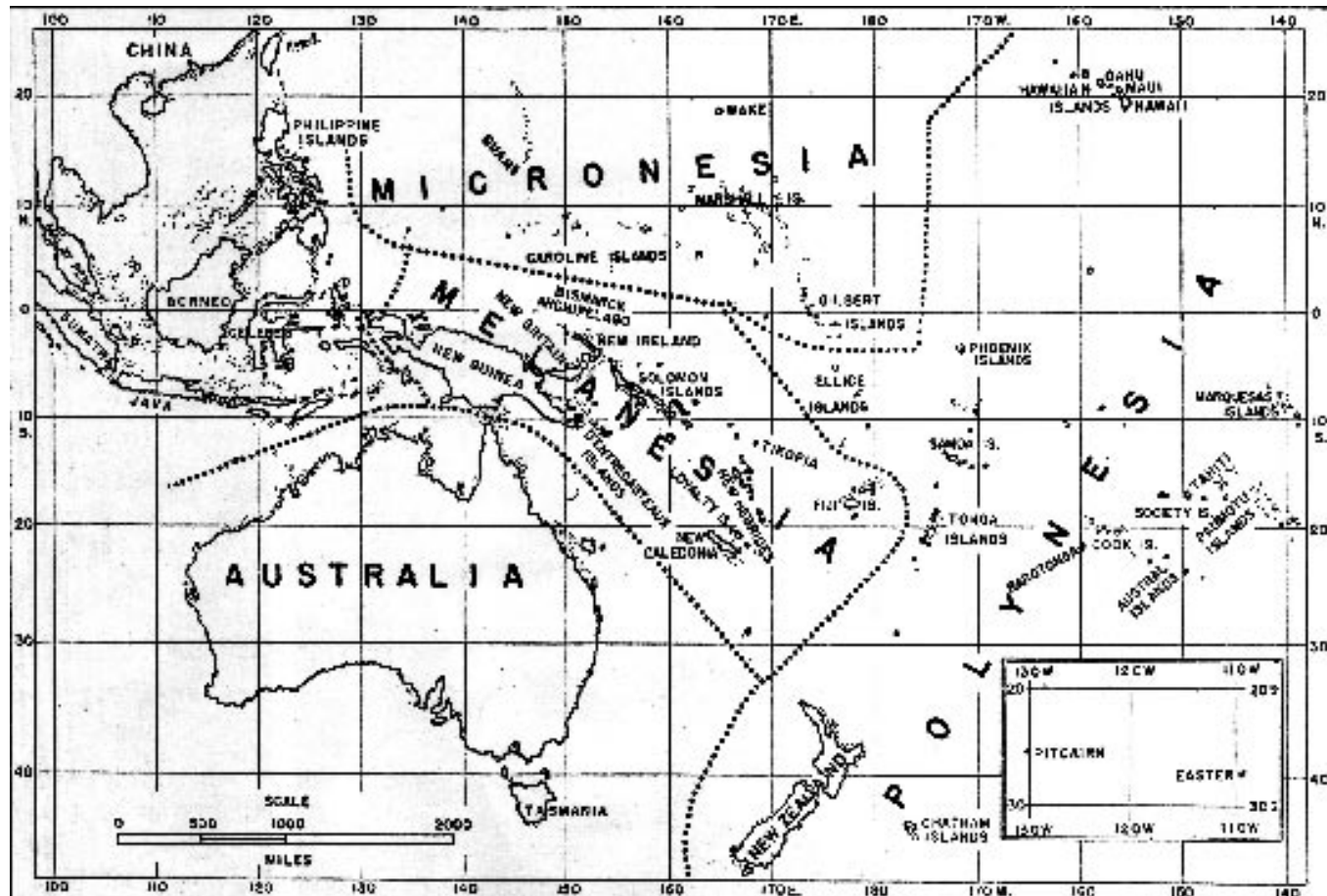


TRADITIONAL ARCHITECTURE IN THE PACIFIC

An Overview

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Pacific: Map showing Micronesia, Polynesia, Melanesia and Australasia. (American Geographical Society of New York).

Architecture of the Pacific covers a region of more than third of the earth's surface. The sparse Pacific population spreads over some 30000 islands, which graduate in size from small atolls to the largest island, Australia, a continent.

Pacific architecture can be studied as four cultural units: Micronesia, Polynesia, Melanesia, and Australasia (Australia and New Zealand). While many of the islands of Micronesia lie above the Equator, the remaining Pacific islands are in the southern hemisphere. With the exception of Australia, most of the islands have a warm and humid tropical climate with high rainfalls and lush vegetation. Some islands lie in the cyclonic and earthquake belts.

Two distinct racial groups settled the region. The indigenous people, the Micronesians, Melanesians, Polynesians, Australian Aborigines and New Zealand Maoris, migrated from Asia thousands of years ago. The second group, the recent immigrants, were Europeans, who occupied the region during the last two centuries, and pockets of Asians brought in by colonial administrations as labourers during the early twentieth century.

European colonisation

European colonizing incursions into the Pacific islands began during the eighteenth century, as the Industrial Revolution stimulated the need for raw materials and markets. The English, the French and the Americans followed Spanish and

Dutch explorers. Simple trading arrangements were soon replaced by more permanent control exercised by white planters who set up copra, sugar and cotton plantations. During the same period, there was a steady growth in missionary influence that radically altered the lifestyle and culture of the Pacific islanders.

The most intense period of colonization lasted from 1870 to 1900 when much of the Pacific region was carved up among the English, the French, the Germans and the Americans. Australia and New Zealand had already been colonized by the British in 1788 and 1840 respectively and had inherited the responsibility for managing some of the Pacific islands. After World War I (1914-18) the British and the Japanese annexed German, New Guinea, Samoan and Micronesian colonies.

Two periods of architectural development

The development of architecture in the Pacific can be classified into two periods. The first is the pre-colonial traditional period, during which some quite elaborate structures were built, such as the haus tambaran in Papua New Guinea and the meeting halls of the Maori tribes in New Zealand. In many parts of the Pacific, traditional designs are still alive and are extensively used by rural populations.

The second period began with European incursions into the region and resulting colonial influences; the buildings of the time were often inspired by the heritage of the occupying na-

tions. Some of these influences were transferred secondhand by Australia in Norfolk Island and Papua New Guinea and by New Zealand in Samoa, Tonga, Niue and Cook Island during the second quarter of the twentieth century. However, despite this common heritage, there is an extraordinary diversity in the architecture of the Pacific nations, largely caused by the immense distances and lack of communication among them.

Australasia

Because of its size and special historical circumstances, Australia has played a more dominant role in the region than has New Zealand. In fact, Australian architects and engineers were involved in much of the early colonial development in New Zealand, viewing their contribution as an extension of their work in the premier colony.

Australia

Australia, including the island state of Tasmania, lies between latitudes 10 S and 44 S. The total area is about 3 million square miles (7.7 million square kilometers). The climate is diverse, including hot and humid area in the north, a hot and dry centre (approximately 70 per cent of the land mass), and a temperate to cooler region in the south.

The development of architecture in Australia to 1945 can be grouped into five distinct phases: namely Pre-colonial, Early Colonial (1800-1850), Victorian (1851-1900), Federation (1901-1930) and Early Modern (1931-1945).

Pre-colonial

Before the Europeans arrived in 1788, Australia was inhabited by the Aborigines who came to the continent from South East Asia about 40 000 years ago. They were nomadic hunters who built no permanent settlements and lived in the open, night and day, without houses, beds and other trappings of 'civilization'. They sometimes built temporary shelters called wurlies, humpies or gunyahs. A typical shelter was based on a semicircular framework of sticks. Branches were laid over this, and then thatch, which was often spinifex, a stiff desert grass. On a cold night a small fire was lit in the doorway for warmth and cooking. These Aboriginal shelters had little influence on later European architectural activity in Australia.

Convicts and soldiers first colonized Australia as a penal outpost, but free settlers soon followed them. Permanent settlements grew up along the eastern seaboard of Australia, and developed into busy ports and trading centres from which inland exploration and settlement radiated. Rapid population growth followed the discovery of gold during the 1850s, and settlements spread throughout the land, based on agricultural, pastoral and mining activities.



Australian Aboriginal nomadic shelter called wurlies, humpies or gunyahs. Australian Aboriginal Arunda Family with possessions in front of a bough house, Alice Springs, 1896. (W. Baldwin Spencer Collection The National Museum of Victoria Council – 1894-1927).



A pattern soon emerged; most Australians preferred to live and work in a few large urban centres on the cool south-eastern coast, where the rainfall was reliable and the soil was rich. The rest of the continent supported a sparse population. During its brief history, Australian architecture, inspired by the Europeans, went through some rapid changes. There were no high peaks of the kind, which normally result from a steady development in a specific direction over a long period. Australian buildings exhibited chiefly transplanted ideas and trends, with minor regional adaptations to suit local materials and environmental conditions.

Early Colonial

European settlement in Australia started in Sydney, which was a penal camp for the first twenty years. The settlement began to develop under the direction of Governor Lachlan Macquarie (1809-22) who brought order out of chaos. He laid out 66 ft-wide (20m) streets and set minimum standards for buildings, which later became the basis for clearly stated building regulations in New South Wales and elsewhere. Although discouraged by the British government, he used his emergency power to foster what seemed a highly ambitious and elaborate building programme. In this two architects, Francis Greenway and John Watts, ably assisted him.

Greenway (1777-1837), who arrived at Sydney as a convict, was more imaginative and architecturally creative than Watts. Within a brief six-year period from the date of his appoint-



Early colonial verandahed buildings in Australia

ment in 1816, he designed and supervised an enormous range of buildings and prepared plans for such civil works as town sewers, provision for a water supply, fortifications and bridges. Greenway's work has been described as colonial Georgian. His hospital in Liverpool near Sydney, Windsor Court House (1822) and St Luke's Church (1818) was well ordered and finely proportioned buildings.

His most outstanding buildings include his churches, St James, Sydney (1820-24) and St Matthew's, Windsor (1817-20), and the Hyde Park Barracks (1819). Convicts using sandstock bricks and sandstone built St Matthew's Church of England at Windsor. Its chief feature was its sculptured square tower with octagonal cupola. John Watts, who arrived as an army lieutenant, was equally competent but not as inspired as Greenway. His work included a hospital and a range of military structures.

The Macquarie period was said to be when the verandah emerged as a semi outdoor shelter for the hot summer months; it later became an important feature of colonial architecture in Australia. Macquarie had previously worked in India and was therefore familiar with the usefulness of the verandah in tropical and subtropical climates. Founders of the British Empire took the concept of the verandah back to Cornwall and Devon in England and then exported the idea to other colonies such as Australia and New Zealand.



*Above: St Luke's Liverpool 1818-24
(Architect Francis Greenway.)*

Below: Governor Lachlan Macquarie (1809) sponsored construction of what is now used as NSW State Parliament House



After Macquarie left Australia during the 1820s, there were developments in architecture in Tasmania, where the colonial engineers built sturdy, plain but well-proportioned structures, notably bridges and churches. Tasmania, which was then known as Van Diemen's Land, became a separate colony in 1825, and John Lee Archer was appointed as its first colonial architect in 1827. During the following 11 years, Archer built a host of military structures such as barracks, canteens and drill halls; elegant bridges; several small churches; and courthouses, customs houses, hospitals, schools and light-houses. All his buildings exhibited a high degree of competency and were distinguished for their good proportions and textural treatment.

Victorian

The development of Melbourne started half a century later and took a different direction than that of the older city of Sydney. Melbourne's climate, topography, history and population background were different. The site was surveyed in 1837 and Robert Hoddle set out the city of Melbourne in a rectangular grid. Streets were 99-ft (30m) wide and parallel to the Yarra River. Graziers backed the economy, and Melbourne was typically English until the 1850s, when the discovery of gold changed it from a market town into a financial capital backed by enormous industrial and economic activity generated by investment from overseas. There was a great surge of building activity during the second half of the nineteenth century.



*Above: Ross Bridge Tasmania 1836
Architect John Lee Archer with convict labour.
Below: Post Office in Bendigo Victoria 1883-87 is a good example of Italian Renaissance style in the colony Architect George W. Watson.*



The resultant Victorian phase is one of the most important periods in the history of architectural development in Australia.

The discovery of gold encouraged growth in two major areas. Increased money supply in the economy led to a demand for hotels, halls, churches, houses, warehouses and offices. Town councils required imposing city halls, public libraries, museums and educational institutions. The second development involved regional expansion in gold mining towns such as Ballarat and Bendigo. A few years later in 1859 the northern areas of New South Wales were separated from New South Wales as part of a new colony of Queensland. The demand for quick building grew suddenly.

The designs for buildings in the cities were influenced by the trends fashionable in Europe at that time; the Gothic style was used for ecclesiastical work and schools, and the Classical style for public buildings. In Sydney the most important architect of the period was Edmund Blacket (1817-83) who, with Horbury Hunt (1838-1904), designed an enormous range of buildings. Blacket's churches were strictly Gothic and he used the same style for several Sydney University buildings, which included its famous Great Hall (1857). His impressive reputation in church building was to involve him later in extensive work in Queensland, Victoria and Western Australia. Blacket's commercial buildings such as banks, offices and hotels were, however, conventionally Classical.



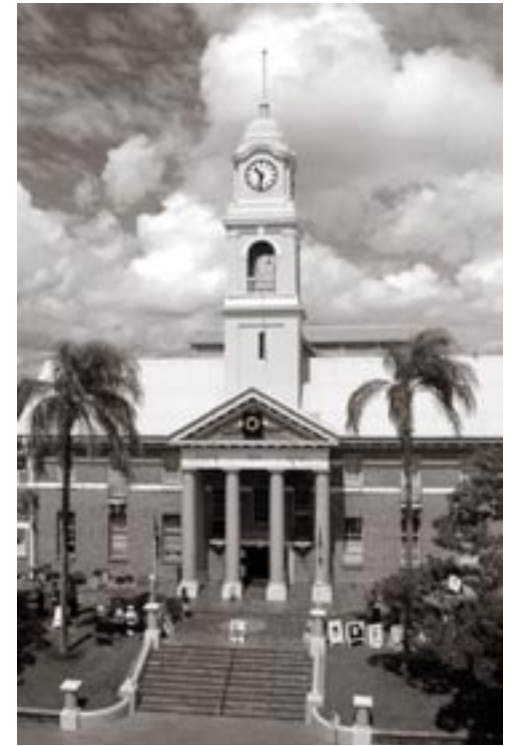
Top: Victorian State Parliament House 1856-1930 Architects Clark, Purchas, Kerr and Knight. (Photo: Brian Lloyd). Above: St. John's Bishopthorpe Anglican Church Sydney 1870 Architects Edmund Blacket with Horbury Hunt for Bell Tower Below: Throsby Park Homestead Moss Vale NSW 1834 Architect, Mortimer Lewis



The surge of building activity in Melbourne attracted many architects from overseas. Among them were Clark, Purchas, Kerr and Knight who designed Classical public buildings such as the Victorian Treasury buildings and the Parliament House. The giant façade of Parliament (1856-1930) culminating in its monumental colonnade was a complex architectural composition and included decorative features, which were quite rare in Australia at that time. The Treasury building was a fine example of Renaissance Revival. It was a simple three-storeyed rectangular building with a recessed arcade across its main façade. Architect William Wardell (1823-99) designed some of Victoria's finest structures such as St Patrick's Cathedral (1858-1939) in Melbourne and a number of architectural and engineering projects in New South Wales and Western Australia, as well as in New Zealand.

The most significant architect of the Victorian period was Joseph Reed (1822-90), whose works were concentrated in and around Melbourne, and who left a vast number of important buildings, which gave the city its present character. He designed almost every building type encountered in a large city and many of them have become landmarks, such as Melbourne's Public Library and Museum (1854-1913) and the Royal Exhibition buildings complex (1879-80), with its dome modeled on that of Florence Cathedral.

In the early Victorian period, many churches and schools were built, but the high and late Victorian eras were characterized by financial activity resulting in a spate of commercial, public



*Top: Maryborough City Hall Qld. 1908
Architect Robin Dods
Above: Queen Victoria Building
Sydney 1898 Architect George McRae*



and recreational structures. Banks, insurance offices, town halls, railway terminuses, theatres and grand hotels appeared everywhere. Some of these buildings were over decorated and ostentatious, often being six to ten storeys high, very ornate, colourful, and usually topped off by a dome.

Examples are the Princess Theatre in Melbourne (1887) and the Queen Victoria Building in Sydney (1893-98). As a direct result of the discovery of gold and the opening up of the country to pastoral, agricultural and mining development, during the Victorian period there was a great upsurge of building in areas outside the main cities.

Housing was urgently needed for the workers. Many primitive materials and methods were employed in the construction of basic

houses – canvas, hessian, mud, grass, bark and slab – but most of the makeshift systems proved inefficient. Prefabricated precut timber and iron buildings were imported from overseas, particularly from Great Britain, where demand from the colonies generated a whole new industry.

Eventually importation of such buildings had to be stopped, as the cost was too high. However, the use of timber and iron for building lightweight structures became quite widespread and the two materials had a considerable impact on the development of an indigenous Australian architecture.

The demand for corrugated galvanized iron and galvanized iron sheets was understandable in view of their many advan-



Above: Royal Exhibition Building Melbourne 1880 Architect Joseph Reed and Frederick Barnes. (Photo: Irvin Green).

Below: Princess Theatre Melbourne 1887 Architect William Pitt



tages: high strength to weight ratio, malleability, coverage of a substantial area at low cost, and speed of use in construction. Timber became useful generally a little later, and had many of the virtues of galvanized iron. The combination of the two gave birth to a house type, which, with minor regional variations, was popular for a century or more, to the end of World War II. This 'timber and iron' house type ranged in size from simple workers' cottages to quite sophisticated large homesteads.

Owing to the high cost of transport of bricks and stone, masonry houses were the preserve of the wealthy, and were generally built near the source of manufacture, that is, larger towns. Clay roof tiles were not introduced until the end of the nineteenth century. Often a compromise was made where a carpenter would employ a mason to wrap his timber structure with a single layer of brickwork. These 'improvement led to the introduction of brick veneer' houses in cooler areas of southern Australia as they were better insulated and also required less maintenance than the conventional wooden houses. Building demand and hence the use of bricks and tiles declined during the depression of the 1890s but soon picked up again with the newly popular Queen Anne buildings made fashionable by architects such as Horbury Hunt.

Federation and Early Modern

In 1901, all the separate Australian colonies were federated to form a single nation. The event provided a national perspec-



Above: Taabinga - an early 1846 example of timber and tin structure in Queensland.

Below: Two examples of timber and tin homes in Boona



tive for Australians which was to permeate all areas of cultural significance, including the arts and architecture. Buildings of that period were appropriately termed 'Federation style'. Interest in the arts and crafts movement and the Queen Anne revival in England had already reached the colonies and in Australia it culminated in a whole range of commercial and domestic structures with medieval touches, decorative terra cotta inserts and highly elaborate verandah woodwork.

Terra cotta roof tiles replaced slates and the house plans developed a strong diagonal emphasis. Roofs became intricate with a romantic profusion of gables and spires, their ridges ornamented with terra cotta finials and figures which included leaves and flowers. Chinese dragons, Australian lyre-birds, kangaroos and kookaburras. However, a more austere approach was soon dictated by the Modern movement and propagated by a new crop of architects including Harold Desbrow-Anne, Robin Dods, Hardy Wilson, G.D. Payne and Walter Burly Griffin.

Hardy Wilson (1881-1955) was attracted by pre-Victorian virtues and the simplicity of colonial buildings and revived Georgian traditions. Desbrow-Anne revived the functionalism of early vernacular buildings. Robin Dods (1868-1920), working mostly in Queensland, stimulated the study of climate and tropical environments in association with design. G.D. Payne's St Andrew's Presbyterian Church (1910) in Brisbane was an excellent example of a simple, uncluttered brick building with clear planes and arches, without the ornamentation fashionable in most large buildings of the time.



Top: A timber and tin house in West End Brisbane



Above: Queen Anne style home in Burwood NSW

Below: Federation style house in South Yarra Victoria



The most important architect to emerge from that era was Walter Burly Griffin (1876-1937), a gifted designer and planner who, accompanied by his equally talented wife Marion Lucy Mahony, came to Australia in 1913 after winning an international competition for the design of a new national capital in Canberra. A protégé of Frank Lloyd Wright, Griffin possessed special abilities for handling floating planes and volumes and an individual penchant for surface decoration based on geometric and prismatic themes.

His plans for the federal capital were thwarted by political wranglings during his lifetime but he practised architecture in Melbourne and Sydney where he designed and built a number of houses and incinerators and a few larger structures such as the Newman College complex (1915-17) in Melbourne.

Buildings after World War I in Australia were of little historic significance. Exceptions were the Californian bungalow houses and the multistory buildings influenced by new techniques from the U.S.A. utilizing lifts and materials such as steel and reinforced concrete. It was a period of transition when the ground work was being laid for the adoption of Modern movement, which followed the trends already evident in Europe and the U.S.A. Perhaps the most important regional style to emerge during Australia's architectural development over the 150 years of colonial occupation was the 'timber and iron' house of its tropical regions, which came closest to houses built by the Pacific islanders.



*Top: Newman college Melbourne 1957
Architect Walter Burley Griffin*

*Below: Australian Parliament House
Architect Romaldo Giurgola of Mitchell/Giurgola Architects*



New Zealand

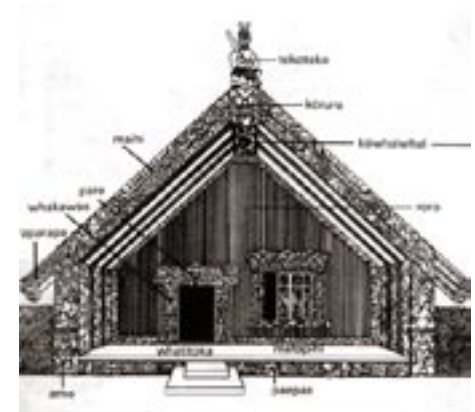
The two main islands of New Zealand lie in a broad sweep in the South Pacific with a sub-tropical climate in the north and a sub-arctic winter in the south.

Traditional

Long before European settlement during the early nineteenth century, New Zealand was inhabited by the Maoris who were mainly nomadic hunters and whose ancestors were known to have migrated from eastern Polynesia not later than 850 A.D. These Polynesians soon found they needed warmth and protection from a climate markedly different from their warm and humid tropical Polynesian islands. The early colonizers soon modified their construction techniques to suit the colder climate. Many traditional island building techniques were retained, using new materials: raupo reed, toetoe grass, aka vines and native timbers: totara, pukatea and manuka. Archeological evidence suggests that the design of Moa-hunter sleeping houses (850-1350 AD) was similar to that of houses found in Tahiti and eastern Polynesia. These were rectangular, round, oval, or “boat-shaped” semi-permanent dwellings.

Classic

Next came the Classic phase (1350-1769) which was characterized by a more developed tribal society expressing itself



Top: whare-whakairo - carved meeting house/ (Photo: National Museum of New Zealand).

*Above: Kemp House Keri Keri 1822
Built by London-based Church Missionary
Society Below: Treaty House Waitangi
1832 Architect John Verge*



clearly in wood carving and architecture. The most spectacular building type was the *whare-whakairo*, or carved meeting house. This building was the focus of social and symbolic Maori assemblies, and made visible a long tribal history. The wall slabs depicted warriors, chiefs and explorers. The painted rafter patterns and *tututuku* panels demonstrated the Maori love for land, forest and river. The *whare-whakairo* was a colourful synthesis of carved architecture, expressing reverence for ancestors and love of nature.

Colonial

White settlement in New Zealand began in the early years of the nineteenth century with sealers, whalers and missionaries. During this early period the most common building material was timber and it remained fashionable since it was light, flexible and withstood earthquake tremors better than masonry structures. Stone was extensively used in the South Island, and brick buildings were constructed in the Auckland and Dunedin areas.

The earliest European building standing today is Kemp House in Kerikeri (1819), built in timber for the Rev. John Butler of the Church Missionary Society. A chapel soon followed which doubled for a school. The first colonial building to be designed by an architect was the Treaty House in Waitangi (1832). This was the work of John Verge from Sydney, who gave it a degree of sophistication and a Regency formality.



*Top: Auckland Post Office 1911
Architect John Campbell
Below:: Government Bath House
Rotorua 1908*



Victorian

The most successful Victorian expressions were conceived as a setting for social and religious occasions. From the romantic tradition came Frederick Thatcher's (1814-90) Old St Paul's in Wellington (1864-66), and Benjamin Mountfort's (1824-98) Canterbury Provincial Council buildings in Christchurch (1859-65). From an altogether different but not opposite tradition of Classicism, there is the Christchurch Catholic Cathedral by Francis William Petrie (1847-1918) which presented a grand, symmetrical, consistent and ordered space.

The economic depression of the 1880s brought building activity to a standstill but it revived towards the end of the century. Early makeshift buildings were slowly replaced by more substantial masonry structures of three, four and five storeys which gave New Zealand cities their present character. Collectively such buildings reflected a mishmash of European styles faithfully transplanted in a colonial setting. New Zealand thus lost some of the honest simplicity exhibited by the earlier, more functional structures.

Premodern

A new generation of architects created some of New Zealand's historically significant landmarks during the period between 1880 and 1920. Buildings included Auckland's French Renaissance Art Gallery designed in 1887 by Grainger and D'Erbo of



*Above: Christchurch Cathedral
1873 Architect George Gilbert Scott and W.
Petrie*

*Below: Canterbury Provincial
Chambers Christchurch
Architect Benjamin Mountfort*



Melbourne; the Harbour Board Office in Wellington, a simple, elegant building with high mansared roof designed by F. de J. Clere in 1891; and the Government Bath House in Rotorua, an Edwardian structure designed by W.J. Trigg and B.S. Corlett in 1904. Architect William Pitt, another Australian, designed theatres in Wellington and Auckland, and Claude Paton designed Auckland's Post Office in 1911.

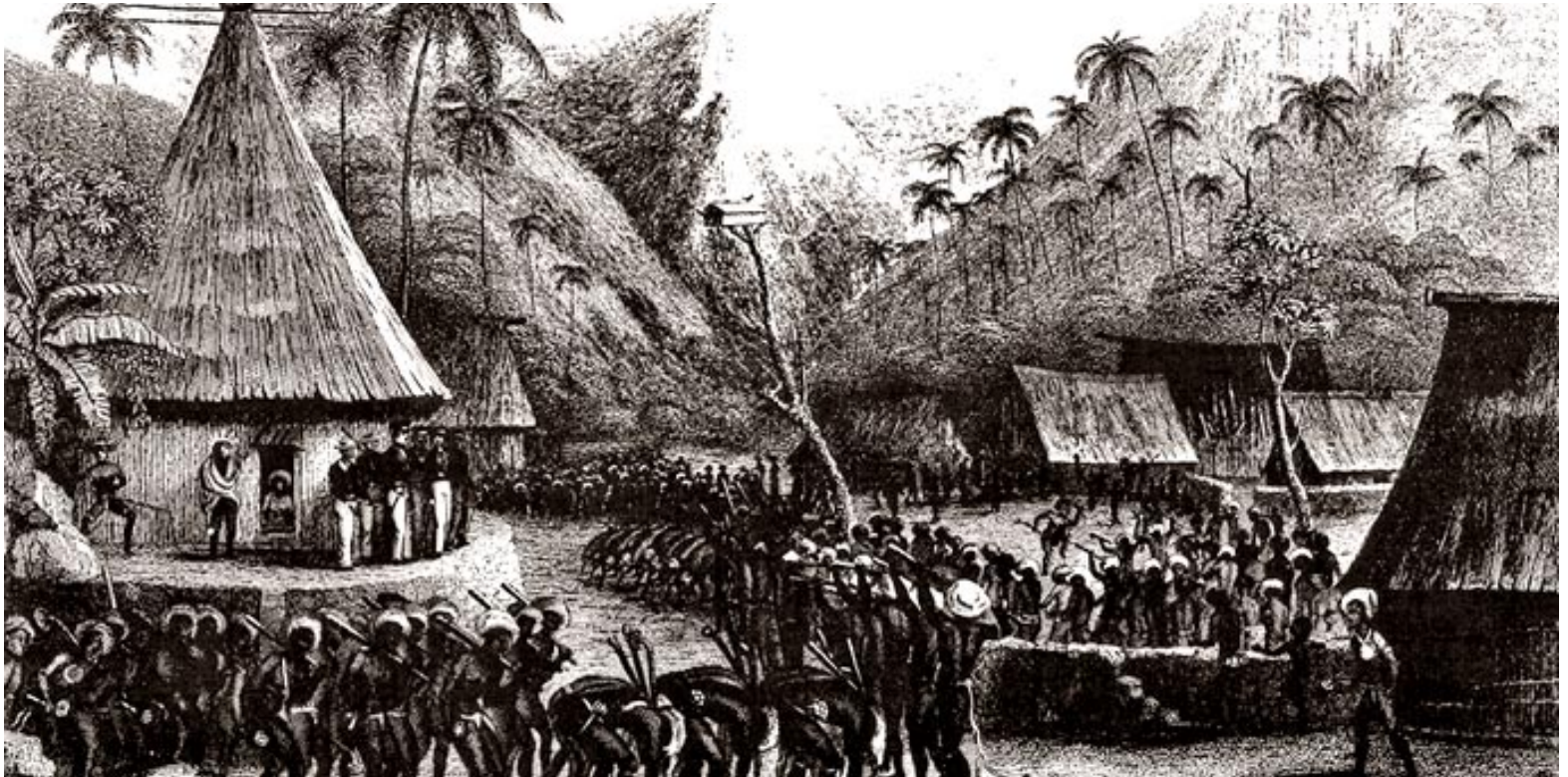
However, the most remarkable building of that era was the neo-Baroque Edwardian railway station in Dunedin designed by George Troup in 1904. While this building in dark granite and Oamaru stone represents the heyday of the steam train, Cecil Walter Wood (1878-1947), at Christ College, was entirely content to weave a coherent sequel to the English public school-Oxbridge tradition of memorial dining rooms (1925). Another notable architect was R.A. Lippincott, an American and relative of Walter Burley Griffin who, with a Melbourne architect, Edward Billson, designed university college buildings in Auckland in 1921.

The influence of the Modern movement, which championed the examination of human needs and the use of contemporary technology, was not felt in New Zealand until the Department of Housing and Construction, under the leadership of Francis Gordon Wilson (1900-59), championed the cause of medium-density housing as an alternative to urban sprawl. In 1938, at Berhampore in Wellington, a mass housing development carried the imagery of the machine aesthetic for the first time thus establishing a sound basis for future development of post-World War II building in New Zealand.



Old Arts Building University of Auckland Architects R A Lippincott

Pacific Islands



The architecture of the rest of the Pacific islands is as varied as the cultures. Within the three groups of islands, Micronesia, Polynesia and Melanesia, there are many micro-societies with their own specific rituals and traditions. It is difficult to generalize about the architecture of the Pacific except in terms of similarity of climate which, in turn, has dictated the types of materials available and the building techniques which have been developed and which have been highly refined over hundreds of years.

*European colonisation of the Pacific. Fijian dancers perform for explorer Charles Wilke: 1840
Artist Joseph Drayton - member of the expedition*

The warm and humid environment of most of the Pacific islands generates lush vegetation, so the most common building materials are organic: for example, timber, bamboo, cane, grasses and reeds. These are utilized as framework, thatch, and mats to construct buildings which are suited to the climate, are within the economic reach of the majority of the population, and are built in a manner which the local people understand.

An island house is very comfortable; it is dominated by the roof which provides shelter from the hot sun and rain and is usually its most important architectural component. The walls are often omitted to allow good cross-ventilation in an environment where humidity is extremely high. Samoan houses, locally known as fales, perhaps represent the ultimate in this approach. They are no more than pavilions on raised floors, with no walls, and the roof is supported on round wooden pillars.

Traditional structures, however, do have shortcomings as they deteriorate rapidly due to weathering and insect attack and they also represent a considerable fire hazard. Although this has resulted in the loss of some very important historic buildings, the tradition of rebuilding with the same standardized techniques has ensured continuity and thus helped the local culture to survive for centuries without any drastic changes.

This evolutionary process was often interrupted from the eighteenth century onwards as the missionaries and Europe-



Samoan coast -Apia

an planters, traders and administrators introduced new ideas and began to use masonry and other more substantial and durable materials such as galvanized iron for building.

During the twentieth century, particularly after World War I, the architecture of the Pacific islands has included both the traditional indigenous structures and colonial buildings, which sometimes sit unhappily together. In general, colonial buildings are located in the near urban centres whilst the traditional organic buildings are usually found in rural areas.

Architectural styles of colonial buildings usually reflected the fashions and tastes of the Europeans, who were anxious to keep memories of their mother countries alive and who held positions of power and influence in the islands. Buildings in French Polynesia, for instance, replicated typical Mediterranean structures commonly found in southern France and French colonial possessions in Africa.

Two important buildings in Nukualofa, the premier city of Tonga, are the chapel (1882) and the Royal Palace (1867). The latter is a white timber-framed building topped off with a bright red roof and a mixture of gables and scalloped eaves, providing an interesting example of Victorian architecture in the Pacific. Europeans also built some impressive hotels, such as Fiji's Edwardian-style Grand Hotel (1914) in Suva, reminiscent of the British Raj, and the old Hotel de Ville (1874) in Noumea, New Caledonia which over the years was used as a bank, a town hall and a museum. Churches were scattered



Top: Royal Palace Nukualofa Tonga 1867 - White timber framed Victorian styled builing.



Above: Pacific Grand Edwardian style Hotel Suva Fiji 1914

Below: Hotel Lounge Room



all over the islands, ranging from exact replicas of European Gothic to those made of local timbers exquisitely carved by indigenous craftsmen and decorators.

In the complex world of the island communities of the Pacific, perhaps the best way to understand and study their architectural heritage is by examining the development in a few selected countries in the three groups of Micronesia, Polynesia and Melanesia.

Micronesia

Most Micronesian islands are small and straddle the Equator primarily to the north. They include the Carolines to the north-west and the Marshall Islands in the centre. The Gilbert and Ellis Islands form the southern end of the chain and are by comparison no more than mere dots located around 2 S and 175 E.

The climate varies little throughout the year, with day temperatures around the 80s and relative humidity around the 70s. The islands are subject to frequent strong gales and occasional violent hurricanes. Organic building materials commonly used are coconut palm, pandanus and a few species of timbers such as *calophyllum inoplyllm*, *cordia subsordia*, *inocarpus edulis* and odd branches of driftwood for structural framing. Thatching is of pandanus, and plaited green coconut palm fronds are used for weather screens and ridge capping.



The Maneaba, the meeting house of Kiribati

Traditional tools include adzes in varying sizes to suit specific tasks. They are made from shells of the giant clam shaped and sharpened by hard coral rock obtained from a great depth. When lashed to wooden shafts, the adzes make efficient tools which are still used even though more and more crude steel knives are being imported.

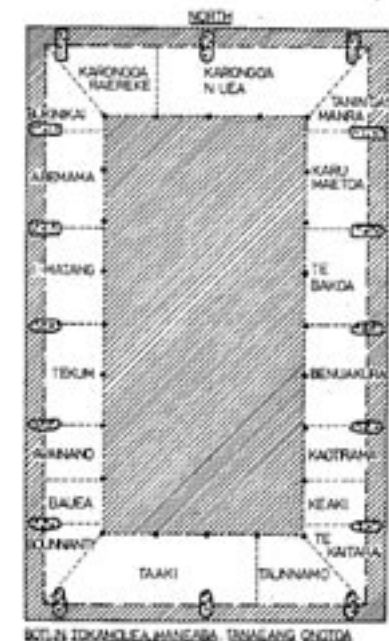
Most traditional Micronesian houses are timber-framed with thatch roofs which in some cases are designed to be lifted off the posts and placed on the ground during strong winds and hurricanes and also for repairs. Wall and floor coverings such as mats are beautifully patterned and exhibit the islanders' varied and artistic range of handicrafts developed as a result of weaving and fine lashing techniques. Islanders make fine belts, baskets, fans, shell body ornaments and coir body armour.

These craft traditions can be observed in smaller islands such as Kiribati (Gilbert Islands) which conform to the typical pattern of Pacific atolls. European contact with Kiribati can be traced as far back as the seventeenth century and has involved traders, beachcombers and missionaries.

By 1825 American, British and Australian whalers were bartering tobacco and iron for beche de mer and turtle shell. These contacts grew more frequent as a result of a demand for coconut oil, until 1892 when the islands became a protectorate of Great Britain and finally a colony in 1916.



The Maneaba, the meeting house of Kiribati in Micronesia where various clans have special areas or boti assigned to them. (Fig. John Hockings)



The most important traditional building in Kiribati culture is the maneaba or meeting house which is based on the building forms brought by Samoan invaders. It has a large pandanus thatch roof, resting on short coral (or sometimes wooden) pillars, around which are clustered little village houses. A maneaba and the social space defined by it provide the key to the identity of each individual as well as the whole community.

This view is clearly supported by the enormous effort and care expended on its construction and maintenance and the high regard with which it is viewed by the people. The maneaba has been considered as the house of the principal deities of Kiribati cosmology, a non-denominational bangota or sacred shrine for the community at large where, in the presence of gods, all the main civil ceremonies, rituals and debates are conducted. Here, unlike in European societies, religion, law and politics are inextricably mixed and the ceremonial feasts associated with these are highly ritualized. Ceremonial procedures are reflected within the building which is used for enacting formal social relationships within the community.

Polynesia

The islands of the Polynesian group include large centres of population such as French Polynesia, Western Samoa and Tonga as well as the smaller islands of American Samoa, the Cook Islands and Niue. Easter Island ruins suggest that Polynesians, at least those in that part of the Pacific, were great temple builders. Surviving relics of low walls and terraces of

coral blocks are surrounded by flat slabs probably used for seating the gods represented in human form and for presenting ritual feasts.

Samoaan buildings typify Polynesian architecture, exhibiting its rich traditions which survive in the form of faa Samoa, or the Samoan way, while incorporating changes brought about by Europeans in the late eighteenth century. Samoa's distinct culture and metai or chieftain system were already well developed over a hundred years before colonial influences began to make their mark and threaten cultural survival.

By 1840, most Samoans had been converted to Christianity by the missionaries. Ten years later, German traders arrived and established coconut plantations with Chinese and Melanesian labour. British and Americans moved in and the jockeying for control continued among the three powers, finally resulting in the division of Samoa into two territories occupied by the Germans and the Americans by the end of the nineteenth century. The British withdrew in exchange for German concessions in Tonga and the Solomons. In Western Samoa, German control ended during World War I (1914-18), and New Zealand administration was brought in to help the Samoans manage their own country.

Most Samoans live in villages near the seashore. Each family has its fale, a house which may be round or oval. It has no walls and hence no privacy in the European sense. A fale is



Samoaan Village

built on a stone platform with mats covering the pebble floor. Mats or blinds are let down to provide shelter from storms. It is a cool, tidy place which allows breezes to flow freely. Food is grown in the village and cooking is done in an earthen oven called an umu.

The most important traditional building is the fale talimalo – the Samoan round house, a more elaborate version of a standard fale which is the stage for all island ceremonies. The structure is of timber poles tied together by black and white sennit string in remarkably intricate patterns. (Sennit is a twine made from coconut fibre or vines.) The carpenter is carefully chosen by the chief who ensures that every rib by tradition has its individual legend of creation and symbols expressing deep Samoan pride in the local culture.

The traditional Samoan fale building has survived despite the influence of missionaries who tore down spirit houses and erected limestone block and corrugated iron roofed churches. These churches and their ancillary buildings dominate the skyline of the islands and have also tempered and changed Samoan tastes and aspirations. Over the years some Samoans have begun to accept European notions of privacy and have built walls with windows where none existed before. The most influential building form in Samoa has been the German verandah houses which were built from the later part of the nineteenth century to the end of World War I.



Samoan Fale

The German houses showed how European house types could be adapted for living comfortably in the tropics. European house building techniques achieved ready or wide application in Samoa. However these techniques had a devastating effect on traditional building and were, by and large, detrimental to the local environment.

By 1945 concrete floors and corrugated iron roofs had become standard in Samoa. The curvilinear end of the traditional fale had been replaced by right-angled wooden posts or concrete block ends. Verandahs, which were the most important component of German houses, were not introduced, because of cost. In most cases, roof overhangs all but disappeared. Samoan owners installed louvered glass windows which, because there were no overhangs, had to be closed off during heavy rainfalls, thus preventing cross-ventilation. Elaborate sennit connections were replaced by nail connections and as a result buildings became more inflexible and thus vulnerable to damage during the hurricanes. The result of the introduction of European building practices was a flood of very poorly designed and equally poorly constructed buildings which defaced a once idyllic island environment.

Melanesia

There are five main island groups in Melanesia: Fiji, New Caledonia, Vanuatu, the Solomons and Papua New Guinea, the last being the largest, both in terms of population and in size. Fiji is on the edge of Polynesia and influenced by its tra-

ditional arts and crafts and its indigenous architecture such as bure (village house). Fijians have developed special skills in assembling building components through a team effort which by repetition has achieved considerable refinement and speed.

A typical bure is built on a platform of large boulders and earth known as yavus which is raised a foot or two (less than a metre) above the ground. Wall posts are made from hardwood round timber and the roof has a timber frame lashed together by sennit, and covered by a thatch made from pandanus or other palm leaves stitched together and laid in 6 ft (1.8m) sections overlapping one other. The thickness of the walls varies according to climate. In dry areas rows of reeds are lashed together and form a screen which allows ventilation. In wet areas this screen is lined with thatch on the outside.

The complexity of Melanesian architecture is clearly evident in Papua New Guinea. Archeological studies have indicated that the main island of New Guinea was inhabited by tribes whose origins can be traced back to 800 B.C. and it is likely that the first people arrived there as long ago as 50 000 B.C. During the nineteenth century the western half of the main island was occupied by the Dutch and the eastern half was shared by the British and the Germans. Australia became a federation in 1901; in 1906 is agreed to take on the responsibility for British New Guinea, and after World War I also began to administer German occupied areas.

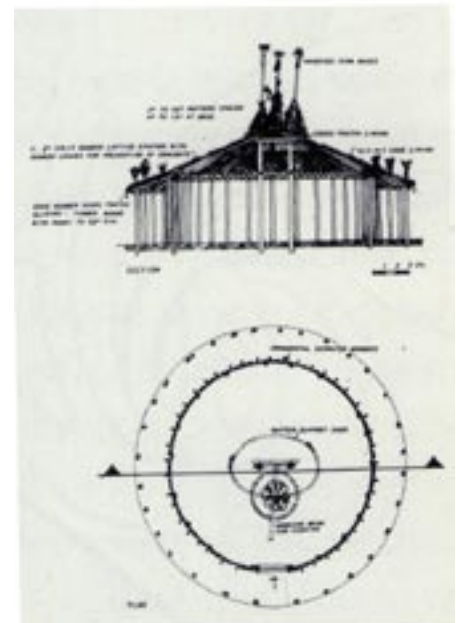


Fijian bure (village house)

The whole of the eastern half of the main island, with adjacent islands and the arc of islands extending from Manus to Bougainville in the Solomons lying between three and ten degrees south of the Equator, add up to what is now called Papua New Guinea. It is a region of extreme variety; the mangrove and sago swamps of the coast sharply contrast with the steep and rugged mountains and gorges of the central island. Torrential rivers flow from the ranges, the largest being the Fly, the Purari, Markham, Ramu and Sepik. In some areas, the rivers are broad and navigable, but in others they taper off into vast swamps. Here, the usual rainforest is replaced by swampy forest of palms and vines.

By contrast some of the volcanic regions such as New Britain are gardenlike in appearance. The climate too varies considerably. Generally, like the rest of the Pacific, it is warm and humid with little change throughout the year. However, with elevation, it ranges widely from humid tropical on the coast to alpine with occasional snow falls on the highest mountains such as Mt Wilhelm. It is one of the wettest parts of the earth's surface. So the traditional building materials are the products of the tropical forests and the people use thatch from kunai grass and mats from pit-pit and bamboo.

The architectural expression is as varied as the people who, because of geographical barriers, have remained comparatively isolated, separated into sub-groups, living along coastal strips on the islands, in the valleys and in the mountains.



Chief's house Mount Hagan
New Guinea

This isolation has encouraged a bewildering multiplicity of languages and customs.

Consequently, there are remarkable differences in cultural and social organization. In some areas a man and his wife (or wives) live in a detached house; in others, a single building serves the whole community. The community is important in most areas, with a village or a group of villages being the social unit. Houses vary greatly in type; some are temporary, while others are elaborate and well constructed. In some villages there is scant decoration; in others it is essential, and the wood carver, the poet and the dancer are the most honoured in the community.

The central Highlands of the great island are the most thickly populated areas. Here the design and layout of buildings provide an interesting physical framework for living and reflect in some measure the kind of life people lead and the way in which they are organized. The basic shelter unit is a circular hut with a diameter of 17 to 20 feet (5.2 – 6m) whose walls have intricately carved supports. There are separate houses for men and women and all are located around a sing sing ground which is the focus of village life, ceremonial dances, initiation ceremonies and other community activities.

Along the coastal strip on the south of the island people live mainly by fishing and trading in their canoes. People like the Motu are watchful and build their houses on stilts well above the sea to guard against surprise attacks. However, this is not

typical of all coastal houses. Local practice is invariably governed by superstitions as is the case with Trobriand islanders who generally build their dwellings firmly on the ground. The reason is the fear of a sorcerer who might otherwise light a fire under them.

Most coastal houses are based on simple rectangular plans. The side walls are closed for privacy, but the front is always open towards the sea to catch the welcome breeze. The structural frame is simple and members are lashed together by coconut fibre sennit. Mats in various patterns are used for cladding walls, while the roof is thatched with pandanus (spike pine) or palm leaf, whichever is locally available.

Across the north-western part of the main island, life is very much dominated by the Sepik River which runs a course of well over 700 miles (1126km). The people of this region build simple A-framed huts scattered along ridges at different levels and enclosing a variety of open spaces. The roofs and walls are covered with a thatch of dry sac-sac palm leaf and they peak forward like a leaning tent with an open front.

There is also a larger structure called the haus tambaran, the sacred house. It is essentially a ceremonial house which is used only by men. Women and uninitiated boys are forbidden to enter. It is the architectural culmination of the male ethos of Sepik society and the centre of the village.



above: Coastal village house in Papua Below: A simple A framed Sepik hut



It houses all the ritual objects associated with ceremonies, that is, masks and assorted decorations and also objects such as drums and flutes which are used more widely.

The haus tambaran, a dramatic sight, is basically a giant version of the village house, the only difference being the front, which is closed. The base is approximately 30 ft (9m) wide and the series of A-frames made from log timber sometimes soar as high as 100 ft (30m) into the sky. The structure is held together with vines and the outer surface is covered with thatch.

The front is closed with flat sheets of sago palm bark all sewn together and smoothed for painting. This painting consists of some of the most dramatic and colourful patterns and designs found in the Pacific region. Rows and rows of faces depict ancestral spirits, long and vivid, with staring eyes and scarlet peak headdresses, all very clear, strong and beautiful in the blazing sun of the tropics.

Like Kiribati's maneaba and Samoa's talimalo, the Sepik's haus tambaran provides a stage for ritual essential to continuity, mental well being a sense of security in an environment continually threatened with changes since the first European incursions into the Pacific.

In Papua New Guinea, these changes were first caused by the Germans, and then by the Australians, who introduced timber for framing, corrugated galvanized iron for roofing and



*Above: Haus Tambaran
Facde Below: Haus Tam-
bran in Maprik village Sepik
New Guinea*



flat asbestos cement and plywood sheets for wall lining. The concept of a window as a hole was introduced. The result was that by the end of World War II (1945) much of Papua New Guinea's urban landscape had already begun to look more and more like a slice from northern Queensland and less and less a part of the Pacific community.

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