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## **Social Constructions of Nature in Urban Singapore**

Lily KONG\* and Brenda S. A. YEOH\*

Wilderness was increasingly evaluated either as a resource to be exploited or a resource to be protected. Those who urged the protection of wilderness viewed it as a place for outdoor recreation and safe enough for the family; others saw it as a museum of natural curiosities, a tourist attraction; while the high minded revered it as nature's cathedral. [Yi-Fu Tuan 1971: 38]

### **I Introduction**

In Singapore, interest in reclaiming the nation's natural heritage, while having existed in some guise in earlier times, has gathered impetus recently. It is argued that while there has been increasing emphasis on nature conservation in recent state policies as well as significant groundswell in public interest in preserving nature in urbanised Singapore, there has been little debate over and critique of the conceptions of "nature" written into specific policies and developments. This paper examines the social conceptions of nature in Singapore and argues that these conceptions embody the values and visions of society at specific points in time. In precise terms, nature has been constructed to satisfy human usufructuary purposes by colonial and post-colonial state agencies.<sup>1)</sup> These visions of nature have been translated into policies which have resulted in different material forms. Nature has been altered to consumable form, as scientific sanctuary for observing and contemplating nature; as landscape for health, aesthetics and recreation; and as an economic resource.

### **II The Retreat of Primitive Nature and the Emergence of "Constructed" Nature**

In the early years of Singapore's colonial history, the island's natural vegetation was typified by lowland tropical evergreen forests, characterised today by some of the vegetation in Bukit Timah Nature Reserve. Also common were mangrove forests along the coastal estuaries and banks of tidal creeks, such as those at Kranji and Tuas. In addition, many flooded interior lowlands were covered with freshwater swamp forests, some of which can be found in contemporary Seletar. The coming of Stamford Raffles (1781–1826) in 1819 marked the beginnings of the retreat of such natural areas. The steady onslaught of first agricultural and subsequently urban development has ensured the near-total removal of these natural forms. What was once an island clothed with dense, pri-

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1) In this paper, attention will be paid only to state constructions of nature because of the tremendous extent to which it has directed landscape changes and use of nature. We acknowledge that other non-state agencies have increasingly become more prominent in expressing their views of nature and nature conservation in Singapore (for example, Nature Society of Singapore), even if we are not dealing with them.

mary, lowland forests has now become one that is highly urbanised, with a proliferation of skyscrapers and other built forms.

In the early nineteenth century, there was a concern to develop agriculture on the island and in particular, to cultivate produce for export. In order to achieve this end, primary vegetation was cleared to make way for plantations. Such destruction was recorded in the writings of the British naturalist, Alfred Russel Wallace (1823–1913), who observed that much of the forest had been reduced to isolated patches, mostly on hilltops. In addition, he noted that what was not cleared for agriculture was subject to harvesting of timber, firewood, and forest products such as rattan, resins and gums [Wallace, quoted in Corlett 1988: 38]. By the turn of the century, there had been widespread clearance and subsequent abandonment of natural areas, and *belukar* and *lalang* over-ran the island, covering a significant 40 per cent of total land area. In 1900, only one-tenth of the island was left covered by primary rainforest and secondary jungle while swamps accounted for 13 per cent of total land area [Wong 1969].

With the wheels of clearance and destruction already set in motion early this century, momentum gathered particularly in the post-1960s. The political and economic situation of those early years of independence provide the context for an understanding of landscape transformations in the island-state over the last three decades [Wong 1989; Wong and Ooi 1989]. Specifically, when the newly-constituted government of Singapore achieved internal self-government in 1959, it was confronted with a plethora of problems, amongst them, rapid population growth, housing shortages, high unemployment and poor infrastructure. As part of the national efforts to address these problems, various economic and social programmes were initiated. Each of these necessitated an immense degree of land-use planning and land and building developments which quickly became an integral part of Singapore's growth strategy. Such planning and development entailed sometimes radical changes in *inter alia* housing, industrial, commercial, and infrastructural facilities. For example, under the aegis of first the Economic Development Board and subsequently the Jurong Town Corporation, Jurong's ridges, swamps and coral-fringed coasts were transformed into Singapore's largest industrial estate. As part of this industrial development, the number of industrial establishments nearly doubled between 1960 and 1965 to 1,000, doubling again by 1973 and reaching 3,617 in 1985 [Chia and Chionh 1987: 110]. Besides these agencies, the Housing and Development Board (HDB), as the foremost housing organisation in Singapore, has also been responsible for the tremendous landscape transformations since the early 1960s. Prior to the HDB's inception, the Singapore Improvement Trust (SIT) which was responsible for public housing, had constructed 18,072 units of housing from the time it recommenced work after World War II to 1958, the last year of its operations [HDB n.d.: 7]. In contrast, the total number of residential units under HDB's management in 1988 was 620,467 [HDB *Annual Report* 1988/89: 73], a 35-fold increase over 30 years. Added to this are the other commercial, industrial, recreational and social/communal facilities that the Board has constructed over the years. All these changes have been possible partly through reductions in the extent of Singapore's natural habitats. This is clearly illustrated in Table 1. The proportion of Singapore covered by forests decreased from 6.5 per cent in 1960 to 4.6 per cent in 1990 while the proportion covered by swamps dropped from 7.9 per cent to 2.5 per

Table 1 Land Utilisation in Singapore, 1960–1990

| Year | Total <sup>a)</sup> | Forest              | Swamp               | Farm Holdings <sup>b)</sup> | Built-up Areas <sup>c)</sup> | Others <sup>d)</sup> |
|------|---------------------|---------------------|---------------------|-----------------------------|------------------------------|----------------------|
|      | km <sup>2</sup> (%) | km <sup>2</sup> (%) | km <sup>2</sup> (%) | km <sup>2</sup> (%)         | km <sup>2</sup> (%)          | km <sup>2</sup> (%)  |
| 1960 | 581.5 (100.0)       | 37.8 ( 6.5)         | 45.9 ( 7.9)         | 141.7 (24.4)                | 162.3 (27.9)                 | 193.8 (33.3)         |
| 1965 | 581.5 (100.0)       | 35.0 ( 6.0)         | 35.0 ( 6.0)         | 131.6 (22.6)                | 177.4 (30.5)                 | 202.5 (34.8)         |
| 1970 | 586.4 (100.0)       | 32.4 ( 5.5)         | 32.4 ( 5.5)         | 134.0 (22.9)                | 189.9 (32.4)                 | 197.7 (33.1)         |
| 1975 | 596.8 (100.0)       | 32.4 ( 5.4)         | 32.4 ( 5.4)         | 105.9 (17.7)                | 228.4 (38.3)                 | 197.7 (33.1)         |
| 1980 | 617.8 (100.0)       | 30.0 ( 4.9)         | 26.0 ( 4.2)         | 80.9 (13.1)                 | 275.1 (44.5)                 | 205.8 (33.3)         |
| 1985 | 620.2 (100.0)       | 28.6 ( 4.6)         | 18.7 ( 3.0)         | 58.9 ( 9.5)                 | 295.0 (47.6)                 | 219.9 (35.3)         |
| 1990 | 626.4 (100.0)       | 28.6 ( 4.6)         | 15.7 ( 2.5)         | 12.0 ( 1.9)                 | 307.4 (49.1)                 | 262.8 (41.9)         |

Source : [Wong 1989 : 774 ; *Singapore Facts and Pictures* 1990]

<sup>a)</sup> Percentages do not necessarily add up to 100 because some figures have been rounded off.

<sup>b)</sup> Licensed farms, excluding land under pure rubber and coconut plantations.

<sup>c)</sup> Includes new industrial estates.

<sup>d)</sup> Includes inland water, open spaces, public gardens, cemeteries, non-built-up areas in military establishments, quarries, rubber and coconut plantations, and unused land.

cent in the same period. Correspondingly, the proportion of built-up area almost doubled from 27.9 per cent in 1960 to 49.1 per cent in 1990.

Just as Singapore's natural areas have faced clearance over the years, other forms of nature have been "constructed" with the aim of satisfying various human needs. These take a variety of forms, including parks that have been specially designed, constructed and planted with vegetation; trees and shrubs particularly selected for roadsides, road dividers, car parks and other such open spaces; creepers trained onto walls and overhead pedestrian bridges and so forth. With this "construction," Singapore's landscape transformation from dense tropical forests to an equally dense built-up environment has entailed a paradox of sorts: while on the one hand, natural areas continue to be destroyed, on the other hand, various policies and actions have been introduced to green the city. The result is that the form of nature which Singaporeans have become familiar with are messicol vegetation<sup>2)</sup> which were deliberately planted to provide some balance in an increasingly urban environment.

Nature, in both its original and "constructed" forms, carries with it socially-defined conceptions and roles particular to Singapore. The precise usufructuary values invested in nature will be unpacked in the three sections that follow.

2) This refers to vegetation planted by humans and in a strict sense refers only to crops planted for harvest. Hill [1973: 31], however, extends the meaning to include plant communities which are deliberately planted and maintained for purposes such as aesthetic enjoyment and recreation.

### III The Practical Uses of Nature

#### III-1 *Nature as Scientific Sanctuary: The Botanic Gardens, "So Rational and Useful an Establishment" and Bio-diversity*

The establishment of colonial hegemony over the island of Singapore in the early nineteenth century not only involved appropriating the benefits of trade and commandeering labour resources but also required the subordination of "primitive nature" to the purposes and projects of colonialism. Alongside the aim to discipline and shape unruly nature for economic gain was a fascination with the perceived exotic abundance of the island's natural wealth and a desire to examine and experiment with its flora and fauna. The "taming" of "primitive nature" hence took different if complementary guises: nature was to be exploited for usufructuary purposes and at the same time, where preserved in selected enclaves, its complexity could be dissected as a "curiosity" to be observed and studied, or to be catalogued and investigated under the auspices of science. The view that nature could be cordoned off to serve as an "experimental sanctuary" was evident from the earliest days of the British Settlement, as exemplified by the establishment of a "Botanic and Experimental Garden."

The first Botanic Garden in Singapore owed its origin to the founder of the settlement, Raffles, a man with an enormous enthusiasm for natural history [Bastin 1990]. In 1822, at his invitation, Dr. Nathaniel Wallich (1785–1854), the Superintendent of the Calcutta Botanic Garden who was then visiting Singapore, submitted an official proposal to establish a Botanic Garden in Singapore for the study of local flora and the cultivation of tropical produce [Bastin 1981: 13–14]. Conditions in Singapore, claimed Wallich, were

the most favourable for indigenous as well as foreign vegetation and forming part of the richest archipelago in the world — its soil yielding to none in fertility, its climate not exceeded by any in uniformity, mildness and salubrity. It abounds in an endless variety of plants equally interesting to the botanist, the agriculturist and the gardener, with unrivalled facilities and opportunities of disseminating these treasures and exchanging with others. [*ibid.* : 35]

Not only would cataloguing the "magnificent and novel productions which adorn this delightful Island" benefit the scientific community, in Wallich's words, there were also "considerations of an agricultural and commercial nature" [*ibid.* : 36]. Knowledge gained from experimenting with trees which yield timber fit for ship and house building, and tropical crops such as clove, nutmeg, gambier, pepper, sugar-cane, coffee, exotic fruits and vegetables could be applied to promoting commercial agriculture and husbandry, and as such, allow the bounty of nature to be harnessed to colonial interests. Raffles readily allotted an area of land comprising 19 hectares on Government Hill for the Garden which was placed, on Wallich's departure from Singapore, under the charge of Assistant Surgeon Dr. William Montgomerie (1797–1859) who devoted his attention to the cultivation of spices in the Garden. The Garden was, however, abolished in 1829 when Dr. Montgomerie left Singapore to take up a post in India [*ibid.* : 51].

In 1836, a society was formed among the Settlement's dilettante agriculturists for the purpose of "promoting and encouraging undertakings of an Agricultural and Horticultural nature" [Buckley

1984: 304, 306]. One of the society's main concerns was to establish permanent cultivation yielding "exportable produce" which would successfully prevent the forest from "ultimately reassum[ing] its dominion" [*ibid.*: 362]. As a means of fostering agriculture, the society revived part of the original Botanic Garden and continued to run the Garden up to 1846 when declining interest compelled the society to return the land to the Government [Burkill 1959b: 1602; Tinsley 1983: 21]. Yet again in 1859, a Botanic Garden was re-created by a new Agri-Horticultural Society, this time on a 23-hectare tract in Tanglin and landscaped into an ornamental garden and pleasure park [Tinsley 1983: 21-24]. In 1874, the Garden was handed over to the Government, and until the formation of the Malayan Department of Forestry and Agriculture, became the main centre of research on forestry and agriculture in Malaya [Holtum 1949: 1].

The supervision of the Garden passed out of the hands of the dilettante into those of professional botanists and horticulturists trained in Kew and other parts of the British Empire who placed the Garden on a firm scientific footing. In 1879, an Economic Garden was established on a plot adjacent to the Botanic Garden with the express purpose of "experimental planting" of potentially useful crops, among them the first rubber seedlings brought to Singapore in 1878 which eventually stocked plantations in Malaya and precipitated the take-off of the rubber industry [*loc. cit.*]. Besides scientific experimentations with living Nature, the Gardens also housed a herbarium containing a huge collection of mainly dried specimens and drawings of new and exotic plant species from the Malay Peninsula and further afield [*loc. cit.*]. The Botanic Gardens in Singapore was hence "heir to the long-established custom of developing European botanical gardens in the tropics" which were "devoted to useful or revenue-earning crops, research and preservation of native plants" [Tinsley 1983: 16].

In the mid-1920s, with the surrender of the Economic Garden to make way for the Raffles College campus, the Botanic Gardens lost its immediate contact with economic agriculture and forestry and shifted its emphasis toward native plant ecology and breeding, taxonomic botany and decorative horticulture [Burkill 1959b: 6]. Even then, the ties between scientific research and economic enterprise were not entirely severed. The successful programme in orchid hybridisation started in the late 1920s which eventually gave rise to a thriving orchid nursery industry with increasing export value was ample testimony of the practical utility of economic botany [*loc. cit.*; Burkill 1963: 15].

The colonial fascination with the bounteous natural wealth of the tropical world was rapidly translated into an imperative to dominate its secrets. The scientific construction of nature not only represented a means of domination over nature in itself, but also facilitated other more practical forms of exploitation of nature. Botanical science was pressed into service in harnessing the wealth of tropical nature to the expansion of the colonial economy. Through the application of experimental techniques and conscious planning, the lot of nature could be improved for the benefit of Empire. Through its design and endeavours as a scientific sanctuary, the Botanic Gardens visually and ideologically accomplished what land surveys, land clearance and urban expansion achieved practically: the domination and transformation of nature. Nature was conceived as that which was enigmatic and resilient, and yet, at the same time, through scientific endeavour and intervention, capable of

being made malleable and exploitable.

While the links between the Botanic Gardens and commercial enterprise became less direct after the 1920s, the pursuit of botanical research to augment the reservoir of scientific knowledge continued as one of the chief preoccupations of the Gardens' professional staff. As the ravages of urban and industrial development claimed its toll on the island's natural vegetation and biotic diversity, the Botanic Gardens provided a refuge where representatives of an even greater variety of indigenous and exotic flora could be collected, whether as living plants scientifically labelled for purposes of identification and study, dried specimens preserved in the Herbarium, or drawings and descriptions catalogued in the many scientific publications issued under the auspices of the Gardens. Besides the Gardens, selected forest reserves at Bukit Timah, Pandan and Woodlands were also appropriated in the late 1930s as "botanical reserves" for the express purpose of preserving what little remained of the indigenous flora and to accord sanctuary to the remnants of Singapore's fauna. These reserves were to function as biological laboratories for observation and research as well as "sample products of the biographic history of the country and its heritage" [Burkill 1959c: 34–35]. The Woodlands Reserve, for example, was the preserve of the rare *Pandanus Corneri* while the Pandan Reserve contained "all the characteristic plants of mangrove, and also . . . g[a]ve shelter to an interesting natural fauna" [Holttum 1949: 6–7]. Bukit Timah Reserve, the largest on the island, "include[d] a fine sample of primitive forest, with a great variety of trees and smaller plants, some of which certainly [no longer] occur elsewhere in the island" [*ibid.*: 7].

The concern with preserving the bio-diversity of plants on the island has continued into the present with the gazetting of Tree Conservation Areas<sup>3)</sup> in August 1991 to protect matured trees planted during different periods of Singapore's development as far back as colonial days [*The Straits Times*, "Life!", 6 Nov. 1991]. Recent attention has also been focused on the question of the reforestation of Singapore's nature reserves in order to "restore the original richness of the forest" [*The Straits Times*, 4 Nov. 1991]. Unlike previous Tree Planting Days<sup>4)</sup> which were centred on housing estates and human-created parks, the tree-planting campaign in 1991 for the first time highlighted the public reforestation effort at the Upper Pierce nature reserve where 300 saplings of local species such as *Kapur*, *Chengal*, *Resak* and *Mersawa* were planted to signal the move away from "just keeping Singapore clean to making it green" [*The Straits Times*, 2 Oct. 1991]. The rationale was to repair some of the damage caused by squatting, cultivation and military exercises, to restore bio-diversity and greenery to the country's nature reserves and rescue Singapore's natural heritage from continual devastation. It is, however, unlikely that such efforts amount to more than token gestures in rolling back the tide of destruction of the island's natural vegetation. The pressures of economic and urban development in Singapore dictate that the bio-diversity of nature

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3) Two areas have thus far been designated: the 4,710-hectare Central Tree Conservation Area which stretches from Telok Blangah in the south to the edge of the MacRitchie Reservoir and a 220-hectare area in Changi. In these protected areas, no tree with a girth of over one metre can be felled without the approval of the Parks and Recreation Department.

4) This was initiated in 1963 by the then Prime Minister, Mr. Lee Kuan Yew [Parks and Recreation Annual Report 1962–1963], and since then, a day has been set aside every year where Singapore's political leaders set the example in planting trees, often in housing estates and parks.

can only exist in carefully selected sanctuaries. Paradoxically, these biotic enclaves in turn provide the experimental medium to create improved plant material more suited to incorporation into an urban fabric in order to yield “nature” a “place” in the “city of man [*sic*]” [McHarg 1973]. Indeed, according to the former chief administrator of the Botanic Gardens, taxonomic studies and pure research conducted by the Gardens have given way to “more practical objectives of applied botany and horticulture to meet the Republic’s goals for a better environment” [Ng Siew Yin, quoted in Tinsley 1983 : 53].

A more concerted effort to preserve bio-diversity, albeit only within selected sanctuaries, can be found in the *Singapore’s Green Plan* [1991 : 14–15 ; see also *The Singapore Green Plan* 1992 : 28–29] which explicitly sets aside five per cent of land — forests, swamps, marine environments and other areas “of ecological merit” — for nature conservation. In selecting areas for conservation, one of the stated objectives is to “conserve the diversity of our flora and fauna and protect their natural habitats” [*The Singapore Green Plan* 1992 : 30]. This is in line with the fact that Singapore is a signatory to the Convention on Biological Diversity at the June 1992 Rio Earth Summit [*The Singapore Green Plan* 1993 : 11]. In the plan, 19 selected areas are designated as “Nature Areas,”<sup>5)</sup> including wooded and forest areas,<sup>6)</sup> certain marshlands and mangrove swamps mainly along Singapore’s northern coastline,<sup>7)</sup> ridges and hillocks,<sup>8)</sup> and offshore islands.<sup>9)</sup> In early December 1993, the Sungei Buloh Nature Park was completed and opened to the public, a move which, in the words of the Prime Minister, Goh Chok Tong, signals the government’s “commitment to nature conservation” [*The Straits Times*, 7 Dec. 1993]. This 87-hectare wetland site made up of a variety of landscapes including mangrove swamps, coconut groves and remnants of prawn and fish ponds is Singapore’s first nature park and the haunt of some 141 species of birds as well as other wildlife<sup>10)</sup> [*The Straits Times*, 27 Jun. 1992].

While applauding the government’s efforts to accord a higher priority to the preservation of nature, certain individuals and groups, in particular the Nature Society of Singapore (successor to the Malayan Nature Society (Singapore Branch)), have expressed concern that designated Nature Areas are insufficient to preserve the country’s bio-diversity. Ho Hua Chew, Chairman of the Nature

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5) As selection criteria, the main considerations were that the area has a natural environment in terms of landscape and wildlife ; is ecologically stable and capable of supporting and sustaining a large variety of wildlife ; has potential for recreation, education and scientific research ; is able to coexist with nearby developments ; and the opportunity cost of alternative uses of the land. These Nature Areas have been incorporated into the Concept Plan and over the next five years, their boundaries will be delineated in the drawing up of Development Guide Plans (DGPs) for the whole of Singapore [*The Singapore Green Plan* 1993 : 49].

6) These are Bukit Timah and Central Catchment Nature Reserve ; Bukit Timah Nature Park ; Bukit Batok ; Labrador Park ; and Singapore Botanic Gardens.

7) These include mangroves or marshlands at Pasir Ris Park ; Sungei Mandai ; Kranji Reservoir ; Kranji ; Sungei Buloh ; Khatib Bongsu and the Western Catchment Area.

8) These are Kent Ridge Park ; Mount Faber and Telok Blangah Hill Park.

9) These include parts of Pulau Ubin ; Pulau Semakau ; Sentosa (Mount Serapong and Mount Embiah) ; and Pulau Tekong.

10) The park is developed by the Parks and Recreation Department in consultation with the Wildlife and Wetlands Trust, Slimbridge, England.



Society's Conservation Committee, has long argued that "Sungei Buloh and gazetted nature reserves are certainly not sufficient to ensure the long-term survival of existing diversity of species in Singapore" [*The Straits Times*, 22 Nov. 1991]. He alleged that while Sungei Buloh is a sanctuary for *certain* mud-haunting species, it "can never be a substitute in terms of abundance and diversity of wetland birds [for] the marshes at Poyan or Kranji Reservoir"; neither will it cater to bird species which require sandy beach environments [*ibid.*]. In a similar vein, a document which summarises the Nature Society's feedback on the Singapore Green Plan<sup>11)</sup> and proposes an "Alternative Green Plan" urges that several other areas<sup>12)</sup> be included as Nature Areas both to expand the number of sanctuaries as well as to widen the range of habitats if the principle of bio-diversity is to be seriously respected.

While the government's response to the Society's proposals is not yet publicly known,<sup>13)</sup> the debate over the question as to how much weight bio-diversity should carry has surfaced in smaller locales. For example, in May 1992, the Nature Society appealed to the government to reconsider its decision to fill in certain duck ponds in the reclaimed Marina South area as these were the breeding and feeding grounds of several water-fowl species, including the lesser treeduck, common moorhen and cinnamon bittern. Despite support from members of the public as well as the National Council for the Environment, a non-profit, non-governmental organisation formed in 1990 to aid the Government in transforming Singapore into a model Environment City [*The Straits Times*, 14 May 1992], the Ministry for the Environment (ENV) felt that the area, earmarked for future urban development, was "too commercially valuable to be set aside as a bird sanctuary" [*The Straits Times*, 12 May 1992]. In laying aside the appeal,<sup>14)</sup> the ENV also noted that the area was not "natural" but "man-made" and if not filled in, was a public health hazard because of profuse mosquito-breeding in the waterlogged environment [*The Straits Times*, 14 May 1992].

Another recent furore arose out of the Public Utilities Board's proposal to build an 18-hole golf course in the Lower Peirce Reservoir. In an Environmental Impact Assessment report produced by the Nature Society of Singapore (NSS), it was calculated that to build the golf course on the site, a total of 163 species of plants (including 40,000 mature trees belonging to 82 different species) and 485 species of animals (of which 44 are considered endangered) would be lost [Wee 1992: 3]. Furthermore, forest clearance on the site could also threaten the adjoining Nee Soon freshwater

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11) Feedback on the Singapore Green Plan, First Draft, Nature Society, Singapore, dated 18 May 1993, personally obtained from Ho Hua Chew, Chairman, Conservation Committee, NSS. Ho's views are also reproduced in summary form in The Nature Society's newsletter, *Nature News*, Nov./Dec. 1993, pp. 5-7.

12) These are Senoko, Khatib Bongsu, the Sembawang Corridor between the Upper Seletar Reservoir and Senoko, the Punggol grassland, a small rocky islet off the northern Changi coast known as Batu Puteh and various patches of mangrove along the northern coastline which are hitherto not included as Nature Areas in the Green Plan.

13) It would appear that the government is willing to consider some of the Society's recommendations but not others. In September 1993, it was announced that Khatib Bongsu, one of the areas championed by the Nature Society as worthy of conservation, has been added to the list of Nature Areas [*The Singapore Green Plan* 1993: 51; *The Straits Times*, 20 Sep. 1993]. However, Senoko, a site which boasts one of the highest diversity of bird species, has been left out of the Green Plan despite intensive lobbying on the part of environmental groups.

14) The duck ponds were filled in despite the public protest [*The Straits Times*, 29 Oct. 1992].

swamp forest, home to several species of animals unknown elsewhere in Singapore. The NSS led a petition against the building of the golf course [*The Sunday Times*, 10 May 1992], arguing that Singapore “is now affluent enough to make a sacrifice in favour of nature” and should uphold its image as “a civilized nation and responsible world citizen” responsive to the worldwide call to preserve bio-diversity [Wee 1992: 8–9]. It also pointed out the incongruity of the fact that the plan to excise the forest to make way for the golf course came on the heels of the November 1991 reforestation project designed to restore the original richness of the forest in the Upper Peirce Reservoir (as earlier discussed). There is as yet no official pronouncement on future plans and actions [*The Straits Times*, 1 Aug. 1992].

In sum, while rapid urban and economic development through the years had taken its toll on the natural environment, both the colonial and independent states had attempted to preserve some semblance of nature’s bounty and bio-diversity in selected sanctuaries. In the colonial era, these sanctuaries, exemplified by the Botanic Gardens, did not simply serve as scientific laboratories but were also a means through which nature was pressed into the service of the colonial economy. In post-independence Singapore, bio-diversity, again confined to specific sanctuaries, is also valued, not so much *for* economic gain but *vis-a-vis* economic development. On the one hand, the diversity of biotic species from trees to birds are acknowledged as tokens of a nation’s tropical heritage in its search to become an “Environment City.” On the other hand, its proper place in urban Singapore is seemingly negotiable in the light of other priorities which are decidedly “urban” and “economic” in nature and hence deemed more pressing. In the words of *the Singapore Green Plan* [1993: 49], “we have to take a pragmatic approach to nature conservation . . . [and balance] the needs of development and the preservation of our natural heritage.”

### III-2 *Salubrious Nature, Aesthetic Landscape and Public Playground*

Nature’s prescribed role as biological laboratory is but one of a range of usufructuary values that have been invested. Three other inter-related socially constructed roles have also been conceived for nature in its “original” form as well as nature managed and maintained. First, nature can contribute to a salubrious environment which ensures the health of a people. Second, nature forms part of an aesthetic landscape, beautifying the ugliness of slum settlements of the past, and softening the harsh built-up landscape of the present. Third, nature is a setting for recreation, with the construction of facilities like parks for leisurely activities and the harnessing of various waterscapes for sports.

Nature in its original form was thought to have a salubrious effect on inhabitants. In the early days when the island was still fairly much in its pristine state, it was well known as a stop for rest and recreation where invalids could relax and recover their health and vigour [Graham 1852: 6]. The beauty and calmness of the island’s setting was said to “contribute to form a scene calculated to soothe the irritability of the invalid” [“Advice to invalids” 1851: 188] so much so that “no inter-tropical position perhaps could be chosen more favourable for invalids” [Anonymous 1839: 59].

Beyond its contribution to salubrity, nature was also part of an aesthetic landscape, appealing particularly to Western sojourners who found the fecundity and plenitude pleasing to the eye. These nineteenth-century naturalists and sojourners, such as Stamford Raffles, Nathaniel Wallich,

Alfred Wallace, John Cameron, John Bull and Isabella Bird, were apt to wax eloquent about the island's luxuriant vegetation with its "endless varieties of ferns, calladiums and parasitic plants" [Bird 1967 : 114]. Their aesthetic evaluation also derived from the captivating shapes, sizes and colours of flowers and plants, such as the beautiful orchidaceous plants [Cameron 1965 : 84] as well as the general topography of "hill and dale" [*ibid.* : 28].

With the growth of human settlements and the increasing denudation of natural areas, there was also a growing realisation that nature's salubrity and aesthetic quality were being eroded. In both the colonial and post-colonial eras, the reaction was to "construct" nature in order to serve what were seen as the important functions of providing salubrity, aesthetics and recreation. The specific state policies and actions designed to achieve these ends can be analysed at three inter-related levels — the institutional (that is, the agencies that were chiefly responsible for implementing policies); the legislative (that is, the laws enacted to enable implementation of policies); and the practical (that is, the specific actions that translated policies into material form).

Prior to 1927, the principal agents responsible for nature in the city were the municipal authorities. The emphasis on orderliness in nature, reflecting human management and maintenance, was evident even in those early days. This is clearly set out in the Indian and Municipal Ordinances of 1856, 1887, 1896 and 1913 where the only piece of legislation that addressed the issue of nature directly was one which gave the Municipal Commissioners power to ensure that owners or occupiers of land trim their hedges which border or overhang public roads in order to prevent obstruction and damage of any sort [Straits Settlements Ordinances 1879 : 1266; 1887 : 66; 1896 : 1517; 1913 : 47]. In view of this, it is evident that at both the institutional and legislative levels, little was actually said or done in the early years with respect to the salubrious, aesthetic and recreational potential of nature. In practical terms, the municipal authorities were in overall charge of planting and watering roadside vegetation in the city. One of their most notable efforts was the opening of 'People's Park' in 1888 in the Chinese district which entailed the ornamental design and planting of 1,000 trees and shrubs [Tinsley 1983 : 29] covering about three hectares for aesthetic as well as recreational reasons.

Despite such efforts and despite the fact that the municipal authorities recognised the value of open spaces for aesthetic, recreational and educative purposes, Singapore was still found to be "lamentably deficient in open spaces and parks" [Commission Appointed to Inquire into the Cause of the Present Housing Difficulties 1918 : A38-39]. By 1925, the full list of open recreational spaces within municipal limits numbered only 14 places, of which a large proportion such as the Padang, Raffles Reclamation Ground, the Old Gaol site in Stamford Road, Hong Lim Green and the Race Course were under the control of recreational or sporting clubs or "alienated" for specialised activities such as cricket, golf or horse-racing. The only additional open space available for public use was the Stadium ["Improvement Trust of Singapore" 1921 : 99; "Existing open spaces" 1925], which was in fact a "by-product" of the Malayan-Borneo Exhibition rather than specifically planned for the ordinary public.

In view of the deficiencies, the Singapore Improvement Trust was established in 1927 and amongst its other responsibilities, it was charged with the role of providing open spaces throughout

congested areas to act as “breathing lungs.” As a consequence, many new open spaces were created, such as Farrer Park, Beach Road Open Space, Chulia Street Open Space and Ramah Street Open Space [Fraser n.d. : 11]. While the need for green lungs was recognised and addressed, the recreational and aesthetic significance of nature was not forgotten either. In 1930, the Governor, Sir Cecil Clementi, identified the water catchment areas around MacRitchie and Peirce Reservoirs as having great potential as a public park. He instructed that bridle paths be created, stately trees planted, and vistas improved and beautified for public recreational use [Burkill 1959a : 203]. Unfortunately, only limited success had been achieved before the Japanese Occupation put a stop to this work.

In the post-war period, a committee was set up to study and report on the housing situation in Singapore. In the oft-cited 1948 Housing Committee Report, recommendations were made for satellite towns to be developed which would take into consideration *inter alia* recreational, aesthetic and health needs. Provisions were therefore made in the plans for playing fields, green belts and public parks [Report of the Housing Committee of Singapore 1948 : 12–13].

In the post-independence period, with heightened activity in the building industry, rapid urbanisation and massive alteration of the landscape, far more concerted efforts went into the construction of nature for aesthetic and recreational reasons, with some though declining emphasis on a salubrious environment. At the institutional level, various committees and departments were created to take the responsibility for creating an aesthetically pleasing Singapore through the construction of nature. In 1965, a Garden City Action Committee was formed to implement the Garden City Concept, taking on an overall policy making role. This committee comprised representatives from a variety of government departments, including the Ministry of National Development, the Public Works Department, the Housing and Development Board, the Primary Production Department, the Parks and Recreation Department, the Urban Redevelopment Authority and the Jurong Town Corporation. In 1968, the Parks and Trees Division of the Public Works Department (PWD) was formed to undertake the task of greening Singapore. In 1973, it merged with the Singapore Botanic Gardens to form the Parks and Recreation Division under the PWD. Reflecting the increasingly important role of this division, it became in 1975 an independent department under the Ministry of National Development. Since 1990, the National Parks Board, a statutory board under the umbrella of the Ministry of National Development, has been in operation, charged with the administration, development and promotion of the Singapore Botanic Gardens, Fort Canning Park and the Nature Reserve lands as resources for recreation, research, education and conservation. The number of official departments and committees set up over the years to bring to fruition a socially constructed vision of nature reveals the level of state commitment to this vision and the determination to see it realised.

At the legislative level, the Parks and Trees Act was introduced in 1975. This piece of legislation provided for the “development, protection and regulation of public parks and gardens and for the preservation and growing of trees and plants” [Parks and Trees Act, 1985 : 2] in the Republic. It spelt out specifically that any proposed development had to meet with certain standards in landscaping and tree planting, subject to control by the Parks and Recreation Department and the Public Works Department. The Act also required that landowners spruce up

their property and made it an offence to wilfully destroy trees, plants and turf areas.

It is at the practical level that the official views of what constitutes nature and what nature can contribute to urban living are most evident. If nature is seen as an aesthetic entity and a setting for recreational activities, what material actions have been taken to achieve these ends? In analysing the language adopted to describe an aesthetically pleasing “natural” landscape and the actions taken towards achieving that end, contributory elements to such a landscape would appear to include colour, variety and orderliness. In concrete terms, to attain the goal of adding colour to the “concrete jungle,” it was initially intended that Singapore would be provided with abundant greenery. This was to be achieved through the large scale planting of trees and shrubs all over the island, which was given greatest impetus in 1963 with the then Prime Minister’s introduction of Tree-Planting Day [Parks and Recreation Annual Report 1962–1963]. Suitable trees and shrubs were planted along highways and roads, in public gardens, open spaces, parks, recreational grounds and approaches to public buildings. Subsequently, plants have also been introduced to camouflage concrete structures in order to soften the harshness, and in particular creepers and climbers are trained on to retaining walls, lamp-posts, flyovers and overhead bridges.

As the programme progressed and Singapore attained a reputation as a “green” city, the aim of “colouring” the island to create an aesthetically pleasant environment received further attention. Specifically, the Parks and Recreation Department increasingly introduced a variety of ornamental trees and shrubs brought from other countries and more kaleidoscopic colours in the choice of vegetation. At the same time, neighbourhood parks that were being created in different parts of the city emphasised and capitalised on the aesthetic quality of nature. For example, Mount Faber Park and Kent Ridge Park took advantage of the panoramic views from hill and ridge tops while West Coast Park and East Coast Park made use of sea front views. As part of the Central Area Open Space Plan,<sup>15)</sup> planting strips have been incorporated within road reserves to form green buffers along major roads so as to ensure a visually pleasant streetscape with a variety of colours and shades [Yeh 1989: 825].

While colour and variety were introduced into the city through natural vegetation, this was done with a clear objective of order and system, and specifically, of not encouraging an indiscriminatory profusion of foliage and verdure. This orderliness is seen to be a form of nature acceptable to urban living, one in which there is no unruliness, and one which is managed by human hands. Yeh [*ibid.*: 817] characterises this well:

Maintaining and nurturing the greenery requires a great deal of effort. Trees, shrubs, and creepers have to be trimmed and pruned regularly to prevent unruly or dangerous growth. . . . trees [are subject] to regular inspections to ensure that the branches do not get in the way of moving traffic, obstruct traffic-lights or street lamps, or damage overhead service lines. Shrubs in the city also have to be monitored to prevent them from becoming unsightly or getting in the paths of pedestrians.

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15) The Central Area Open Space Plan was formulated by the Urban Redevelopment Authority in 1976 and revised in 1980. It is the overall plan that guides the design and use of open spaces in Singapore’s central area. It places much emphasis on *inter alia* the use of nature in the design of streetscapes [Yeh 1989: 825].

Such a conception of nature reflects the language and attitude enshrined in earlier municipal ordinances, as illustrated above, and bear testimony to human inclinations to manage and maintain nature.

The only concession to a form of nature that is not constructed, ordered and managed and yet is aesthetically acceptable and indeed pleasing is Singapore's nature reserves. These nature reserves were established with the enactment of the Nature Reserves Ordinance in 1951 for the purposes of the "propagation, protection and preservation of the indigenous fauna and flora of Singapore and for the preservation of objects and places of aesthetic, historical and scientific interest" [Nature Reserves Act, 1985: 2]. Today, they include the Bukit Timah Nature Reserve, the Water Catchment Area and the Labrador Nature Reserve.

Besides the aesthetic evaluation of nature, another dominant socially-constructed role in the post-independence period is that of nature as a setting for recreation. Primarily, "recreation in nature" translates into recreation in a managed nature: a natural setting such as a riverside or the sea, which is now enhanced with the introduction of recreational facilities, as well as any area transformed into a park with facilities for recreation. For example, the Urban Redevelopment Authority's draft Master Plan for the Urban Waterfronts and the Singapore River Redevelopment Plan aim to "turn the three major bodies of water and their waterfronts into a grand stage for outdoor recreational activities" [*URA Annual Report* 1988/89: 4]. Nature in the form of water bodies are hence seen to be the settings for water-based recreation, such as powerboat and dragonboat races, swimming and boating while waterfronts are turned into tree-lined promenades for strolling and other leisurely activities. The goal for Kallang Basin, for example, is to turn it into a "recreational sanctuary" [*ibid.*: 13]. Alternatively, there are the planned parks of the Housing and Development Board which form a hierarchy: town parks of five to ten hectares each, neighbourhood parks of one to one-and-a-half hectares each, and precinct gardens of approximately 0.2 hectares each. These form the recreational green spaces in HDB new towns and are equipped with a range of facilities: jogging tracks, children's playgrounds, playing fields, multi-purpose courts, fitness corners, and landscaped areas with seats and shelters. The Jurong Town Corporation has also established Jurong Park which consists of over 280 hectares of parkland and Jurong Hill Park, a "landscaped multi-level Park on the highest point in Jurong Town" [*JTC Annual Report* 1971: 25], both of which are planned specifically with social and recreational amenities.

Apart from focusing on these institutional, legislative and practical levels which have already largely been translated into reality, attention must also be given to the plans that have been drawn up by the state, namely, the Revised Concept Plan of 1991. As articulated in the widely disseminated literature, the vision for Singapore is that of

an island with an increased sense of "island-ness" — more beaches, marinas, resorts and possibly entertainment parks as well as better access to an attractive coastline. . . . Singapore will be cloaked in greenery, both manicured by man [sic] and protected tracts of natural growth and with waterbodies woven into the landscape. [*Living the Next Lap* 1991: 4]

One of the major ways of achieving this vision is through the implementation of the Green and Blue Plan, which is intended to “[weave] together a system of open spaces that complement waterways – thus giving rise to the green (foliage) and blue (water) name” [*ibid.* : 28]. Most explicitly recognised in the plan is the importance of harnessing nature for recreational benefits. For example, there are visions of Singaporeans camping, hiking, fishing, canoeing, bird watching, swimming, orienteering, rock climbing, cycling, jogging and taking nature walks in various parts of mainland Singapore and offshore islands such as Pulau Ubin and Pulau Tekong. To this end, there will be riverside parks along the banks of the Kallang and Geylang rivers, adventure parks in old quarries, as well as “green trails” which link parks all over the island. Some existing natural areas (hills, wooded areas, river banks, mangrove swamps, coral reefs) will also be conserved so that people can retreat from the city and enjoy the “natural, wild beauty which still exists in our country” [*ibid.* : 31]. This tremendous emphasis on the recreational potential of nature is a reflection of the stage of Singapore’s development. Given that many of Singaporeans’ basic needs have now been fulfilled, attention has increasingly been turned to other aspects of life such as recreational needs, including cultural entertainment and sports facilities.

Apart from the emphasis on nature’s recreational potential, there is passing recognition of the aesthetic importance of nature and of its salubrious quality in the Revised Concept Plan. For example, the notion of a garden city is carried over from the earlier periods. As outlined in *Living the Next Lap* [*ibid.* : 30], landscaped green gateways to the Central Area will heighten the impression of a garden city. These will be coupled with “big, open boulevards, abundantly lined with trees and other vegetation, with flowers and bushes forming occasional scenic vistas that work as focus points.” While contributing to an aesthetic evaluation of Singapore’s landscapes, such greenery are also recognised to be important green “buffers” between housing and other land use such as expressways.

Whether it is salubrious nature, aesthetic landscape or public playground that has received institutional, legislative and practical attention from the state, each emphasises nature’s role in improving the non-tangible notion of quality of life. The tangible material roles that nature can play in economic development have not been overlooked either. In line with the tremendous focus on economic development in Singapore, nature has also been harnessed for its economic value to improve the material conditions of existence. In the next section, we will illustrate how nature has been used as an economic resource from colonial times to the present.

### III-3 *Nature as Economic Resource: Timber and Tourism*

Economic exploitation of Singapore’s “natural wealth,” embodied in the island’s woodland and mangrove forests, was initiated during the colonial era. In 1883, alarmed by the rapid destruction of natural forests which were cleared to make way for the cultivation of crops of economic value such as nutmeg, clove, sugar-cane, coconut, gambier, pepper and fruit trees as well as for urban expansion, the colonial Government commissioned Nathaniel Cantley, Superintendent of the Botanic Gardens, to conduct a survey of forests in the Straits Settlements. Cantley noted that forest regulations were non-existent and in the face of indiscriminate destruction, only seven per cent of

Singapore's original forest remained. His recommendation for the establishment of forest reserves and the afforestation of wastelands eventually led to the creation of the first forest reserves in Singapore and the planting of wasteland areas with a mixture of native species and exotics such as Teak and Mahogany [Corlett 1988: 38–39]. The official implementation of Cantley's recommendations has been hailed as “the beginning of a constructive policy of land utilisation and conservation in Malaya”<sup>16)</sup> [Burkill 1959a: 202]. By 1886, there were 13 forest reserves, scattered all over the island, with a total of 4,676 hectares making up a mere one-tenth of the total land area of Singapore [Wee and Corlett 1986: 11]. In addition to officially designated reserves, there were about 2,000 hectares of privately owned forests kept chiefly as firewood reserves in connection with pepper and gambier plantations, or supplying firewood to the town [*loc. cit.*]. Over the next few decades, effort was made to increase the reserve area and this reached a maximum of 6,576 hectares or 11.7 per cent of the island in 1930 [*loc. cit.*].

These early efforts at the conservation of nature, however, cannot be extricated from the imperative of sustaining the economic viability of nature for exploitation. While the aim was to ensure regeneration and permanence, forest reserves were managed for exploitation and with the exception of the Bukit Timah reserve, worked for timber. Timbering was among the first of the extractive industries practised by colonialists who sequestered forest lands to the state and managed them using principles of “scientific forestry” or “sustainable silviculture” which promoted the transformation of virgin forest into sustainable stands of commercial trees [Rush 1991: 24]. By the turn of the century, forestry had developed into a major scientific enterprise in Malaya, a development marked by the appointment of A. M. Burn-Murdoch as Chief Forest Officer, Straits Settlements and Federated Malay States, in 1901. Timber research and experimentation focused on testing the suitability of local timber for commercial purposes, preparing wood specimens for a forest museum and authenticating timber samples issued to the public, developing modern methods for the exploitation, conversion and treatment of timber, and recording and measuring the growth of Malayan trees [Edwards 1930; Flemmich 1959: 15–19].

In Singapore, however, the forest reserves contained only limited amounts of valuable timber and these were rapidly depleted. Mangrove forests in coastal areas were also continually worked for poles and wood for charcoal and badly degraded as a result of over-exploitation. By 1930, except for the still unexploited Bukit Timah reserve, all other reserves either comprised immature mangrove or were occupied by squatters [Wee and Corlett 1986: 11]. Furthermore, in the 1930s, reserved land was continually excised for agricultural and building purposes [Mead 1937: 16; 1938: 21]. By 1938, most reserves were deemed to have been worked out and were finally revoked as they were no longer of economic value [Burkill 1959c: 34; Wee and Corlett 1986: 11]. In 1939, three of these forest reserves (Bukit Timah, Pandan and Kranji) were re-gazetted as botanical as opposed to economic reserves under the protection of the Conservator of Forests

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16) According to Corlett [1988: 38], at least three decades before the first forest reserves were designated, concern for the climatic effects of deforestation had already prompted the colonial state to place Bukit Timah hill, the island's principal hill, under a system of protection. There was, however, no sustained system of forest conservation before the 1880s.



[Burkill 1959c: 35; Holtum 1949: 6–7]. Commercial exploitation having been ruled out, these reserves were gazetted for research, education, recreation as mentioned earlier in section III–1.

Up to the outbreak of the second world war, colonial administration of the forest resources of Malaya was based on the experience of the British in India, “where forestry was already taken seriously and conceived . . . as the assumption of the white man’s burden . . . to be administered in the interest of a teeming and apathetic people” [Robinson, quoted in Kumar, 1986: 65]. The management of forest resources exhibited a tension between two policies: that of conservation on the one hand, and that of generating revenue by exploitation on the other. However, in practice, the concern with building up colonial revenue outweighed conservation efforts. Forest reserves in Singapore, as in the rest of Malaya, were thus perceived primarily as an economic resource which could be exploited for tangible gain. Indeed, according to a statement presented to the Fourth British Empire Conference held in 1935, the general unwritten forest policy in Malaya was one which

consistently encouraged [colonial Governments] to think of their forest departments primarily as quasi-commercial organisations, engaged in an activity of economic importance . . . — the growing of timber as a raw material for industry — justifying themselves mainly by their financial results. The protective argument may carry weight in countries where the ill effects of forest denudation have been experienced; elsewhere there is no argument for forestry so cogent as a forest department that pays dividends. [Troup 1940: 379–380]

Commercial exploitation of Singapore’s forest resources petered out in the late 1930s, not because of the strength of “the protective argument” but because exploitation was no longer an economic proposition given the depleted resource base. As mentioned earlier, the forest reserves were converted into nature reserves in 1951.

In the 1990s, nature preserves are increasingly re-invested with new economic functions: no longer viable as resource areas to be harvested for timber and other forest produce, they are increasingly touted as the island’s “natural” or “ecological” attractions which are easily accessible to the tourist. Indeed, one of the Singapore Tourist Promotion Board’s marketing strategies lies in “eco-tourism” whereby “the natural assets of a country are sold as a tourist draw”<sup>17)</sup> [*The Straits Times*, 16 Aug. 1991]. The Board is currently taking active steps to publicise the rich diversity of the island’s natural heritage and to develop “special interest” tours based on various aspects of the natural environment so as to counter the hitherto “heavy dependencies . . . on man [sic]-made attractions” [*Catering and Hotel News*, 5 July–18 July 1991: 8]. Singapore is sold as “one of only two cities in the world to have a genuine rainforest,” an island of “beaches and wildlife” and a place where the tourist can experience the “traditional rural charms” of offshore islands amidst a natural setting [*The Straits Times*, 16 Aug. 1991; Waller 1990]. The “glass and metal of Singapore’s skyscrapers,” it is claimed, conceal “havens of nature where birds, insects and greenery thrive”

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17) The concept of “eco-tourism” was publicised in April 1991 at the Preserve Planet Earth Award Ceremony, where Professor Tommy Koh, Singapore’s ambassador-at-large and the Chairman of the Preparatory Committee for the 1992 United Nations Conference on Environment and Development, challenged the Singapore Tourist Promotion Board to market the republic’s natural habitats as tourist attractions.

which can be “systematically tapped . . . as a tourist attraction” [*PATA Travel News Asia/Pacific* 1991 : 42]. Nature thus provides the ideal converse to “the city’s growing sophistication in telecommunications, finance and transport, its changing skyline and shopping centres” in promoting Singapore as a city of “surprising contrasts” [*The Straits Times*, 16 Aug. 1991]. Indeed, the ambition of the Singapore Government is to make Singapore an “Environment City,” a city which is, in the words of Professor Tommy Koh, “like New York built inside Central Park” [Briffett 1990 : i]. Nature thus not only serves scientific, aesthetic and recreational purposes, but “produces significant economic advantages” as “there are more and more tourists who are interested in observing nature” [*ibid.* : ii]. More precisely, the NSS calculated that “eco-tourists” would exceed 25 per cent of Singapore’s tourist population and that the extra days tourists would spend in “nature-related activities” could significantly boost tourist-derived income [*ibid.* : 4].

Specific nature-related tourist activities currently promoted in Singapore include bird watching tours and specially designed nature walks. A recent issue of the *Singapore Travel News*, for example, highlights nine “wildlife sanctuaries” dotted around the island which boast some “322 species of birds and many endangered species of wildlife found on the tropical island” [*Singapore Travel News* 1991 : 4]. While bird watching in itself is not a new activity, the recent promotion of ornithological activities is packaged for the tourist, complete with “free-lance guides specialising in nature tours [to] help newcomers to spot the birds and wildlife in their natural habitat” [*loc. cit.*]. In a similar vein, one of the best-publicised nature rambles which takes two-and-a-half hours to complete is developed on Sentosa, Singapore’s premier tourist resort island. These are but precursors of future plans to commodify nature for tourist consumption. The Singapore Tourist Promotion Board has plans to actively “market” the natural environment and stimulate visitor interest in Singapore’s natural heritage [*Catering and Hotel News*, 5 July–18 July 1991 : 8]. It plans to produce a special brochure on aspects of Singapore’s natural heritage as well as to encourage local tour operators to develop “special interest” tours based on various aspects of the natural environment [*loc. cit.*].

Nature is hence heritage, to be conserved as part of the nation’s consciousness of its own unique identity and as a magnet to draw tourists who seek to escape the press of urban life to find the pure and pristine. The economic value attached to nature preserves is no longer calculated on the basis of timber and forest products, but in terms of visitor revenue. Nature itself, replete with symbolic meanings of “wilderness,” “naturalness” and “otherness” is now the marketable commodity, not nature’s more tangible produce. The designation of selected segments of the landscape as “natural” preserves (nature reserves, wilderness enclaves, bird and wildlife sanctuaries) as opposed to non-preserves also reifies nature as a separate curiosity which is visited in preserves on special occasions rather than something which is present in the context of everyday life. This is totally consistent with the imperatives of economic development, for restorative preserves of nature detract from the fact that elsewhere nature is threatened, transformed or erased, and rapidly alienated from everyday urban life. Nature, whether in material or symbolic form, could serve as a resource which can be shaped towards economic ends and as such, tourism often becomes the main beneficiary.

#### IV Conclusion: Nature as Constructed Human History

The environments of everyday life have seldom been the subject of reflection or interrogation [Eyles 1989: 102]. Nature suffers all the more from this lack of inquiry because it is taken for granted as “naturalised” and hence unproblematic. Far from being a singular abstracted entity, nature is invested with a multiplicity of meanings. These meanings are socially constructed and reflect changing values inherent in society [Olwig 1984: 95]. At the heart of these socially-constituted meanings lies the basic conception of nature as “other,” as separated from human society. As externalised “other,” nature is open to manipulation for human ends. In the context of Singapore, nature is objectified as a resource for scientific inquiry, for health, aesthetics and recreation, and for economic gains. While these have been consistent themes in the construction of nature in both the colonial and post-independence period, the precise form of each construction is specific to the particular historical context. In the colonial period, the construction of nature as a sanctuary for diverse biotic species was central to harnessing tropical botany to economic purposes in an era when new cash crops were needed for incorporation in colonial plantation economies. In the post-independence period, while still furnishing the raw materials for utilitarian purposes, biologically diverse nature is conserved as part of a country’s heritage and at the same time evaluated against other economic and developmental goals. On the question of nature’s contributions to salubrity, aesthetics and recreation, the colonial period was one in which the pristine environment was valued particularly for invalids; in other words, much store was placed by nature’s contribution towards salubrity *vis-a-vis* its aesthetic and recreational functions. Given the often squalid conditions in the urban quarters during the colonial period, it is no surprise that nature was valued for its contribution to healthy environments. With the improvements in public health and hygiene in the post-independence years and growing affluence, nature as an aesthetic entity and as a setting for recreational activities has understandably gained ascendancy as contributions towards improving Singaporeans’ quality of life. Finally, during both the colonial and post-independence eras, the value of nature has not been beyond commodification. Under colonial rule, nature was exploited for economic gain in the form of tangible produce. In recent years, nature is again marketed, this time in less tangible terms as an ecotouristic commodity.

In sum, the objectifications of nature embody a set of social values that endorse economic imperatives. Specifically, they support rather than challenge economic development and the concomitant expansion of built-up areas in two ways. As we have shown, nature in both material or symbolic form can afford direct economic benefits. Where nature does not produce direct economic advantages, it can nonetheless support economic goals. In particular, as constructed forms, nature acts as substitute for those larger tracts of naturally occurring landscapes that were cleared away to make way for urban and economic development. In other words, nature is a socially constructed reality constituted in the image of a society concerned with economic development and progress. As Singapore looks towards becoming a “blue and green” island playground by Year X [*Living the Next Lap* 1991], integrating new urban developments with nature become even more crucial. Yet, there is little question as to the relative priorities of urban development *vis-a-vis* the preserva-

tion of nature. In the words of Liu Thai Ker, the former Chief Executive Officer of the URA,

It is not a case so much of bringing nature into urban development but bringing urban development into nature. [*The Straits Times*, 12 Sep. 1991]

In this interpretation, nature can be and is rightfully invaded and used if the aspirations of Singaporeans to live in a tropical island paradise with close-to-nature housing, resorts and marinas were to be achieved. The ideological debate in contemporary Singapore is not so much whether the urban and the natural should be dichotomised and kept apart but which *form* of nature — “manicured lawns” or “untamed wilderness” [*The Sunday Times*, 3 Nov. 1991] — best suits modern urban Singapore.

Given these varied constructions of nature within the context of Singapore, what we have illustrated is that “the idea of nature is the idea of man [*sic*],” particularly the “idea of man in society” and indeed “the idea of kinds of societies” [Williams 1980: 71]. In other words, nature is neither static nor singular but instead “contains, though often unnoticed, an extraordinary amount of human history” [*ibid.*: 67]. While this paper illustrates the substance of specific constructions for a particular place at a particular time, what we also hope to do is to suggest that the research ambit can be enlarged. We would like to suggest that this study of state constructions of nature in Singapore opens up possibilities for comparative work in at least two directions. First, state constructions can be understood in relation to popular meanings and values invested in nature. Particularly in the context of multiracial, multireligious and multicultural Singapore,<sup>18)</sup> one interesting and important dimension for exploration is the different ways in which the various groups invest diverse meanings in nature. While writings about the different Chinese, Malay and Indian folk beliefs regarding nature exist, highlighting how all three groups have long traditions that encourage harmonious attitudes towards nature [for example, Savage 1993], given the lack of research, it is less clear how these beliefs actually influence behaviour. As Doughty [1981] pointed out, holding a particular attitude does not necessarily amount to acting in a manner consistent with that attitude. Thus, even while *yin-yang* philosophy advocates harmonious relationships, including that between Heaven, Earth and humans; even while the Indian Great Tradition stresses that human beings are a part of nature and that all life is inviolable; and even while part of being Muslim includes loving and respecting nature, historical evidences also exist to show how each of these different groups have at certain points despoiled nature [see, for example, Tuan 1974].

Second, comparisons can be made between state constructions of nature in Singapore and those in other contexts. For example, comparisons can be made with other urban contexts as opposed to rural contexts. A preliminary reading of Malaysian state constructions of nature within the context of its capital city, Kuala Lumpur, indicate, for example, that fairly similar constructions of nature are apparent. Nature is constructed as scientifically and ecologically important, evidenced in land

18) Census categories, for example, show a racial profile of Chinese (78%), Malays (14%), Indians (7%) and ‘Others’ (1%) [Census of Population Office, 1991: iii]. The religious profile reflects 54% Buddhists/Taoists; 13% Christians; 15% Muslims; 4% Hindus; and 14% with no religion [*ibid.*: 12].

gazetted for the preservation of birds and animals, and in the language which couches natural pockets as "green lungs." Simultaneously, nature is recognised, and indeed, developed as recreation grounds. Such forms of nature are often managed, taking shape as golf courses and other public parks. Finally, nature is acknowledged to be economic commodity, but unlike Singapore's case, such nature takes the form of plantations, for instance, of rubber [Teh 1989]. Such constructions may differ from the same government's constructions of nature in the rural areas. More certainly, they differ from other groups' constructions of nature, such as environmentalists and nature conservationists. An understanding of such divergences may well be the first step towards reconciling differences over the importance of development *vis-a-vis* nature conservation.

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