The 'Essentials' Of The Sub-tropical House: An Exegesis Of The 'Modernistic' Town Planning Principles

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In Sub-Tropical Housing, a small booklet published in 1944, Dr Karl Langer stakes a claim for a revision of the design of sub-tropical housing. To support this claim a number of house plans, neighbourhood allotment arrangements and a proposal for a community of 2000 inhabitants are presented as solutions for problems pertaining to what are described as 'the essentials of a sub-tropical house'. These problems are identified through a scientific-like consideration of what is defined as three "basic human needs: The Avoidance of Fatigue; Provision of Light and Avoidance of Glare; and Economy". In the concluding remarks it is claimed that although tempted, there is no discussion of aesthetics. However, at pains to emphasise the improbability of separating housing from town planning, Dr Langer presents his solutions with a legible design consistency across varying scales. Furthermore there is an abstract quality in the detail house plans and neighbourhood arrangement that suggests strongly a 'modernist' solution to the problems stated. This paper examines the architecture presented in the booklet and its idiomatic relation to the work of Dr Langer. It is suggested that a number of characteristics in the work can be read as particularly 'modern' in form and intent.
Sub-tropical Housing is a technical design guide written in 1944 addressing specific local climatic conditions of Brisbane and was notable and influential from the mid 1940s well into the 1960s. It was written by the Australian emigré Dr Karl Langer who had married Gertrude Langeder later Gertrude Langer for Greece and finally Australia in 1938. Folklore is that most Brisbane architects during this period had copied its booklets in their offices. The implication being it was central to the dissemination of modernism in Queensland. Its significance can be framed in terms of the particularly modern basis with which it addressed the problems of house design and town planning in a sub-tropical climate. In this sense it was an early local example of the use of systematic scientific data to inform architectural and town-planning design principles. As it was one of Dr Langer's few publications, this significance is transformed by the symbolic role the booklet has played since as a tangible reminder of the important place Karl Langer holds in the architectural history of Australia and in particular Queensland.

The expiry of its content is less clear today but was considerably comprehensive up to until death in 1969. His teaching in architecture and landscape architecture was highly influential and included a view framed in the canon of modernity on a generation of 'local architects. John Gordon, when Prime Minister; appointed him to Vice-Chairman of the Music Board of the Australian Council. He played key roles in the establishment of the Royal Australian Planning Institute and the Australian Institute of Landscape Architects as well as executive roles in the Royal Australian Institute of Architects and in Queensland: the National Trust, Arts Council and Art Gallery Society. And in spite of the best efforts of a very parochial State bureaucracy, his reputation and his activities spread quickly across Australia, from Mackay to Sydney to Canberra to Perth, and he was commissioned for major town planning consultancies in all these places. Most notably he was the consultant who in 1948 selected Bellingen Point as the site for the Sydney Opera House Competition.

Self-evidently Modern

The breadth of Langer's vocational interests was considerable spanning architecture, music, art, planning, landscape, horticulture, architectural science, mathematics, physiology and engineering. By way of underlining his importance, these interests coupled with a desire to transform and invent have been suggested by the Queensland academic Ian Finnemore at analogues of the renaissance "Univesal Man." Born in 1903, Karl Langer undertook postgraduate study at the Academisch Masters School of the Vienna Academy of Fine Arts run from 1922 to 1936 by Peter Behrens for whom he later worked and subsequently ran the Behrens' Vierkante office before establishing his own practice. The work of Behrens' students, including Langer, was exhibited in 1926 to considerable acclaim. He was a member of the Guild of Austrian Architects and won competitions as a student and in practice. His own work in Vienna in the 1930s received favourable reviews. Or P.W. Born in an overview of Austrian architecture and decorative art published in 1935 in the English journal Design for To-Day refers to Langer as "a young and gifted architect." Born's article illustrates a doctor's consultancy interior by Langer described in the text as influenced by Eastern abstraction in "translating its spirit into functionalist forms." 12

Interest in the Orient, which remained with Karl and Gertrude Langer as an enduring legacy, owes something to the innovations in teaching the "element of form" initiated by Behrens' Vierkante classes at the Dusseldorf Kunstgewerbeschule in 1903. However the "functionalist forms" of Langer's doctor's consultancy project: elegant tubular steel chairs and stools, unorthodox use of translucent glass in J o inery and spindly light fittings suggest his aesthetic leanings towards a modernist orthodoxy rather than maintaining lineage with Behrens' "functionalism through craft expression." 15

A student competition scheme, "124216," for a villa set in a "seaside setting" grouping drawn during this period illustrates the intentions of the young Langer. The scheme offers formal characteristics to Behrens' Kurt Lewin house (1929-1930), however the logic of the planning and overall simplicity is in keeping with the more progressive exemplars of the Deutscher Werkbund exhibition "Weissarchiv, Stuttgart where Behrens' own contribution, "Wasserschloss" (1926-1927) was criticised for poor internal planning and "fused" formal resolution. 16 Furthermore there is evidence in the detail planning of "124216" of an interest in "total site design beyond the ubiquitous cubic International Style of the villa's form. Langer's proposal would seem to have been engaged in what Born describes as "Functionalist Theory" as opposed to the "Nouveau Werkbund Osterreich" whose 1934 exhibition "Das befremdliche Handwerk" showcased furniture and decorative art work opposed to modern industrial products. 17

The extent to which further refinement and complexity is brought to this milieu is borne in the rigor and maturity of Sub-tropical Housing as a compelling total proposition and hint at the Australian climate which would encompass teaching and unradical innovations in town planning, municipal buildings, schools, offices, commercial buildings, houses, hotels and the new industry of tourism.

A Modern Methodology

In its brief 24 pages, Sub-tropical Housing presents a coherent framework for responding to the influence of climate in a determinedly modern manner. 18 It is divided into two parts. The first deals with the question concerning the "essentials of a sub-tropical house" and the second speculates on whether there are "other forces that influence design." The methodology adopted for the "essentials" relies on framing the problem of adapting houses to suit climatic and social conditions in abstract terms that addresses what are described as "three basic human needs." These are categorised as "The avoidance of fatigue," "provision of light and avoidance of glare" and "economy." 19 Under claims these "needs" are intrinsic to sub-tropical regions in addition to other common universal constraints that affect dwelling and settlement. 20 Statistical information from a diverse range of research including medical science, astronomy, climatology, physiology

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and contemporaneous developments in industrial technology are orchestrated to support a series of hypothetical design propositions. These in turn are studied in various small neighbourhood combinations and developed into a "specimen layout" for a community of 2000 inhabitants based on Clarence Stein and Henry Wright’s Radburn Plan, New Jersey of 1929 described by Langer as a universally accepted principle.22

By making reference to the American social theorist Thorstein Veblen, Part II is anecdotally framed as a cautionary reminder to not abandon the scientific de- terminates of dwelling that address or shape "needs" in favour of the cultural aspirations of class and status seen as potentially undermining the character; and by extension, value, of building form.

Though Langer’s booklet would appear to be one of the first it was by no means the only publication at this time to examine the pressing need for a reconsideration of the problems of house design and town planning that could be considered more relevant to an Antipodean setting. For instance Ernest Fooks published X-Ray The City23 in 1946 and Robin Boyd, Victorian Modern in 1947. Other notable publications at this time were Walter Bunnings’s Homes in the Sun (1945), and Ernst Pletschke’s Design and Living (1947). These last two texts share with Langer a consistent form and structure in aligning a modernist solution to efficient and ‘appropriate’ house design and the interconnectedness of house design to town planning as well as a similarity if not uniformity in the particular models adopted. What is of interest is the manner in which Langer attempts to codify his model through a scientific methodology.

In the Foreword by Dr H.C. Coombs, the Director-General of Post-War Reconstruction, Homes in the Sun is described as "an example of the way in which intelligence and understanding can be applied to the day to day problems of living in a way which will not merely increase comfort and convenience but will also incorporate simplicity and grace in design." In publishing Homes in the Sun, Bunning who had been Executive Officer of the Commonwealth Housing Commission during World War II, like Langer makes a case for climatically responsive design and town planning based on social-democratic community needs.24 Bunning’s "sun trap” houses,25 shown as plans and cut-away isometric views of linear L-shaped arrangements with tell tale modern flat roofs bear similarities to Langer’s house plans in that they are proposed as minimal (economic), able to be extended and are distinctly modern in their consolidated planning and character. There is a nine-point list of ‘principles’ of house planning that correspond with the sentiment of Langer’s more abstract categories. These are organised within a system of programmatic modules including furniture and light fittings. Like Langer, Bunning models his town plans communities on Stein and Wright’s Radburn Plan of 1929.26 Central to these models are various proposals for Community Centres with adjoining town squares adjacent green recreation spaces with green pedestrian ‘fingers’ connecting neighbourhoods as ‘super blocks’.28 There are various examples of suggested possibilities

for large-scale pre-fabricated State controlled development to address the chronic housing shortage and haphazard urban growth. Homes in the Sun, cites schematic proposals for Yalloum, Fisherman’s Bend and elsewhere though these are more a summary of places of identification where the proving of the text may take hold. In general the content of the booklet remains an overview of the benefits of modernism as a panem for the problems of the times.

In 1946 the Auckland-based ‘architectural group’ published planning, an occasional magazine whose aim was “discussion and propaganda.”29 Issue 1, August 1946 contained an extract, ‘design and living” by the Viennese émigré Ernst Pletschke. This was a preliminary three-page sketch of an expanded publication of the same name published the following year.30 Linda Tyler’s account of Pletschke’s background and circumstances bears a remarkable resemblance to Langer’s.31 Pletschke was born in 1903, the same year as Langer, had been taught by Behrens and worked briefly in 1926 in Behrens office in Vienna. And in the new world they both had to sit out the war years in menial roles as draughtsmen.32 Design and Living like Sub-tropical Housing aimed to instruct the value of design at all scales from furniture to towns. And like Langer there is deference to the rôle of aesthetics.

"The utilitarian and the aesthetic approaches to planning are not fundamentally opposed. The difference is one of emphasis only. It can never be one of principle, because neither aspect can possibly be excluded in any good design...so that the early remarks in this booklet, about the design of a chair, can equally well be applied when, at the end, we come to plan a town.”30 Pletschke’s book, more substantial in scope (it runs to 92 pages) than Sub-tropical Housing though not more detailed in terms of research, follows a similar model to Langer and Bunning: the incremental development from small scale elements of furniture to room to house where concerns for access of light and sun, some of the particular characteristics of the New Zealand landscape: views and wind, efficiency of planning and economy all act as a set of principles that are aligned to reveal the vagaries of stylized shortcomings evident in the speculative bungalows of suburban development.34 Although this polemic in itself resonates with Robin Boyd’s critique of styles in Australia’s Home35 there is a broader aim to illustrate how this coordinated response can offer solutions of a distinctly modern nature to the particular problems of the century.

Turning to towns, Pletschke presents an expanded view on the nature of city form that includes a lengthy discussion on physical town planning aesthetics based on the work of the Viennese urban theorist Camillo Sitte.36 Pletschke’s call for the design of town squares, identified as asymmetric nodes enclosed by building form, notably key community buildings, is consistent with Langer’s renowned lectures on Sitte whose accounts of the Piazza San Marco and Venice in general align with Pletschke exactly.37 The two owe an obvious debt to Behrens whose views and teachings on Sitte were influential, for example, in the
masterplanning and design of the AEG Humboldtthain factory (1909-1910) Behrens who, Stanford Anderson describes as "delighting in broken silhouette" and "picturesque projections" acknowledged his own debt to Sitte;

"Because of the practical necessity of recession (form), the group acquires an effective silhouette, and due to the necessary arrangement of courts, a re-
requirement of that old master of city planning, Camillo Sitte, is complied with. Sitte pronounced pizzas enclosed by building units as the most essential elements in creating artistic effects in city planning."10

In a pattern that mirrors Langer and Bunning, Pils-
chek then goes on to promote and describe a number of town planning proposals with distinctly Radbum-
ese qualities, such as the government housing
development at Trentham by the Housing division of
Public Works.14 This is augmented by Sitte-esque proposals for a Civic Centre for Naenae near Wel-
lington by the Department of Housing Construc-
tion,15 and a Community Centre at Mount Roskill, Auckland.16 Pischke's intent is partly a critique of the gridded block of the colonial city, whose abstract geo-
metrical form denies the potential of the community to gather in ways appropriate for contemporary circum-
stances:17

"...a clear differentiation between requirements of vehicular and pedestrian traffic is attempted...the service lanes serve as access drives to houses only. Each cul-de-sac leads towards the large central rec-
reation reserve and is linked with it by a pedestrian footpath...All the schools and kindergartens border the reserve as well as the road, so that children can
go to and from school without crossing the traffic road...The pedestrian will no longer have to follow the usual gridiron or the ribbon street system. Pedest-
rian walks through the park would be part of everyday life. Main shopping centres are centrally placed... (and so on)"18

This view mirrors with Langer's; that in town planning:
"...distances should be measured in walking min-
utes rather than chains...and the shopping centre, ele-
mentary school, kindergartens, swimming pool, playgrounds, library, health-centre and bus-stop can all be reached in not more than ten minutes without crossing any road used by vehicles.19

Underscoring this interest in combining the figured
space of Sitte's aesthetic principles and modern
planning is what Linda Tyler eloquently describes as "typically Modern tensional opposites"20

It is not conclusive whether Pischke and Langer know each other or the full extent of their work in
Vienna, Australia or New Zealand.21 Langer and
Bunning did maintain correspondence but none pub-
lished work followed such coherently similar structure and objectives.22

It is not the aim of this paper to suggest authority or
precedence between Langer, Bunning or Pischke.
The milieu of the time plausibly contributed to a
co-constancy in objective and approach that could be
expected from several commentators. They were
writing in a period where the urgency to attend to
the transformation of cities was pressing and an
orchestrated coordination of solutions across scales of
planning and building had attractions. In a similar
manner the possibility of a new idiom contributing to
this coordinated approach had obvious currency not
only for its newness suiting the rhetoric of the ap-
proach: economy in plan and construction and so on;
but the opportunity to set aside the upheaval of the
immediate past must have understandably seemed
too compelling to ignore. As Harry Margin has dis-
cussed, the "reformentor zeal" of the immediate post war
era had been silenced by the "roar of prosperity in the
1950s."23 Bunning was soon back in private practice and
Pischke had by 1963 returned to Austria and a
distinguished academic career.24

Langer's method however is striking for its role as
pronouncing authority on the principles that were
being promoted in all three publications. And in the
Sub-tropical Housing contributes to a potentially more
rigorous account of the claims of modernity. Bunning,
perhaps mindful of a bureaucratic audience, adopts a
"policy-like" method of drawing on numerous, mostly
international, precedents to support his arguments;25
Pischke, on the other hand, writing in a manner sug-
gestive of appealing to a lay audience, sketches
the detail of precedent and presents his argument with
an almost evangelical rhetoric. For example in describ-
ing the values of re-using urban form and the role
of community centres with a clearly Radbum-esque
strategy, he stratches his point: "Except for one or two
American schemes for housing war workers, there does
not yet exist one new town of this kind in the
world."26 Compare this with Langer's straightforward
assertion of the town 16-year-old precedent of Rad-
burn as a "universally accepted principle.27

Langer is at pains to identify through his "essentials"
reliable supporting data and information that are
im-mutable and objective to the degree that aesthetics
can have no room in the discussion. His principles
are derived from findings intrinsic to sub-tropical con-
ditions that relate the body: "Fatigue" to conditions of
the natural world. "Slate" and culture: "Economy."28

At the core of this endeavours is an attempt to expose
the failings in the vernacular and present a more suit-
able alternative based on empirical information.

In "A. The Avoidance of Fatigue," 29 a summary of
domestic energy consumption drawn from medical
research is tabulated to prove merely doing nothing is
the biggest tax on human energy and who fatigues
comes in the sub-tropics from a loss of blood supply
to our organs as the respiratory system attempts
to cope with heat exchange. With muscle unable to
perform well, unnecessary physical activities contrib-
ute to a sense of fatigue. Langer uses this informa-
tion to bolster a variety of arguments: open efficient
floor plans with small simply designed kitchens help
reduce walking; all activities can be maintained on
ground level eliminating the need for more walking
(upstairs);

"in causing strain, a staircase is the equivalent of a
continuo a hundred foot long. Two storied houses,
then, would appear to be unsuitable for this climate.
For the same reason, it is undesirable to build
houses on high slumps."30

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Furthermore the line of reasoning informs town-plan-ning criteria – Langer’s recommendation to ‘shape’ towns on distances measured in ‘walking-minutes’ in response to diminishing unnecessary ‘effort’ accords with the writer David Malouf’s account of the effects of walking in Brisbane:

The first thing you notice about this city is the uneveness of the ground. Wherever the eye turns here it is of necessity restless and variety and possibility, as the body learns effort. Brisbane is a city that tires the legs and demands a certain sort of breath.54

As has been mentioned, this recommendation finds its corollary in the ‘universal principle’ of the Rad-burn Plan. Other measures to reduce heat gain led Langer to consider the problem of orientation and shade and from first principles he developed a unique ‘green’ sun path chart for Brisbane to aid in the cor-rec-t calculation of shading devices.55

In “B. Provision of Light an Avoidance of glare”56 further problems with the vernacular are identified:

...people living in the semi-tropics find glare in the houses very trying. To overcome this they reduce the window-area, and ‘protect’ the house with verandahs, blinds, curtains, etc. this remedy has two defects: firstly, it makes the rooms so dark that most activi-ties are transferred to the verandah, and secondly, surprising though this may seem, the effect of glare within rooms is increased.57

Physiological and physical science in the form of diagrams of light intensities and wind pressure58 are published to provide evidence for opening views to outdoors through apertures made as large as possible to reduce the effects of glare. As external aspect of at least 20 feet is considered ‘comfortable’ and windows the size of room walls reduce the discomfort of glare, as long as effective shading can be main-tained. In this turn assists ventilation and reinforces the pre-eminence of orientation in site planning.

In “C. Economy”59 Bureau of Industry statistics are provided to reinforce earlier recommendations for “soil-cement slab” construction and simple efficient modular plans capable of being extended as anticipated affluence increases.

From these “essentials” five house plans are given, appear- ing seemingly as the result of the data yielded by the principles simple plans (often in an “L configuration” of slab-on-ground structures with large unimped-ed openings onto generous garden spaces. “Heavy” walls are coordinated as much with garden/hedge design and western orientation as with the formal house layout. Each plan has a combined north-point/ wind-side with notes identifying optimum orienta-tion. These plans are in turn re-presented in various neighbourhood-like clusters based on plan permuta-tion and orientation.60 This is done perhaps as an indication of “testing” (as with a scientific hypothesis) in order to underscore the reliability of the original ‘arrangements when placed under adverse or contra-dictory conditions and also to ‘predict the preferential’ orientation of blocks and streets.

The result is remarkably consistent and decidedly modern in form and process; a kind of ‘pure’ design free from stylistic association informed by ‘neutral’ sci-en-tifically determined constraints to meet the minimum requirements of human needs. Among subsequent town plan projects; a competition in Westmead, Sydney (date unknown) and a development proposal for Hatchett, Canberra (1965) indicate the principles had endured.61

In Part II “What Other Forces Influence Design” the situation is less clear in the light of the rejection of a discussion of aesthetics. This is particularly instruc-tive when we see Langer embark on the analysis of the “consumption” of culture through the display of taste, he opts for a less empirical and more anecdo-tal methodology, arguing against applied “fine arts” of status at the cost of “universal human needs for comfort, convenience and spaciousness.62 Citing the aspirational character of the mid-century Middle Class who ‘dress’ their homes in a pastiche of formal ‘styles’ in-cluding the recognition of a new one – “the modernis-tic”.63 Langer aligns himself with Boyd and Pischke64 without seemingly being capable of defining his position. One alternative reading might be that the “other forces” of Part II could be construed as “non-essen-tial” and by definition, redundant. He concludes: “It cannot be denied that the possession of a home with ‘palatial’, ‘masculine’ or ‘modernistic’ features does often give to the owner a certain feeling of satisfac-tion. But this satisfaction is for most of us, bought too dearly when it involves the sacrifice of basic needs.” These human needs, it would seem for Langer, are only met when framed through the lens of rationalized scientific analysis and the “objectivity” of the forms that result from such scientific bases produces a mo-dernity of universal value.

5 Ian Sinclair in An Educated Eye: Karl Langer in Australia in Landscape Australia 1.55 February 1988 p.54 suggests it was “one of the first of its kind in the world.” Much of the key Buttgen-bred publications that showcased the advent of environmental accoutrements research followed Langer’s booklet. For example in 1956 the Combeangus Experimental Building Station published R. O. Phillips Sustainable and Shade in Australia, and in 1952 published Notes on the Science of Building series with SB1 ‘Design for Climate.’
6 Alan Kirkwood, P.C. April 2003
7 Sinnammon, “An Educated Eye,” p.49
8 Sinnammon, “An Educated Eye,” p.54
9 Sinnammon, “An Educated Eye,” p.56
10 Sinnammon, “An Educated Eye,” p.49
11 Sinnammon, “An Educated Eye,” p.49 see also Stanford Anderson, Peter Behrens and A New Architecture for the Twentieth Century, Cambridge MIT Press 2000, p.231 “It is no doubt correct to speak of Behrens as setting the agenda for the architectural works that bear his name in the interwar period.”
13 Gundel Peter award recipients and “cultivation of winning ar-chitectural competition in Turkey” by Dr K Langer Colloquium, The Library, University of Queensland.
14 Dr P. W. Bem, Architectural and Decorative Art in Australia” in De
for a more comprehensive account of wartime refugees see also Anne Baupoleau, A Small Place to Fly: Refugees from Hitler in New Zealand 1933-1945. Association of Alien Women and Men":
Langer, Sub-tropical Housing, p.6
Langer, Sub-tropical Housing, plates 11 & 12
Langer, Sub-tropical Housing, p.69
Langer, Sub-tropical Housing, plates 1-5
Langer, Sub-tropical Housing, plates 6-7
Reed, "Competition: four-handwoven panels of pencil and ink drawings (unlined), proposed housing development Madigan St, Canberra, 1966, six 'dyeline' prints both projects currently in the author's possession (courtesy of Mr Ian Sinnamon)."
Langer, Sub-tropical Housing, p.10
Langer, Sub-tropical Housing, p.11
Plachte, Design and Living, p.37
Langer, Sub-tropical Housing, p.11