Ideas are Ecological: Human Ecology in the City

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Ecology has expanded beyond its origins as the interdisciplinary, scientific analysis of biology and earth science to a way of thinking about many systems of interdependent components. While cities have largely been abiotic influents on the natural order of systems that pre-dated their construction, cities also support ongoing ecologies, both natural and human, wherein the human species plays critical roles.

If it were logical to include humans as a species co-existing with other species within cities, even to consider humans as something of a keystone species, then it would be prudent to include human behaviour and human ecology in our understanding of city habitats.

Recent philosophies such as "object-oriented ontology" (OOO) "reject the privileging of human existence over the existence of nonhuman objects".[1] If OOO, as a way of thinking, would allow us to accept human behaviour as merely that of another species, then human imagination would be part of the ecosystem instead of standing aloof from it.

For example, Singapore, as the "City in a Garden", positions humans as a keystone species, authoring and maintaining biological systems as a major part of its physical fabric. The "garden", though biological, is a human construct. Even so, the garden will have ecological consequences through means such as hosting other species and tempering microclimates.

Aspects of human ecology are perhaps more visible in cities where the entire environment is human-made. Media ecology, in particular, cites all of our technologies as determining human perception and understanding. In this context, "City in a Garden" postures as a brand among the media ecologies of global cities, enhancing its desirability and promoting its reputation as a place for human "resources" to expend their careers. The "City in a Garden" becomes discernable, only to humans, as a cultural product, immersive and informative.

A global ecology of ideas

The "City in a Garden" is an idea, a weapon in Singapore's cache in maintaining its position as a competitive global city. Moreover, Singapore is perhaps the first contemporary city to represent itself as an idea worth emulating—not just a city with

a few iconic projects, but the whole of the city as an iconic idea. The "City in a Garden" is at once a biological ecology as well as an idea fighting for ongoing survival within media ecologies.

The theory of memetics postulates that ideas themselves behave in ecological ways, as memes—ideas, behaviours or styles that spread from person to person within a culture. The genius of the "City in a Garden" idea might be its fusion of natural and human-made regimes, the genetic and the memetic, two systems mutually reinforcing each other through time, as well as its utilisation of living systems as a brand. Singapore is now an ongoing case study of natural biological systems integrated into architectural tectonics and civic design. This is a grand meme, more than an idea that spreads within a culture; it is an idea that defines a very culture.

The recent World Heritage listing of the Singapore Botanic Gardens by UNESCO consolidates the significance of the city's garden ideas to humanity. Since Singapore's Botanic Garden now enjoys the same World Heritage status as Sydney's Opera House, we can expect the alignment of Singapore's brands of "city" and "garden" to be as productive as Sydney's "city" and "natural setting". Indeed, common to both Singapore and Sydney is the charisma between the human-made and the natural.

Sydney, by way of contrast with Singapore, has quite a different relationship with its natural context. It could be argued that much of Sydney's attractiveness can be attributed to pre-existing geography—the beaches, the harbour, and the

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lifestyles that can be wrought in and around them. Its setting is based on its original character, with ecological connectivity to a vast continent and remnant connectivity to its ecological past. Hence, authored urban design plays less of a role in Sydney's brand than many cities.

On the other hand, Singapore's natural context is a human-made garden. Its brand, "City in a Garden", is overlaid and designed into human-made ideas on an island that has been almost entirely urbanised.

Birds and sydney
Slow but observable patterns

The intermingling of nature into the fabric of Sydney is one of the factors that makes the city such a desirable place to live. Birds are a conspicuous part of this attractiveness, appearing in great numbers in parks as well as streets and balconies of apartments.

Bird watching becomes an inevitable interest in Sydney, an activity that connects us to the patterns of behaviour of the species that surround us. Some patterns appear over many years, emulating the speed of change in the physical nature of the

city itself. Perhaps this pace of deliberation over decades, in matters of urban design, is innate to our biological behaviour as a community.

I have observed one such pattern concerning birds in the decades I have lived in Sydney. About 30 years ago, there was heated discussion about the explosion of the currawong population in Sydney. The currawong is an omnivorous bird that eats almost anything, including the eggs of other birds and myriad food wastes of humans. Taking refuge in Sydney from a drought, they were pushing out other familiar species in large numbers.

In recent years, we do not see as many currawongs. Curiously, we are now awoken in the spring by the assertive squawks of Channel-billed Cuckoos that make the effort every year to fly down from Papua New Guinea to breed. They do this by laying eggs in other birds'—currawong's—nests, such that when the young cuckoo is hatched it kicks its currawong foster-siblings out of the nest and is fattened up through the misplaced maternal instincts of the currawong. It then flies back to Papua New Guinea with its folks at the end of its first summer.

Is it possible that the explosion of currawongs created the context for a breeding ground of Channel-billed Cuckoos? Such ecological wars of the birds are being waged between our houses and apartments every day. No doubt word will soon spread in Papua New Guinea of the shortage of currawong's nests in Sydney, and something else will evolve.

Such patterns of competition are slow, yet discernable. So too are the patterns of the evolution of cities and the ecologies of ideas that inform them. While the ecosystems of Sydney comprise remnant species, it is also true that humans have determined their trajectories through both ignorance and design.

Disruption of ecosystems

Australian ornithologist Tim Low published an eye-opening book in 2014 titled *Where Song Began: Australia's Birds and How They Changed the World*. His book demonstrates that highly assertive and noisy species compete for nectar from the plants

1. PARKROYAL on Pickering demonstrates that the genius of the "City in a Garden" idea might be its fusion of natural and human-made regimes, the genetic and the memetic.
2. Skyville@Dawson dramatises Singapore's "City in a Garden" idea by both embracing nature within its design and by framing nature in the city beyond.
3. OUE Twin Peak defines its civic edges with richly granular amenities in a landscaped setting.

they pollinate while feeding, and various roles in transporting pollen have major impacts on the spread and diversity of trees.[2] All of these forces are in play in cities as much as they are in agricultural land and bushland.

From my apartment, which is about three kilometres from Sydney's Central Business District (CBD), we are frequently visited on our balcony by a diverse number of bird species including Rainbow Lorikeets, Sulphur-crested Cockatoos, King Parrots, Brushtail Possums, and Ringtail Possums. From time to time we see nocturnal tawny frogmouths roosting for the day outside our window. The Rainbow Lorikeets are usually accompanied by Noisy Miners, which act as a mob trying to evict the lorikeets from the trees supplying nectar.

Agriculture and urban development have disrupted pre-existing ecosystems and have led to conditions that favour birds such as the Noisy Miners, historically a bird that inhabits the fringes of forests. Our thinning of forests and thin forestation of cities has given a habitat advantage to the Noisy Miner. They behave collaboratively and create destructive conditions for other species. A 2012 paper in *Ecology* speaks of "despotic aggressiveness over sub-continental scales", mentioning 57 bird species being suppressed by the noisy miners.

A hidden order
Sandstone framework

As part of its creation and the subsequent unloading of strain following erosion, Sydney's sandstone has a regular grid of fine fissures that separate the huge beds of rock into individual modules. Sydney's sandstone masses, having been deeply buried or subjected to tectonic stresses during their Gondwanan migration, have acquired a considerable amount of "locked-in" strain energy. Some of this strain has been released when confining pressures were reduced.

The unloading joints around Port Jackson form an organically calibrated grid with longitudinal and latitudinal axes at right angles to each other. It is this lattice of fracture lines that choreographs the erosion of the foreshore. The innate geometry, respective hardness of the stone, and the relative aggression of the water and wind have determined the endless variety of shapes that now characterise and make beautiful the edges of the harbour.

"Ecotectonics" of the foreshore

Sandstone platforms, through disposition to the tides, become home to molluscs while the fissures form residential subdivisions for crustaceans and aquatic invertebrates. Port Jackson Fig Trees, while finding fresh water in fissures above the salt water line, will often brave the influence of the harbour's edge by sending further support roots inland beyond the salty splash zone, enabling their canopy to reach beyond the shoreline away from the eucalypts and angophoras that colonise the adjacent salt-safe benches.

It is along the unloading joints that the Parramatta River eroded the valley as rock broke away from the ridges and tumbled to the valley slopes and floor, millennia before its flooding by the ocean to its current levels. It is also along these joints that the cliffs of North Head and South Head are gradually sacrificed to the sea. The bedding planes and uploading joints determine the benching and terracing of headlands above the intertidal zone. This continuous process of erosion by the harbour gives the foreshore its golden colour, while the structure forms the background aesthetic of Port Jackson.

Sydney Harbour—relatively young

Sydney Harbour, of which Port Jackson is a part, comprises ocean-flooded valleys formed by erosion from the Parramatta River, Middle Harbour Creek, and the Lane Cove River, their sandstone escarpments now forming a jagged shoreline. Port Jackson has existed in its current form for only 8,000 years, as it flooded between 10,000 B.C. and 6,000 B.C., following an ice age.

In 10,000 B.C., Sydney Harbour was a suspended valley, much like those in the Blue Mountains west of Sydney. The shoreline was some 30 kilometres east and the ocean some 200 metres lower than today. This could mean that the current harbour was gradually flooded in the latter 10 percent of a 4,000-year period. While 400 years seems long, it is only one hundredth of the remembered history of the people who lived in Australia before Europeans arrived.

Sydney's search for identity

Metropolitan Sydney wrestles internally with its branding as a global city. The city of Sydney as we

4. A Rainbow Lorikeet spotted at Balls Head, just across the harbour from the city.
5. The ocean continuously erodes Sydney's sandstone around its dramatic grid of unloading joints.
6. In a quiet struggle for survival, a Port Jackson Fig Tree captures its own airspace above the "saltwater" of Sydney's Harbour while clinging to the supply of "sweetwater" that is delivered through the unloading joints of the sandstone foreshore.

know it by its harbour landmark does not effectively characterise the pursuits and ambitions of most Sydneysiders. In recent times, metropolitan Sydney has begun to see itself, through government policy, as a dual-core city; the city of Sydney's CBD augmented by the CBD of Parramatta, which is located at the geographic centre of the metropolitan area.

Though seeming like a fresh observation, even this duality is rooted in the pre-existing ecologies of the place, ecologies that effectively defined the cultures of the people who lived here prior to European occupancy.

It was at Parramatta and Sydney that two of the peoples of Australia first suffered colonial disruption; the sweetwater people of the Dharug nation, which stretched from Parramatta up into the Blue Mountains and the saltwater people of the Eora nation, which comprised the harbour and beaches of present-day Sydney. The sweetwater and the saltwater influents, which sustained the two different ecologies of the nations, met at Parramatta on land owned by the Barramatugal clan.

Characterising European precepts

Sydney's geomorphology has shaped the overall patterns of the city, and much of its early built form is also shaped from its Triassic Hawkesbury Sandstone. To date, we have used this sandstone to reinforce notions of permanency. Used as propaganda to revive classical assertions of sovereignty and longevity, the sandstone architecture of Sydney embodies European aesthetic precepts. Indeed, these ideas are performing well, the city's beautiful golden buildings successfully conveying their seductive messages through time.

We have also hacked the headlands about, cut them callously to the lines required for mercantile utility. Nevertheless, we have reached a time when the world's greatest shipping harbour has been rendered obsolete by the aesthetic demands of its new quaternary industrialists. Within this new era we have also, suddenly, begun to learn the consequences of a culture obsessed with resisting nature, impeding and harnessing its forces for the exclusive benefit of mankind. This European thinking has been anchored in patterns of aboriginal governance all along, patterns that owe their existence to ancient food gathering ecologies.

Nature as the DNA of place

The binary leadership roles of Parramatta and Sydney have been in place since the very beginning of metropolitan Sydney. The fresh

water Dhurag lands have acted as the gateway to European ideas of production while the salt water Eora lands and waterways have acted as ports, anchoring and sustaining our modern history of trade and commerce.

It took 10 months of virtual starvation for the colonising Europeans to think beyond the saltwater ecology of Eora and to realise that it would be the sweetwater Dharug ecology that could host agriculture. Parramatta, the place where the eels lie down, is where the rainwater meets the seawater. It is the first place where overland flow meets the ocean-drowned valley that is Port Jackson.

It seems that, although we think we are independent of natural ecosystems, the forces of place temper most of our cultural precepts when we choose to build cities.

Sydney's aboriginal, early colonial, and modern communities have been obliged to participate in ecological systems, our ideas inevitably merging with the particular forces of place. Its Harbour Bridge, Opera House, parks and gardens, and suburbs and city centres all derive their cultural meaning from their natural context. Singapore has gone a step further, directly harnessing biology into the fabric of urban design, insinuating human imagination into the natural order of things.

As a testament to its worth extending beyond celebrity, the Sydney Opera House has been acknowledged through its World Heritage listing as having "outstanding universal value", placing it generally among a range of equally famous but very old monuments. The Sydney Opera House received this accolade in 2007, when it was merely 34 years old.

Its youth makes it a highly unusual part of the canon of contemporary architecture, an honour shared only with the City of Brazilia and the Central University of Mexico. To put this in context, the most recent structure with World Heritage listing in North America is the Statue of Liberty, dating from 1886. There is no late 20th century architecture listed in Europe, Asia or North America.

The World Heritage listing of the Singapore Botanic Gardens in 2015 links Sydney, and Singapore, both managing human-made contemporary structures of World Heritage status as implicit components of their distinctive global city branding. The fact that Singapore's project is "alive" makes this even more beguiling. ©

References
1 Graham Harman, *Tool-Being: Heidegger and the Metaphysics of Objects* (Peru, IL: Open Court, p2)

2 Tim Low, *Where Song Began - Australia's birds and how they changed the world* (Viking – an imprint of Penguin Books, 2014), Kindle edition.