What Lay Beneath?

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By peeling back the layers of the wider Port Phillip landscape to reveal what lay beneath, buried under two centuries of built form from European colonisation including houses, roads, factories and shopping centres - what would be left? Imagine for a moment a landscape that had been carefully managed for over 65,000 years by communities who were deeply and ecologically attuned to a particular ecosystem. A landscape created to appear more like a Picturesque 'gentleman's parkland', where the understorey was not a dense thicket but cleared and manageable to enhance foraging; enable navigation or easy animal herding. Instead of nomadic wanderers, there were communities of people living in houses or stone huts, like those made by the *Gunditjmara* People at *Tae'rak* (Lake Condah). Some of these homes were often surrounded by agricultural pastures like we have today, where fields of indigenous grasses were cropped for their grain to make the world's first bread – tens of thousands of years before the Ancient Egyptians were claimed to have invented bread around 8000bce. A landscape that hosted communities of people who had a sophisticated sustainable philosophy and approach to managing and caring for the lands and waters, who moved with the seasonal harvest so they did not deplete the natural resources in one location, and had an attuned understanding of the ecological fabric of the landscape. This paper considers the Port Phillip landscape of the Kulin Nation, specifically the *Wadawurrung* language group, and it 'de-constructs' this landscape to reveal an alternate civilisation, and offers thoughts as to a more attuned approach to 're-making' the landscape.

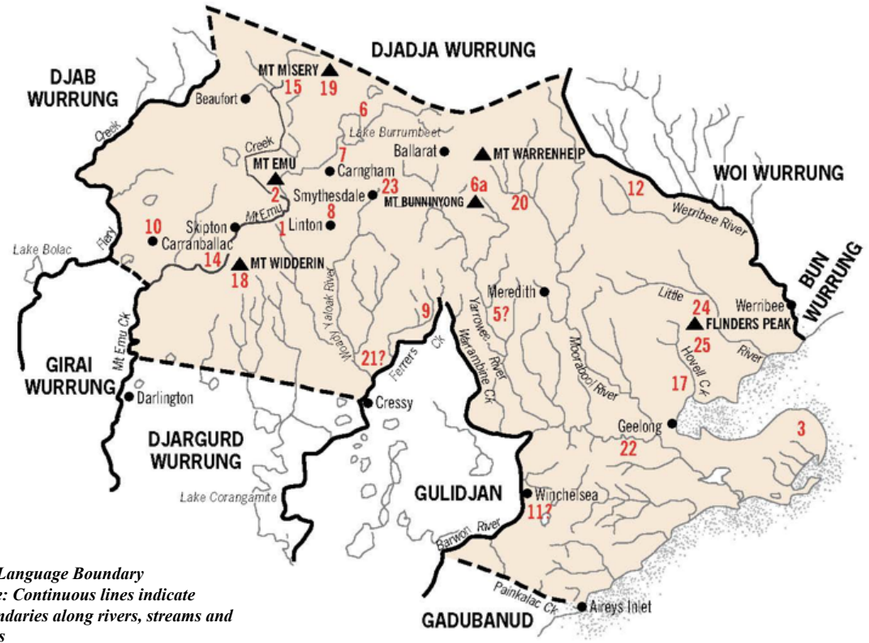
Keywords — *Wadawurrung; Biodiversity; Ethnoecology; Ethnobotany.*

Introduction

Australian Indigenous People are considered one of the longest surviving nations on the planet. The latest evidence suggests that human occupation of Australia occurred over 65,000 years ago.[1] The Eastern *Kulin* nation was an alliance of four Aboriginal language groups that spoke related languages. Two of these groups resided around the shores of present day Port Phillip Bay – the *Wadawurrung* and *Boon wurrung* language groups. 'The name *Wadawurrung* is a recognised language group which consisted of some 25 clans or family groups that have lived within the western part of this region for more than 25,000 years.'[2]

The *Wadawurrung* lived, and continue to live in the Greater Geelong Region and beyond as far as Beaufort, Cressy, Aireys Inlet and Queenscliff.[3][4][5] They were a powerful language group with access to various natural and mineral resources prized for trading amongst neighbouring language groups and beyond.

Occupying a territory of over 18,000 km², *Wadawurrung Country* encompasses a significant ecological diversity including rainforests in the Otway Ranges to the open woodlands of central Victoria. Between were grasslands, freshwater and saline lakes and wetlands of the volcanic plains, and a *Country* edge of ocean and bay coasts hosting a great variety of terrestrial and aquatic flora and fauna, in part unique to this *Country* and advantageous for *Wadawurrung* trade and sustenance.



---- Language Boundary
Note: Continuous lines indicate boundaries along rivers, streams and lakes

Wadawurrung Country. Source Ian D Clark, Aboriginal Languages and Clans, Number 37, p 311

The primary reason for their success in achieving such longevity is in part the ecological diversity that the *Country* provided, coupled with their traditional land management techniques and knowledge of *Country*, along with the generational transmission of this knowledge. Sadly, when Geelong was colonised by Europeans in 1837, a generation of the *Wadawurrung* People living in *Country* were decimated due to genocide, displacement and disease. Across the Australian continent, it has been estimated that 'smallpox killed far in excess of 70 percent of Aboriginal People in the late eighteenth and early nineteenth centuries.'[6]

Today's Greater Geelong Region landscape is a reflection of contemporary activities with schools, shopping centres, sports stadiums, office blocks, churches, factories and warehouses linked by roads, railways and foot paths.

The pre-colonised landscape also reflected the activities of the day. The pre-colonised landscape held symbols of lifestyle to a large extent as today does and a great deal of this tangible evidence still survives although a lot has been erased through the course of time and lack of awareness. Stone houses, kitchen middens, artefact-laden camping venues, aquaculture structures and fish traps, places of worship (ceremonial sites), ceremonial exchange centres, stone circles, scarred and ring trees, human-constructed water storage facilities (carved waterholes), rock art and stone quarries amongst many others exist today as tangible evidence of *Wadawurrung* pre-colonised society.

Peeling back the layers of colonisation reveals the well-worn passages or journey routes across the landscape to key

locations that hosted critical economic resources for trading amongst neighbouring language groups or beyond such as the *Wadawurrung*'s cleverly crafted stone axes. The *Wadawurrung* would source the wood from stands of Red Ironbark (*Eucalyptus tricarpa*) trees at Jan Juc – a timber extremely durable and ideal for hafting as axe handles, whilst the green stone for the axes was quarried from Batesford or Dog Rocks.[7] [8] The hafting mastic which joined the two components together was made in a particular way by the *Wadawurrung* that gave it a superior hardening quality and was observed by colonialist James Dawson as being a prized commodity that was traded far and wide throughout what is now known as the Western District.[9] [10]

When we consider remaking a landscape, an approach to contemplate may initiate a reflection on how modern society lives the way we are living. However, reflecting on the societies that came before who lived successfully for thousands of years in the same region maybe a more apt place to start. This paper is a reflection on the pre-colonised societies which may help us find answers for the future, teaching us how these societies achieved longevity by being dependant on the environment but without impacting it in the same way modern society has.

Discourses In Australian Landscape Management

When explorers arrived to the shores of Australia they classified Indigenous People as 'primitive' based on observations of their processes of acquiring their food,

> *"... cultural distinctions were made between those 'primitives' who derived all of their food from hunting and gathering wild sources, against those more 'civilised' groups who primarily relied upon nomadic pastoralism or horticulture."*[11]

The simplistic label 'Hunters and Gatherers' has type-cast Australian Indigenous Peoples (Aboriginal and Torres Straits Islander peoples) and has influenced popular thinking and media since colonisation. However, Clarke explains that because of their supposed reliance upon 'stone age' technology, Aboriginal People were not credited with having had a major impact nor influence upon the development and management of the Australian landscape. Rather, they were seen as 'entirely opportunistic foragers.'[12] Clarke further adds that 'a detailed examination of their socio-religious traditions and environmental knowledge provides compelling evidence against this.'[13] Their environmental knowledge or traditional ecological knowledge helps us to understand the day-to-day lives of Aboriginal People's existence and reliance upon plants prior to colonisation. This existence was heavily dependent upon plant matter for most of their daily needs, processes and comforts. This need outstripped their landscape carrying capacity suggesting a more sedentary *Country*-specific lifestyle.

In archaeologist Lane's review of the *Tae'rak* (Lake Condah) aquaculture-based settlement of the *Gunditjmara*, she concludes that the inhabitants in this area enjoyed an affluent society given the prolific natural resources at their disposal creating a semi-sedentary life about the lakes.

> *"It was only during prolonged, severe drought they were obliged to leave their round stone dwellings with roofs of boughs and brush, sealed with living turf, to itinerate in search of aliment."*[14]

A more sedentary lifestyle is supported by archaeological evidence of middens in various locations in *Wadawurrung Country* that possess accumulated mass from over thousands of years.[15] [16] [17] Thus, the *Wadawurrung* were not nomadic as early myths by early settlers suggest including Batman[18] [19] or in surveyor Wedge's diaries,[20] but they possessed a far more complex and organised society as evidenced in Buckley's[21] and Robinson's diaries[22] or in Dawson's writings.[23] The latter is, in a contemporary context, also supported by Lane,[24] Pascoe[25] and Ferrier,[26] and from a larger Australian perspective, Clarke.[27] *Wadawurrung* pre-colonisation lives appear to have been sedentary to a point, up until their foraging distances became beyond a comfortable commute. 'Indigenous People did move but the movement was predictable, on a circuit established over tens of millennia and based on specific weather conditions'.[28] The migration of people followed the rhythm of nature within their *Country*. Drivers for relocation may have included avoiding depletion of their natural resources; responding to the seasonal weather to gain protection or enjoying the refreshment of a coastal location during the heat; enjoying seasonal harvest and responding to extreme environmental situations such as drought.

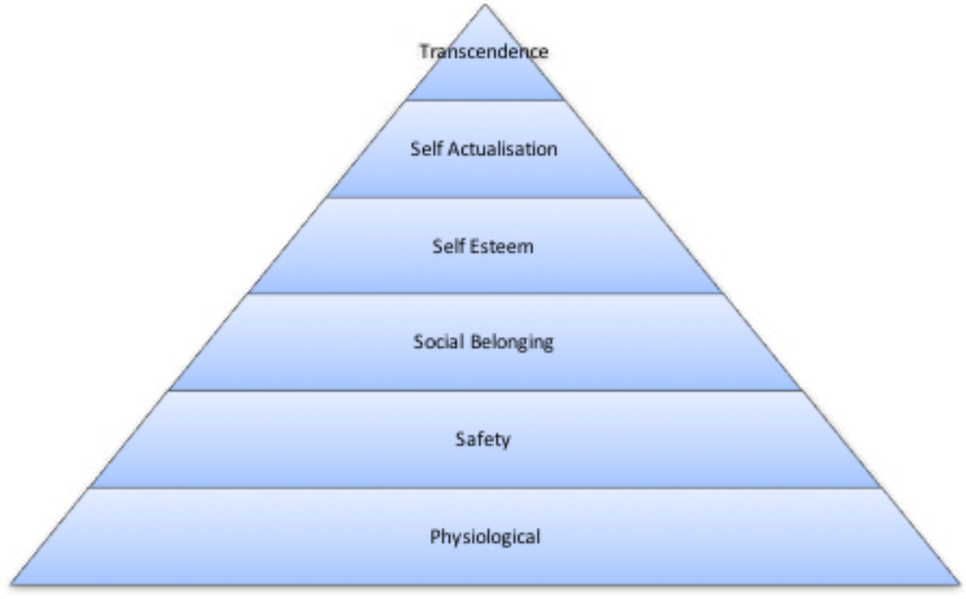
This seasonal migration theory is dependent on whether the *Wadawurrung* 'grazed' the available plant resources supplemented by firestick farming to enhance their foraging gains, or whether they 'cultivated' the land and planted it with seed or tubers to develop agricultural crops for a geographically confined harvest.[29]

These symbols of pre-colonisation activities suggest that Indigenous People were not only hunters and gatherers, but when they were not spending time on collecting supplies and food for the required number of meals and people, they were spending their time on varied activities. Some of these activities included processes for making tools and implements to aid in the hunting and gathering processes but there were many more complex activities that consumed the hours in their day other than thinking about feeding themselves and their community. During the summer months there can be over 16 hours of daylight in a day and even if half of this time was dedicated to rudimentary hunting and gathering tasks there is still plenty of available daylight hours to fill the day with other activities. As humans they would have needed to satisfy a lot more than appetite to live successfully as a civilisation for over 65,000 years.

Hunting and gathering is just one of several Aboriginal sophisticated processes for surviving for as long as they have, but it would be more appropriate to redirect thinking and celebrate the sustainable, selfless, philosophy behind the many approaches they employed. This philosophy underpinned all that they were and all that they did, and the landscape that they resided thereon was a reflection of that.

If we refer to North American psychologist Maslow's 'Hierarchy of Needs',[30] which is a sociology theory based on the motivation of humans within a society driven by innate needs, and we overlay this theory onto the lives of the pre-colonised Wadawurrung, then the theory demonstrates that perceiving the Wadawurrung as merely 'Hunters and Gatherers' is short-sighted and limiting.

Maslow's Motivational Model – Hierarchy of Needs



Based on Maslow's theory, the first level category of 'Hunting and Gathering' only satisfies rudimentary physiological needs for basic survival. Ensuring there is sufficient food, water, clothing and shelter were no doubt priorities in the daily routine, but aside from food and water, clothing and shelter did not need to be created from scratch every day.

After satisfying elementary needs for survival, ensuring the safety of your family and community would have been the next priority. Australia is fortunate enough not to have many aggressive predators during pre-colonisation times, bar the occasional wild dog – or dingo and even rarer was the occasional sparring language group where wrong doings may have sparked animosity and conflict. Defences such as weapons were at the ready and locations for residing were not only close to freshwater but often near a river bend with a vantage point to view oncoming traffic.

However, human security extended beyond preparing for predators or disharmony amongst language groups. It also included ensuring against ill health by understanding the available treatments for the typical type of injuries or ailments and the suitable remedies and locations to acquire these ingredients for these healing concoctions.

The third level on Maslow's 'Hierarchy of Needs' is 'Social Belonging' – feeling a sense of belonging to a community through relationships with friends, family and achieving some sort of intimacy. This can be achieved in some degree through daily routines of going to work together every day to satisfy physiological and safety needs. However, as with contemporary Western lives, social belonging can be achieved through less mundane routine tasks but more in spontaneous or fun activities such as sport, song or dance, religious or spiritual activities, and feeling a sense of community or belonging to a group and sharing in these experiences.

With collective interaction comes human need to have 'self esteem' and feel respected and valued by others. This often comes from having a defined role in the community and reliably undertaking this activity and delivering the requirement for this role. But it also needs to be achieved in the non-work related capacity too. These non-work related activities may see the individual engage in a hobby or function that gives the individual a sense of contribution that is more value-adding than simply supplying physiological needs and could be a means for achieving an individual's identity. It could include activities like being a good story teller, costume maker, basket weaver, or fisherman who knows where to find delicacies that go beyond the staple diet.

Maslow's fifth level - 'Self Actualisation' is achieved when an individual realises their full potential – they have defined and are living their identity be it the head of the clan, the fisherman, the story teller, the costumer maker, the house builder, the cook, the water bearer, the weapon maker, the singer(s), the musician(s), the teacher, the message stick runner, the builder, the doctor, or the parents of the next generation.

After a period of reflection, Maslow returned to his 'Hierarchy of Needs' refining the top of the pyramid with what he called 'Self Transcendence' which means being motivated by 'values which transcends oneself'.[31] Maslow perceived this to be a 'holistic level of human consciousness, behaving and relating, as ends rather than means, to oneself, to significant others, to human beings in general, to other species, to nature, and to the cosmos'.[32] This maybe a naïf description of utopia and an expectation beyond reach, but this was a reality and everyday way of life for Australian Indigenous Peoples. This transcendent philosophy was enabled through communication via journey, song and dance, and storytelling of the Dreaming.

Under the governing umbrella of their transcendental philosophy was the belief that they were the ephemeral inhabitants of this *Country*; this meant that they cared for the land in anticipation for the return of their ancestors and for future generations. This was an advanced sustainable philosophy that modern society has only started to embrace in recent decades, and begs the question of how far has modern society evolved in adopting the mindset of sustainability defined by the Brundtland Commission of 1987 as 'meeting the needs of the present generation without compromising the ability of future generations to meet their own needs'?

Australian Indigenous Peoples were a developed society, not too dissimilar to today whereby all members of the community were engaged in activities. These activities include: children being educated; Elders serving as knowledge holders and transmitting knowledge as teachers to their community; community members partaking in tasks of trade to support the maintenance of their livelihood (health, wellbeing and their homes); and communal planning for their future directed by the seasons and lore. The key difference is that the Australian Indigenous Peoples were not driven by the trappings of capitalistic desires, but evolved through a transcendent philosophy.

Biologist and Professor Emeritus at Harvard University, Edward O. Wilson, considered one of the 'world's greatest champions of biodiversity'[33] and named one of the century's leading environmentalists by both *Time* and the *Audubon Magazine*, believes we have a transcendent obligation to all life'.[34] To achieve this level of belief system and philosophy across the masses in the modern world may feel unattainable. For tens of millennia the Australian Indigenous Peoples held this transcendent approach to living whereby they believe they are a biological species in a biological world; there is no different to how they would nurture and tend to their children to how they nurture and tend to the land and all that is in it. Indigenous Peoples were the holders of the 'precious knowledge of the properties of plants'[35] and they knew how to manage the land so all living species could prosper. Australian Traditional Ecological Knowledge (TEK), that had been finessed and refined for over 65,000 years and story-told through the generations, was largely lost in one generation after the European colonisation of the Australian landscape.

As an inverse result of the 'economic progression' of modern society is the demise of traditional knowledge holders along with species extinction that is happening at an exponential rate with both plants and animals. The United Nations recognises that the threat to ecosystems, and specifically species, has never been as great as it is today. 'Species extinction caused by human activities continues at an alarming rate.'[36] The world is under stress like never before with over population and food scarcity, the earth's natural resources are increasingly depleting, there is degradation of the environment and an increase in CO^2 levels, pollution is impacting upon global warming and depleting the ozone layer, there is an increase in toxic waste, plastics, pesticides, synthetic textiles, as well as damage from nuclear catastrophes and environmental poisoning.

Wilson asks 'why is this happening?' He believes the ultimate reason is globalisation:

> *"We now live in a world where the dominant economic and political forces are aligned to encourage uniformity and the seamless global interchange of products and information. Government policies generally favour developing resources for human use, which simplifies the landscape as it destroys wild animal and plant habitats. Similar policies promote linguistic unification either directly, through sanctions on minority language use, or indirectly, such as by concentrating economic opportunities in cities, thereby making it more difficult for the rural areas in which most languages evolved to remain viable places for the next generation of speakers'.*[37]

At the turn of the new millennia we witnessed a great rise in globalisation and standardisation brought about by political and economic pressures which resulted in homogenisation of cultures, languages and the process of doing things. Globalisation today drives population outliers, usually Indigenous communities, into the city. As a result they lose their identity, cultural differences, and way of living. A negative impact of homogenisation is the loss of biocultural diversity meaning a loss of our options and restrictive limits upon our potential for thinking and approaches to life.

Wilson believes that 'diversity in nature and culture is the genuine condition of life on Earth,'[38] and that

> *"... biodiversity is the intertwined fabric of our lives. By caring for it we are caring for ourselves. We are the mind of the living world; we must become its guardian and steward. To strive against the odds on behalf of all life would be humanity at its most noble. We can share this precious planet of ours so all life can prosper."*[39]

Wilson advocates the urgent need for research to understand the biodiversity found on earth to mitigate further extinction and destruction of ecosystems. Wilson warns, 'The loss of a keystone species is like a drill accidentally striking a power line. It causes lights to go out all over.'[40] From his perception, the world needs a better way to manage the use of natural resources and protect vulnerable species and communities.

The United Nations (UN) promotes that 'the Earth's biological resources are vital to humanity's economic and social development. As a result, there is a growing recognition that biological diversity is a global asset of tremendous value to present and future generations.'[41] In 2002, the *Convention of Biological Diversity* (an arm of the UN) adopted a *Global Strategy for Plant Conservation* (GSPC). This GSPC was subsequently updated in 2010 with the aim of freezing loss of plant species worldwide by 2020. The updated GSPC includes 16 targets. Objective (2) of Plant Diversity Conservation, Target 9 stipulates that

> *"... 70 per cent of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species are conserved, while respecting, preserving and maintaining associated indigenous and local knowledge."*[42]

Wadawurrung Country and Plant Resources

The *Biological Resources Study* undertaken across Australia in 2009 estimated that 566,398 species exist in Australia, of which 24,716 are plant species.[43] Australia's biodiversity has developed largely in isolation over many millions of years, making it one of the world's mega-diverse countries. Clarke believes 'the Australian flora contains more than 20,000 terrestrial plant species which are economically and culturally significant to Aboriginal People.'[44] These people understood the diversity of plant species, where they grew and the impact of seasonal growth and appropriate times to harvest. They arranged for ceremonial gatherings with neighbouring language groups to share in feasts or to trade the surplus when their food sources were in abundance.

Sadly less than 5% pre-colonisation remnant vegetation remains in *Wadawurrung Country* around the Greater Geelong Region. However what remains in this *Country* is an area that supports a higher than expected number of rare or threatened plants and animal species. The region provides a great deal of diversity with over 1,000 indigenous plant species that was recorded in 2001/2002 as a stock take on the region's biodiversity inventory. Of these there are 82 classified rare or threatened Victorian species that are supporting over 100 rare or threatened native animals and birds.[45] Gott, a Victorian-based ethnobotanist, has identified over 900 plant species that held significance to Victoria's Indigenous Peoples,[46] it is anticipated that many of these species are also found in the Greater Geelong Region.

It is very evident that the *Wadawurrung* used plants in every aspect of their daily lives, in every day processes and daily activities. They used plants in a way that modern day society would consider as sustainable and they maintained biodiversity as result of their transcendent philosophy[47] that guided every thought and action. For example laws were maintained that avoided depleting natural resources and they employed techniques such as firestick farming[48] to germinate new growth to continue the life cycle of species or to clear the competition of undergrowth and the practice 'ensured the maintenance of open sites for the growth of all the herbaceous perennial food plants.'[49] There were laws that prevented the removal of 'children' plant tubers that would become a future meal for the following season, or no plant bearing seeds were to be dug up after they had flowered to prevent the loss of seed dispersion and thus regeneration.[50] No patch was completely denuded, and there was deliberate replanting of tuber-bearing species.[51] They would rather relocate an entire clan than remove the remaining plants from the land to ensure full regeneration in readiness for next season's harvest.

They would plan ahead for future sustenance and prevent long term depletion of species.

Additionally many plants, especially woody stemmed plants, had multiple purposes; they would rarely remove a plant for singular use. For example the River Red Gum (Eucalyptus camaldulensis) had many uses; many parts from this plant were used for seven known different medicinal purposes by the *Wadawurrung*, for example:

1. The bast (inner bark) of trees contained the aromatics of the cambium layer and was beaten and infused to make an antiseptic lotion and applied to sores, lesions and scratches;[52]
2. The gum exuded from the tree was mixed with water and taken for diarrhoea;[53]
3. The nectar from the flowers would be shaken out in the heat of the day and applied to shallow wounds before bandaging; [54]
4. The kino (dark red dried juice) was chewed by a patient to delimit a persistent cough; [55]
5. Seeds were used for snacking when travelling to keep human energy levels high; [56]
6. The leaves were doused in water and arranged in a hot stone pit with the patient laying on top wrapped in skin rugs and covered in bark to trap the steam to cure bronchitis; [57]
7. The resin was heated until melting and plastered on sores, wounds or burns to act as a seal; [58]

Not only was the tree used for medicinal purposes, but its thick branches were used for making all sorts of tools, including canoes to transport themselves to different locations or for fishing.

Australia's Indigenous Peoples, including the *Wadawurrung*, identified how to use plants (and their parts) in every aspect of their day to day lives. Tables I and II summarise some of the properties of different plant parts and their uses as identified from Lane's research. As parts of plants were used in nearly every aspect of the *Wadawurrung* People's daily lives the tables below serve only as a summary of their knowledge of the versatility of plant parts and the various ways in which they can be useful. It is not intended that these tables are a complete list, nor is this paper intended to reveal the complete ethnobotanical practice of the *Wadawurrung* People.

fruits/berries	seeds	stems	rhizomes
nuts	foliage	gums	roots
tubers	fungi	kernel	galls
nectar	fibres	sap	bark
bulbs	shoots	piths	flowers (blossom)
manna/lerp (insect sugary exudations) on leaves	beverage (from the roots)	sporocarps (seed-like growths from ferns	mycorrhizal fungi around roots
cladodes	timber/branches	seed cones	stalks
corms	grains	kino	bast
resin	aril	culm	spores
buds	mannitol	stolons	tendrils
rutin	cineole		

Table I: Plant Parts

Food	Tools	Weapons
Medicinal	Totems	In Song and Artwork
Narcotics	Clothing	Implements
Stimulants / tobacco	Shelter / Shade / wind breaks	Calendar plants
Adornment / ornament / decoration	Ceremonial objects/ Mythological	Firewood and torches
Fishing	Glues /adhesives	Insect repellent
Poisonous / harmful	Water	Fibres for weaving baskets
Water transportation	Plants used in capturing game	Children's play and learning aids

Table II: Plant Uses

The Australian Indigenous People, of which the Wadawurrung were but one community, managed to apply these techniques for more than 65,000 years by teaching each generation and everyone in that generation how to be active managers of the land. They taught that nothing lived in isolation therefore there were consequences to everything. They taught this in everyday activities and by telling stories and through a transcendent philosophy which governed all thought and action.

Conclusion

Peeling back the layers of European colonialism of the Australian landscape to reveal what lay beneath evidences a complex society of Australian Indigenous Peoples who were more than just 'Hunters and Gatherers', but a society engaged in multi-faceted and complex varied activities determined by a robust set of human, ancestral and environmental laws. While their daily routines included rudimentary hunting and gathering and activities creating social belonging, self-esteem, self-actualisation and ultimately self-transcendence, such a philosophical approach governed all thought and action and underpinned many of their intricate processes. They lived for thousands of years because their core values transcended individual values, resulting in a sustainable culture and regime as caretakers of the land and all its resources for future generations. They lived a semi-sedentary lifestyle that moved in a predictable circuit according to seasons which are still evident in today's landscape. They optimised the land's harvest by understanding its benefits and varied uses without risking exhaustion of their primary resources – plants, either collectively or depleting an individual species.

Although modern society has only relatively recently coined terms such as 'sustainability', 'ecology' and 'biodiversity' the Australia's Indigenous Peoples have for thousands of years understood the fundamental principles that make up what we ignorantly think of as modern concepts. The *Wadawurrung* People were ecologically attuned and understood the value of biodiversity and how to protect these habitats because they relied on a broad range of plant species for use in nearly every aspect of their day-to-day activities, so they had to ensure these plants were sustained for the long term. They understood the environment in which they grew and how to avoid depleting these resources. This very aspiration is embedded in the United Nations' *Convention on Biological Diversity* that places an obligation upon all humans to avoid further species extinction through mandated global targets.

Whilst planning to remake our cities is there a measurable target for avoiding the depletion of natural resources and ensuring biodiversity? If these targets exist, how far into the culture of the governing organisation does this philosophy extend or are they targets standing in isolation for the purpose of ticking a box?

Maybe the philosophy, principles and techniques applied by Australia's Indigenous Peoples could hold some answers to achieving these targets and to slow or halt further species extinction whilst remaking our cities.

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