Architecture and the Mangrove Environment
Lessons from Form & Adaptation Designs in Mangrove Systems

by

TAN MEI-YIN DIANE
HT00-4052Y

Submitted to the Department of Architecture
on December 14, 2001 in Partial Fulfillment of the
Requirements for the Degree of
Master of Architecture

ABSTRACT

This dissertation is focused towards the lessons that we can learn from
the mangrove tree system and mangrove swamp ecosystem, and also the
lesson that we might have indirectly learnt. By studying the mechanics of the
trees and the energy cycle of the eco-system, it is possible to derive
architectural icons or models that future architectural designs could be based
on.

Mangroves have existed since the cretaceous and have adapted to their
habitat to survive till today. Their ability to survive shows that there is much to
learn from them.

This dissertation talks about the origin of mangroves and what makes up
a mangrove swamp. It also talks about the importance of the mangroves to the
ecosystem and how mangroves are being depleted and destroyed because of
pollution and exploitation.

The main part of this dissertation focuses on the architectural icons that
can be derived from the three main root systems of the mangrove trees, its
ability to selectively absorb water ions and not salt ions, its ability to expel salt
from the leaves and anaerobically decompose organic matter in the anoxic soil.

Lastly, it talks about how we can apply these icons to architecture and
how these architectural models can be of a benefit, and with this knowledge,
why we should preserve the mangroves.

Dissertation Supervisor: Dr Ong Boon Lay
Title: Senior Lecturer