahau* fail to shelter and accommodate a social group as successfully as its cited precedent. In the *Malitte House* (1954), the *Group Architect* Bill Wilson introduced clerestory windows to admit sunlight to the interior of the deep floor plan (Chaplin & Mitchell, 1984, p. 35) with the verandah roof remaining at a width of 1.8 metres. This reinforced the shed reference and produced a definite boundary to the garden. The verandah shaded the full-height glazing and sheltered the doorways, but did not invite use..

Figure 6: Narrow 'verandah' to the Malitte House *(1954).(Photography: School of Architecture Library, University of Auckland)*

Figure 7: Nigel Cook The Kelly House *(1988). (Photography: Robin Morrison)*

These simple building forms became passé in the late 1960s, when young New Zealand architects, Ian Athfield (Melling, 1980) and Roger Walker (Melling, 1985) rejected the intellectual constraints of modernism to freely create intimate and romantic environments. They looked nostalgically to the nineteenth century colonial past for inspiration and decoration. French doors opened once again to narrow cottage verandahs complete with pastiche cross-bracing on balustrades. Although the form remained, the roofing material often became glass, transmitting light and heat to both the adjacent interior and the verandah itself. Transparent shading materials suited the New Zealand climate. Over the next decades, roof glazing and conservatories became a common feature of local architecture.

New strategies

The *Kelly House*, built in 1988, is architect Nigel Cook's first 'wind-rain' house (Cook & Kerr-Hislop, 1988, pp. 53–56). It is a glasshouse with a computer controlled ventilation system into which the rooms of a traditional house are partially inserted. The resulting environment questions the nature and boundaries of inside versus outside living. Although 6mm toughened glass cladding offers some ultraviolet (UV) protection, Cook does not promote this benefit. The need for sun-screening was just beginning to be recognised. In reaction to high levels of skin-cancer, the Cancer Society of New Zealand ran the first high-profile skin-cancer public education programme in 1988. Following in 1992, in response to *Agenda 21*, the World Health Organization (WHO) established INTERSUN, the *Global UV Project* to disseminate information concerning UV radiation and its health effects.

During the 1990s, outdoor living spaces feature in both new homes and renovations. The *Clifford/Forsyth House* (1991–95) by architect Patrick Clifford featured dramatic double-height verandahs at each end, providing a variety of shelter to suit the time of day and season. Typically this form alone provided little UV protection, but the cantilevered decks received shade from surrounding trees (Shaw, 2003, p. 207). *The Rickets House* (1999), by Fearon Hay, exploited the new fashion of the glass-walled to open pavilion (Shaw, 2003, p. 224). Large glass sliding panels shielded winds from either direction or retracted to leave an indoor/outdoor space simply shaded by a solid roof.

Figure 8

Figure 9

Figure 8: Double height verandahs of Clifford/Forsyth House *(1991–95). (Photography: Robin Morrison)*

Figure 9: Rickets House *(1999), Northland transforms the interior into an open pavilion. (Photography: Paul McCredie)*

The first guide for shade planning and design, *Undercover* (Greenwood, Soulos & Thomas, 2000) was published in New Zealand in 2000. *Undercover* defines effective shade as being of sufficient size, in an appropriate location, providing 94% protection from direct ultraviolet radiation (UVR) as well as controlling indirect UVR and creating a comfortable environment in both summer and winter. Even if direct sun is shielded, significant levels of UV are reflected from the atmosphere, the open sky. (In an open field situation 50% can be received from each source). Research found that many sunshade structures have UVR protection factors of only 3–6 (Green, Neale, Parsons & Wolski, 1998), sufficient to provide protection for less than one hour. This understanding was not common knowledge. Even the sophisticated revolving umbrella design by pHd3 (Craill, 2001, pp. 36–38), which cleverly shields direct UVR, fails to acknowledge the dangers of indirect and reflected UVR.

A need for warmth

Research also confirmed that providing both thermal comfort and UVR protection is complex. In central New Zealand, the ultraviolet index (UVI) is over 2 for eight hours a day in summer, but 69% of the time the air temperate cooled by sea breezes is too cool for comfort. (Mackay, 2003). In these conditions laminated glass and polycarbonate provide excellent UV protection while transmitting the warmth of the sun.

Figure 10: Stout/Mitchell house *(1995). (Photography: Mitchell Stout Architects)*

Figure 11: Outdoor living area of Ross Steven's container house *(2004). (Photography: Ross Stevens)*

After extensive travel in the Pacific and Asia, architects Julie Stout and David Mitchell designed their own house with enlightened sensitivity to the climate and the goal to achieve comfort by simple means (Bohling, 1995). The outdoor room is shaded with a sequence of lapping layers of corrugated iron, polycarbonate, trellis and vines, filtering UV and heat from sun. The quality of living space is reminiscent of the mahau of the whare. In a second

example, industrial designer Ross Stevens, in reaction to his childhood sunburn, has designed a fully UV protected verandah for his 'urban bach' (Strathdee, 2004). Polycarbonate cladding and shielding of the west sun and open sky by a cliff-face create a year-round outdoor play-space for his young family.

Conclusions

The most striking revelation from this literature review is the complete absence of any mention of UVR protection for building users. For over a century, outdoor living followed designs imported from Australia, Britain, America and Europe without considering compatibility with the local climate. Verandahs were more a buffer zone between interior and landscape, a narrow linear space where a couple might pause to contemplate the outdoors. Communal outdoor space exemplified in the *whare* is rare in the architecture of Anglo-Saxon New Zealanders.

There is little discussion in the literature of the quality of inside-outside space. As this has not been a central focus, the design possibilities of considering outdoor living as exemplified in Cook's 'wind-rain' house have not been yet fully explored.

This review does however identify a number of shade strategies for outdoor living. Despite its origins from a time when sun-tanning was considered healthy, the Modernist strategy of opening living spaces with large glass sliding doors onto an open courtyard or roof terrace is still valid. The open court can safely be used in the winter and summer mornings and evenings. In the mid-day sun, the use of the house interior as a 'verandah' is an economical solution. A more expensive solution is the provision of different spaces for different times of day and seasons. Sun-shading requires consideration of potential collaboration between built and natural landscape where land-form, cityscape and trees can shield both direct and indirect UVR. Translucent materials, laminated glass and polycarbonate are ideal materials for the New Zealand temperate climate.

On my summer holiday, lunch was taken on a non-architecturally designed folksy verandah clad in clear polycarbonate. On the clear sunny mid-day noon, it might be expected to be too hot, but the open sides allowed in the trusty sea breezes. The restaurateurs in attending to their customers comfort as well as culinary needs had over time developed an 'outdoor' dining experience that suited their micro-climate very well; a step in the evolution of outdoor living in the New Zealand sun. The challenge for architects and designers is to tune into the local climate and need for summer UVR protection to heighten and refine the sensation of outside.

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