

Mason Tan Beng Jin

24A Ann Siang Road, Singapore 069704

Tel: 325 4941

Fax: 325 4901

Email: nutmeg@macestudio.com.sg

A Perspective on Landscape Planting Strategies in Singapore

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Mason Tan Beng Jin

President, Singapore Institute of Landscape Architects

Director, Mace Studio

Abstract

This paper provides an overview of the various greening periods, that shaped Singapore's "Garden City" landscape during its miraculous years of economic development and the new challenges it faces at the dawn of the twenty first century. It defines three landscape periods in the development of Singapore's green landscape. The first two landscape periods, the "Survival Landscape" and "Mosaic Landscape" mark the late sixties to the early eighties, and from then to the late nineties respectively. During the first period, distinct landscape types were "Standardisation Planting" and "Gardenesque Planting", while "Manicured Mosaics" and "Themed Mosaics" characterised the next. Pressure on limited land for a population of 5.5 million and high priority for developing economic infrastructure, is challenging the ability to sustain the lush green mantle. In addition, Singapore is moving to the concept of a "City in a Garden", a more intensive approach to greening the urban environment. This challenge depicts the dawn of the next landscape period, the "Integrated Landscape", where "Local Identity", "Eco-design" and "Consolidation" are proposed greening strategies to realise the "City in a Garden". This will require change in entrenched ways of planning and thinking.

A PERSPECTIVE ON LANDSCAPE PLANTING STRATEGIES IN SINGAPORE

Introduction

Singapore is a small island nation 647 square kilometers in size. It is the size of cities like Chicago in the United States or Madrid in Spain. Situated at the southern tip of the Malay Peninsula, it supports lowland rainforest type vegetation which is humid and tropical in nature.



Photo 1 Singapore at the tip of Peninsula Malaysia

An overview of Singapore's development since independence reveals three periods shaping the green landscape. The first period was the "Survival Landscape", and was then followed by the "Mosaic Landscape".

Singapore is now entering the next period of the "Integrated Landscape".

By the standards of the rise and fall of nations, Singapore has a very short thirty eight years of history since its full independence in 1965. Small and vulnerable,

without any natural resources, the nation had to accommodate the numerous requirements for housing, infrastructure, work places, recreational facilities, training grounds for the armed forces, airport and seaport, something it has done very successfully.

Survival Landscapes

At the time, the landscape outside of the main city area was still dominated by isolated patches of significant forest, large expanses of scrubland, numerous plantations and cultivated land. Within this setting, a strong political will saw the implementation of the "Garden City" concept. Greenery was seen as essential in providing a conducive living environment, as well as a tool to achieve a clean and orderly city. The inaugural "Garden City" campaign was launched in 1967 marking the beginning of the "Survival Landscapes", a period from the sixties through to the early eighties. This was dominated by two distinct landscape styles: "Standardisation Planting" and "Gardenesque Planting". These were horticultural in nature, with little emphasis placed on landscape design.

"Standardisation planting" was born out by the need for rapid greening of the growing urban environment, as well as to minimise costs in a still fledging economy. No road was left unlined with trees and no vacant land within the city left unplanted with turf and shrubs. Harsh concrete walls were planted with creepers, overhead pedestrian

bridges were lined with flowering shrubs, and unsightly sub-stations and rubbish centers were screened from public view. Rapid planting meant only a few select trees and shrubs which were fast growing and hardy, were planted extensively. They were planted based on fixed planting distances (*Samanea saman* tree planting at 12 metre centers) and fixed planting allocations (*Ficus pumila* creepers for covering walls, *Baphia nitida* large shrubs for screening and Bougainvillea shrubs for overhead bridges).



Photo 2 Standard *Ficus pumila* creeper on wall



Photo 3 Gardenesque planting with islands of shrubs

After reflecting on the success of the rapid greening programme in most urban areas, it was decided to enhance this through more aesthetics. A “Gardenesque Planting” style developed from the mid-seventies, when more exotic flowering and fruit trees, and shrub species

were enthusiastically cultivated in literally every available space. The standardized look was now reinforced by a garden of “lollipop” tree planting interspersed with “islands” of shrub beds. It dominated public housing estates, parks and open spaces and roadsides.

The fruits of the “Survival Landscape” became visible in the 1980s when bold swaths of green tree masses and colour engulfed entire urban areas. However, this green landscape was a homogenous urban forest, showing little difference in character from one part of the island to another. This was a soulless green landscape requiring a high maintenance regime.

Mosaic Landscapes

Singapore’s early development strategies proved to be very successful, generating rapid economic growth and wealth for the population. Keeping the economy growing and providing a good quality of life for the people were key forces that shaped the physical landscape of the island from the eighties through to the mid-nineties.

Population growth and increasing demand for land saw an accelerated programme of clearance of plantation and agricultural land, as well as large portions of mangroves and secondary forests. Gazetted forest reserves and remaining biodiversity areas were constantly being eroded along their edges. Within this development frenzy, a “Mosaic Landscape” of roads, parks and open spaces, public housing, industry, defence installations and private residential developments took shape through two landscape styles. These were “Manicured Mosaics” and “Themed Mosaics”.

“Manicured Mosaics” developed from the success of the “Garden City” effort, and was characterised

by institutionalisation and territorialism of planting strategies amongst government agencies. “Lollipop” and “island” planting became an institutionalised planting style, and was intensified and extended as the horticultural estate increased. More exotic species and various plant combinations were introduced. Although, a few conservation and rehabilitation projects were implemented, they remained the exceptions to the rule. Greenery was still seen as decorative in nature rather than a complementary tool to solve larger planning and engineering problems, e.g. channeling wind, filtering water and slope stabilisation.

Territorialism centred along administrative boundaries of responsibility between government agencies. The Urban Redevelopment Authority, National Parks Board, Housing and Development Board, Jurong Town Corporation, Drainage Department and Land Transport Authority, each developed their own planting strategies to suit their respective technical requirements. There was little co-ordination of broad landscape strategies. The fruits of this has been a mosaic of disjointed public landscapes.

By the eighties, the profession of landscape architecture in Singapore was beginning to be accepted by private developers as essential in enhancing projects. However, as the island’s natural landscape had already been largely destroyed, and with only a short history as a nation, there was no strong Singapore landscape identity to incorporate into designs. Developers resorted to borrowing foreign styles. Such “Themed Mosaics” were used in private developments through the eighties and nineties and contributed to the “Garden City”. They contrasted with the “Manicured Mosaic” style because they were intensively designed around themes. Japanese gardens were in great demand since the late seventies, followed by the Balinese

look in the mid-eighties. The mid-nineties saw a reaction towards minimalist/contemporary planting styles. Both the “Manicured Mosaic” and “Themed Mosaic” styles were compartmentalised in nature and did not exploit opportunities to create dynamic macro-level landscapes.



Photo 4 Multiple land owners contributed to the manicured mosaic



Photo 5 Condominium project designed around a theme

Integrated Landscapes

In the early twenty first century, Singapore has to face up to its achilles heel of limited land. According to planners, Singapore requires a population of 5.5 million to sustain

long term economic viability. Pressure on land use poses a major challenge in innovatively allocating enough land to house, feed and entertain an enlarged population, while striving to achieve the new concept of a “City in a Garden” through the ideals of identity, connectivity, seamless ness and nature. How can this new concept be realised in such an environment?



Photo 6 Singapore's Concept Plan 2001



Photo 7 Massing model of Singapore's new downtown

It is important that greenery continues to be viewed as an essential ingredient in creating a livable urban environment. Greenery contributes a vast intangible value

to the economic, social and health of cities. As such, government agencies and developers must begin to look towards shaping a new landscape: the “Integrated Landscape”. Trends in thinking indicate three main strategies which should guide this new landscape: Local Identity, Eco-design, and Consolidation. Achieving this requires a change in planning models, methods of current urban development and adoption of a landscape design ethic.

The new landscape has to attempt to define a landscape identity for Singapore. A good beginning is to recapture our “Local Identity”, through identity planting. Analysing the geological, topographical, soil, climatic, vegetation, cultural and social patterns will help identify the various landscape zones that exist within the island. This will enable different planting strategies and plant palettes to be developed for each zone's natural environment and character. Carefully managed, these zones will gradually establish a more socially valuable and ‘readable’ macro-scale landscape over the next thirty years, in contrast to homogenous landscapes or borrowed identities from other cultures.

Eco-design is an approach to utilising existing topography, natural systems and plant material as tools to help solve sustainability issues and maximisation of land use. Such an approach retains the essence of a site and does not allow a standard manicured solution to be enforced upon it. It can in many instances provide cheaper alternatives to standard hard engineering solutions. Some examples of how planting material can be used are described below.

Precise placement of large masses of tree groves in conjunction with the local climate, topographical pattern,

water bodies and urban massing can affect wind circulation and temperature patterns. This will be useful in high-density urban areas where wind tunnels or wind barriers are common phenomenon.

Re-modeling architecture massing, existing topography and drainage patterns can allow rainwater and surface run off to be collected in numerous water retention ponds, to be recycled. Such ponds can easily be created within each local community's open space network, and also contribute as a recreational amenity. Terrestrial and aquatic plant material can be used to filter the water and integrated into the open space planting scheme. An important benefit is the resulting unique integrated architecture and landscape form created.

Innovative planting designs featuring productive gardens; fruit, vegetable and spice, can be used as a community resource and offer therapeutic benefits to residents of all ages. Such gardens can be cultivated on the hundreds of hectares of high-rise rooftops, providing heat insulation to higher floors, softening the hard urban edges and even modifying the immediate micro-climate.

"Consolidation" is the strategy to bring together various bodies to maximise land use for better greenery integration and exploit opportunities to create unified macro landscapes rather than disjointed mosaics of green. Cross-administrative sharing will need to take a high priority in planning land use. Some examples of how consolidation of greenery can occur are described below.

The Park Connector System was initiated in the eighties and was envisaged as a network of nature corridors and paths that would link each major park. This would provide a seamless green connection. These paths have thus far, been built along existing drainage reserves but have

lost their nature corridor component due to the lack of space. A consolidated Park Connector System can meander through administrative boundaries, such as drainage reserves, road reserves, housing estates, industrial estates and other areas of interest, with adjacent public or private land contributing to a nature corridor planting scheme and even sharing of footpath and lighting facilities.

At the same time, major parks can take on new uses by becoming dynamic environmental centers. They can integrate water retention cum recreational lakes and streams, which collect and store precious water from surface runoff, ground water discharge and the regional drainage system. They can also function as havens for rehabilitating or reintroducing indigenous fauna and flora, and as venues for adventure sports. This will free up land in other locations bodies for other uses.

The current green mantle is largely formed by thousands of street trees. Expanding the road infrastructure and bringing developments closer to the road reserve are developments that will decimate parts of the green mantle. As planting strips and green buffers along streets become narrower, or even none existence, there is a need to look towards adjacent land uses to borrow land and integrate planting, screening and footpaths. Private and public residential estates, industrial estates, government installations, etc can be brought together to use their land adjacent to roads to replace lost road side planting strips.

Skyrise greening is another area where maximisation of land is considered important in Singapore's context. In the future high-density urban condition, buildings will be multi-tiered high rise developments linked together by sky bridges at different levels and multi-level basements. In this multi-layered

scenario, greenery on buildings and sky bridges will have to be well integrated into the environment. Greenery is important in softening the hard and hot environment and to influence the micro-climate.



Photo 8 An impression of landscape integration

In conclusion, the tough challenges which the pioneers of the “Garden City” campaign faced, continue to be faced in Singapore, albeit, in different forms. Achieving and sustaining the new “City in a Garden” can happen if major changes occur; to shift towards a design oriented landscape, bolder experimentation in planting styles and the integrated urban form, and bringing government agencies, private sector and land owners together to share a common landscape.