Towards Sustainable Landscapes

Guidelines for regulating Aesthethics and Environmental Quality of the Landscapes

A Masteral Thesis of Arch Maria Mynn Porciuncula-Alfonso
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Abstract
2003

As we are beginning our lives in a new millenium, it is an oppurtunity to work globally and be responsive to environmental problems we are experiencing. International conferences in the 80's and 90's focusing on issues of sustainability, fired up the hearts of some international landscape architects, to based their works not only on aesthetic but an ecological based designs. They begun to embrace the theory of sustainable development by analyzing their designs and projects not only to their current and potential environmental impacts but also their supposed impact on future generations. Locally, urban planners provided us with books in sustainable land use planning but in relation to landscaping, it was left in the hands of the local government units especially their Clean and Green programs. The declining quality of life and environment in our country must be saved and I am focusing my thesis work to be part of the endeavor.

My thesis is intended to be a guideline for local government officials, environmental advocates and design professionals to deal with the current environmental problems but particularly in the enhancement the Philippine landscapes. It details concepts to alleviate problems in air, water and noise pollution using the most economical natural materials PLANTS. It deals with energy conservation through the use plants, recyclable materials, Passive Design using the sun and wind. It will reintroduce the use of bikes and enjoyment of walking in the streets. It will provide some simple guidelines pertaining visual and environemtnal analysis. And lastly some pointers in changing the levels of moral values and ways of life of Filipinos.

Thus, an appropriately, environmentally fit places utilizing natural materials in natural ways, may help alleviate our living conditions and comfort for a sustainable Filipino Landscape.

2012,Today

After nine years, I am still in pursuit of Sustainable Landscapes, my reason for joining this seminar :14th Shared Growth Seminar: "THE URBAN-RURAL GAP AND SUSTAINABLE SHARED GROWTH -April 26, 2012"

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Introduction

In 2003, I presented my Thesis – Towards Sustainable Landscapes to a panel of distinguised Architects and Landscape Architects with Arch Horacio Dimanlig as my Thesis Adviser to Arch Mary Ann Espina, Arch Cecille Tence, Arch Danilo Silvestre, Arch Paolo Alcazaren and guest Arch Geronimo Manahan, Gloria Lava, Arch Geoffrey Cardinal...

My thesis in 2003 is intended to be a guideline for local government officials, environmental advocates and design professionals to deal with the current environmental problems but particularly in the enhancement the Philippine landscapes. It details concepts to alleviate problems in air, water and noise pollution using the most economical natural living materials PLANTS. It deals with energy conservation through the use plants, recyclable materials, passive designs through sun and wind. It will reintroduce the use of bikes and enjoyment of walking in the streets. It will provide some simple guidelines pertaining visual and environmental analysis. And lastly some pointers in changing the level of moral values and ways of life of Filipinos. All of these post graduate studies will be translated to a Handbook-easily understable , in Tagalog, to the majority of Filipino people, the less literate, less blessed of material world.

The greening of our environment is the restoration creation and maintenance of plant life in our towns and cities . It includes planting shade trees, fruit trees and vegetable garden. It means evergreen ricefields and grasslands. It is also ideal to plant indigenous plants because they are always abundant and require less maintenance and water. A listing of suitable plant species for use in roads, parks and river banks are important “must have” by our local government unit for a sustained greening of our towns and cities.

Values created by Trees and Plants

Softening the towns environment with their green foliage
Reducing pollution by removing airborned dust and particulate matter
Cooling air temperatures by shading people, building, streets and sidewalks
Soothing peoples spirit with their natural beauty
Elevating property values by enhancing the neighborhood aesthethics
Providing places for birds and wildlife, bringing nature into town
Natural resources Increasiong neighborhood pride, as people plant flowers in fences
And most of all
Reducing the greehouse effect by removing carbon dioxide in the air thru planting more Trees and Plants

Background

As we are beginning our lives in a new millenium, it is an oppurtunity to work globally and be responsive to environmental problems we are experiencing. International conferences in the 80's and 90's focusing on issues of sustainability, fired up the hearts of some international Architects and Landscape architects, to based their works not only on aesthetic but an ecological based designs. The role of Architects, Landscape Architects and Design professionals had changed tremendously during the past decades. They led to embrace the environmental values in the design of their projects. Ian Mcharg, John Lyle, Norman Foster. Renzo Piano....were prominent practitioners who based their works not on aesthetic alone but on ecological based designs. They begun to embrace the theory of sustainable development by analyzing their designs and projects not only on their current and potential impacts but also their supposed impact to future generations.

Thus in embracing and practicing sustainability, the Landscapes will survive in natural harmony with the environment. Sustainable landscapes is an alternative approach in enhancing our lives by having back a comfortable living conditions, healthy sites and lovable views.

Like in landscape planning for energy conservation, the concept is to minimize the effects of heat and corresponding use of energy consuming climate control systems by improving the microclimate conditions. These require solutions in vegetation, site planning and landscape and building designs.

Sustainanble development became a prominent word since the publication of the book " World conservation Strategy" in 1980. It gained even greater status since the well attended United Nations Conference on Environment and Development otherwise known as Earth Summit held in Rio de Janiero in June 1992. In the Philippines, DENR initiated the process to fomulated a Philippine strategy for sustainanble development in 1987. In 1992, the Philippine Council for Sustainable Development was created as a quasi-government body by a Presidential order. In mid 1996, the sustainable development models and systems (SDMS) sub program of the Integrated Environmental Management for Sustainable Development (IESMSD) initiated a project on Capacity Building for Sustainable Land Use Planning. This culminated in the completion of six volume guidebook on Sustainable Land Use Planning and Management with sections on Forestry, Protected Areas and Coastal Resources. These quidebooks are useful to land planners but topics pertaining to valuing landscapes and its sustainability are lacking. Locally, urban planners provided us with books in sustainable land use planning but in relation to landscaping, it was left in the hands of the local government units especially the DILG Clean and Green programs in the beginning of the 21st Century .

Thus, in most part of our cities and towns, we will see the words Clean and Green. They became very popular, what most of our folks understood about it, is that, "*pagtatanim ng mga puno at halaman*" and its "*project ni Mayor*" Thus new trees and plants suddenly sprout in our roadsides,streetsides, parks and even in exterior of public buildings. But after a month or two most of these plants withered...gone. They died due to poor maintenance, pollution and intense heat in our streets. Just like when the Marcoses ruled our land. The places

became "*Imeldific*" which means instant beautification drives by repainting of residences and commercial buildings, planting trees and plants in big" Banga", colorful banners and "buntings" along the road - routes of foreign visitors visiting Manila.

The Clean and Green program is monitored by the Department of Interior and Local Government. Trees are distributed by the Department of Environment and Natural Resources or purchased from private plant nurseries. Funds for planting, maintenance and cleaup drives comes from the annual budget of local government unit. Roadsides of towns are usually planted with Acacia, Gmelina, Mahogany, Narra, Cassias, Fire Trees,.. In local streets, the plants are usually bougainvilles, duranta and santan in colorful plastic or metal cans. Some local government even purchased expensive palms and plants for their park. Most of us are willing to be part of these new green revolution but some simple old ways must be relearn.

We are spending millions of funds and time for the program, but have we achieved the true greening of our town and cities?

Now, 2012, we, Academicians, Architects and other professionals are aware of Climate Change which pertains to our unending use of fossil fuel. This will result to rising sea levels – resulting tsunami, earthquakes, loss of communities, Typhoons and flood...landslides, loss of biodiversity in our forest, less agriculture... we cannot do any to prevent climate change. But a way to survive this condition by empowering the people to plant more Plants and Trees that multiply fast.

In our land, the declining quality of environment must be remedied. We must think holistically on how to improve and enhance the image of our towns and cities as well as how we will make them sustainable. We need a concerted decision and actions form our local government officials and constituents based on a set of sustainble landscape guidelines and principles to reshape and reorganize our towns and cities. For a sustained, enhanced, sound healthy, safe and culturally rich landscapes of towns and cities, there are five important elements that needs to be assessed as follows.

Scenic, Natural nad Historic Sites
Roads and Streets
Parks and plazas
Waterways
Dumpsites

And **Handbook** for local folks for them to understand what is really hapenning in our environment now.... what is climate change in very simple terms...understable, so it will be in Tagalog, more graphics and easy for them to perceive it.

Goals and Objectives

Goals

To create an aestically and environmentally sustained landscapes of towns and cities.

To promote sustainable landscapes based on fundamental environmental values as the path to new landscape designs.

To improve the physical and visual quality of the Philippine landscapes

Objectives

The thesis aim to achieve the following objectives:

Promote a wide understanding of the most important issue of our time **Climate Change** and environmental degradation and inequalities

Provide landscaping **guidelines** gearing towards sustainability through proper use of Plants and Trees

Develop a **handbook** intentionally for the barangay unit / local folks for their use in dealing with environmental problems and proposed changes in the landscapes, easily perceivable and understandable.

Scope

The Thesis analyzed five major elements of a town/city utilizing concepts of sustainable development with special emphasis on landscapes as follows:

Scenic, Natural and Historic Sites, Roads and Streets, Parks and Plazas, Waterways, Dumpsites,

Identification of problems relating to environment and landscape focusing in the town proper of Tanay, Rizal, Philippines. Guidelines and design standards for each topic shall be outlined and presented through graphics and photographs. A handbook especially written for the Barangay, (the smallest local government unit).

The study did not delve on detailed land us, social and economic evaluation but concentrated on concepts of visual analysis, regenerative designs and landscape development.

Scenic,Natural and Historic Sites

In the height of technological advancement in communications, more transports and population, the town's visual image is changing rapidly. Patterns of rural land ownership changed hands drastically, thus the scenic rural landscapes of rice field farms and orchards are lost to new business establishments and subdivisions. Historic structures and its environment are desecrated. Town's natural resource such as rivers and waterfalls are being neglected due to unsound practices and pollution. Thus, change is the theme of most towns vying for urbanization, but the maintenance of its image and preservation of its cultural heritage must always be part of its new development plans.

The natural and historic sites and manmade features of towns and cities are major influences on how a town image will look like, but as they developed, these places losses its character. Town landscpes are naturally beautiful , but urbanization inconsiderable eliminates the landscape elemets such as farmland, scenic mountains and hills, majestic waterfalls, centuries old churches as well as the people's culture and traditions.

A tool to improve or maintain the visual quality of a place is to utilize the Visual Resource Management. This is generally used in analysis and decisions about utilization of land area. In the United Satates, these studies are used for analysis of scenic rivers or highway visual quality. The landscape visual analysis is a part in a visual resource management of a place concerned with realtionship between the existing landscape and the new objects/development in the landscape. The quality of a place is being analyze by simply indicating what is best, good, fair , bad or different.

Landscape Visual Analysis for a community

For small towns and communities instead of using the elaborate numerical scaling in landscape visual analysis we can follow this simple approach.

Inventory/Analysis

Primarily, listing and analyzing of resources and sites. Good environmental inventory, if used properly are very important. Communites need to know about:

Basic resources as:

Soils, water, vegetation, climate, habitat of wildlife, agricultural, recreational and visual resources and significant archtiectural and historic sites.

Then selection of best sites by its numerous features.

Surveys and Maps

Survey maps, land Use Plans, aeriel photographs from Namria, vicinity maps, soil analysis, slope analysis map

Natural Sites

These are significant natural areas selected on the basis of their environmental sensitivity in relation to its effect on welfare, health and safety of the people. Example: Springs,

waterfalls, rivers and lakes

Historic Sites

Usually identified by National Commission of Culture and Arts (NCCA) but some sites can be identified by the townfolks. Aside from historic churches which are very typical in the Philippines, historic sites includes old houses, mountain trails, lake area, sites of historic events,etc.

Scenic Resources

Sites along the roadside which possesses exceptional views, picturesque landscape needs to be identified and designated as Scenic resource of a town.

Through Landscape visual analysis, we can enumerate what can be seen in an area (Viewpoints) and whether a proposed project can merged with the site. Visual similation is a good and simple tool to know what will the development will look like in relation to the existing site. Photomontage are effective and inexpensive way of viewing a new project by adding the realistically drawn project to the existing viewpoint to pinpoint the best viewing area of the scenic spot.

Priority Targeting

With the various maps which are over laid to one another, then listing of resources and conduction visual analysis, we can determine the town's positive and negative feautures. We will be able to decide which land should have the highest prioprity for protection, views that needs to be preserved and /or conserved and what type of development can be ideal for the town.

Recommendations

The identified sites shall be discused among the town folks. We must prioritize the role that the public plays in determining the context of a town or city...whether gearing towards natural preservation or historic conservation. It is the response to local people interest which has been the driving force behind most remarkable visual and landscape assessment work. The active participation of each member of a barangay will be the measure of its success. They must be encouraged to participate in the initial activities and let them be heard of their ideas. Seek a consensus from the town folks, seek for solutions for problematic areas by the following techniques and guidelines:

Imposition of zoning/municipal ordinances
Control of building heights, setback provisions
Provision of scenic easements
Planning and Architectural review of new devlopment around sites
Enhancement of views
Impose design guidlines for construction in the sites
Incorporate priority sites in the Land Use Plan

Plan for its future development
Promotion of sites, emphasize their importance
Mitigation, find ways to remove certain distracting features
Siting Buildings
Vegetation

Laws - Environmental Impact Assessment

For a sustainable landscapes, our environment must be at par with our objectives. First we must have laws for effective transformation. The earliest Environmental Law was Spanish Law of Waters of 1866, which stated that when an industrial establishment was found, after due investigation, to have contaminated the water with substances or properties noxious to the public health, the Governor General could suspend its operation until the Owner adopted suitable remedy. Then in 1978, Presidential Decree 1586 was signed and Environmental Impact Assessment System was implemented. It is the most useful tool for sustainable development. EIA is a a basic and essential policy instrument for incorporation of environmental considerations into planning and implementation processes of development to achieve a sensible integration of environment and development. This is undetaken by developers, contractors and businessmen to determine the environmental effects of a paroposed project prior to its implementation. The Department of Environmental and Natual Resources(DENR) Environmental Management Bureau (EMB) and DENR Regional Offices are the implementing arm of EIA.

Major steps in conducting an EIA are:

- Scooping/conduct of site visits and public hearings
- Baseline studies/ Ecoprofiling
- Impact Identification, Prediction and Evaluation
- Environmental Management, planning and Environmental monitoring

A very important factor in the development of sites is the carrying Capacity of an area. We, in our quest for economic advancement and enjoyment of variey of leisure places must realize that our resources are limited. Thus the carrying capacity of an area must be considered. As defined in the book, Eco-tourism in the Philippines “Carrying Capacity is the maximum number of individuals that can be accomodated in an area without affecting the state of the environment, the level of satisfaction of the visitor, and the social culture of the host community” A formula by Boullon (1985) to estimate the carrying capacity in a given area.

$$\text{Carrying Capacity} = \frac{\text{Specific are used}}{\_\_\_\_\_}$$

Average individual standard per area (sm/person)

Others find it difficult to determine the carrying capacity because of social variable that cannot be quantitatively measured. While, if the local government will be using formulas and variables they will find it complicated. By using our common sense especially if intended for used in our Barangay, we should estimate simply how many will comfortable fit in a place or site. But, for bigger projects, we must consult individiduals or government agencies who are best in this field such as environmental planners and architects.

In establishing a viable contemporary landscape of towns in its scenic, natural and historic sites one must be able to tie "ecological values and principles to the notions of environmental and social health; to the essential bond of people to nature; and to the biological sustainability of life itself. The scenic, natural and historic sites lend the town memory and life. They contribute to the town's "Sense of Place" but the community must respect certain aspects of design in its development. By pinpointing the potential of a town, by identifying from other towns and by enhancing its places, we will have varied and exciting experiences in every town. Below are some ideas of Michael Hough in his book "Out of Place" he suggest eight (8) design principles in order to pursue a meaningful and effective identity of place":

1. **Knowing the place**
   Recognizing how people use different places to fulfill the practical needs of living will be the medium for distinctive sense of place.

2. **Identitiy through the landscape**
   We can identify a certain place through its natural features or scenic resources, hence enhancement of these areas will promote the town's landscape.

3. **Different places for different people**
   People differ in their social need. Thus the landscape reflects the cultural and physical aspects of the town, not copied nor similar.

4. **Maintaining a sense of history**
   Historical bacground is always a part of town's identity especially in our country with a colorful past. Town's provide markers, monuments and buildings to maintain this commendable deed.

5 Environmental learning and Direct experience

As Mr. Hough mentioned' An awareness of place can only be enhanced when it becomes a part of every people's everyday lives"

6 Doing little as possible

"Or economy of means, involves the idea that from minimum resources and energy, maximum environmental and social benefits are also available"

7. Sustainability

It is the only ethical and pragmatic alternative to the future health of the landscape. Thus design disciplines must incorporate sustainability in one's work.

8. Starting where it's easiest

This means focusing on things that work and that are achievable. At any one point in time.

In most new development in our country, the local government officials have the authority to lead in preserving and protecting the natural, scenic and historic sites, this should be changed. Local folks need to be the major decision maker since the development will effect their own environment and well being.

ROADS AND STREETS

Modern transportation technologies alter our traveling experiences. The speed of vehicles reduces the scale of the landscape and in here we viewed the different places in their best or worst state. Roads were developed in response to topography and geography of the place. These are typical from town to town, without any relationship to surrounding vegetation and landscape. Planting along road edges in greening activities but it alters the traditional character of our rural roads. Most are copied landscapes such as a streetscape looking like an Italian boulevard.

Roads leading to towns with setting of ricefields, lakeshore or plantations of corn, of pineapple or tobacco are very ideal elements of landscapes. But as a town becomes urbanized, commercial establishment started sprouting in the edge of the roads blocking the scenic landscapes. In 1995, the local government with their Clean and Green Programs, conducted clean up drives and started planting trees and shrubs in the roads and streets without any consideration to kind of plants in relation to its fit to the environment. And , every year, some LGU will have to purcahsed new plants for the roads in coincidence with the judging period of Cleanest and Greenest Town Contest.

Role of roads and streets

What they missed to consider is the true role of roads and streets in our towns as:

Proper vehicular circulation
Act as the pedestrian corridor
Provide air circulation

What we need today are good planning for our roads and streets inorder to have

memorable and comfortable travelling experiences and at the same time to lessen the source of noise and air pollution, improper land distribution especially along the roadside and to bring back people to walk or bike in the streets. A plan whereby roads are intended for people than primarily for vehicles.

Here are some suggestions for the local government unit that can be undertaken immediately:

1. Provide sidewalk in the streets.
2. Remove all structures blocking the sidewalk
3. Identify streets that can be a vehicle free pedestrian mall or convert streets as one way only. Regulate access of vehichles at restricted hours. This will encourage people to walk safely and comfortable
4. Provide bike path ways in streets. We can paint a portion of the street and mark it as Bicycle lane.
5. For new subdivision, encourage developers to provide schools, shops, workplaces and market within the area so people will be less dependent from vehicles. Disallow housing only subdivisions.

6. Improve the micrclimate of roads and streets we can do the following

    Through zoning ordinances, require new construction to strictly follow setbacks along roads and streets, provide setbacks at rear side for services and other unsighty activities

    Encourage cosntruction of uneven building heights

    Plant trees that do not block flow of wind

    Plant trees and plants to improve the microclimate of roads and streets and to lessen the noise and air pollution

7. Provide guidelines in Planting Trees in roads and streets

    Through roads such as National roads and highways, intended for fast and longer trips, plant trees that maintain a constant character and a continous even rhythm. The faster the traffic flow, the longer the length of the repeating module and the more open the road should be. This will help drivers to view the road clearly for a safe journey. In entering towns, we can plant trees that are different fron roadside trees to provide a strong contrast needed to set off an important marker or entry arch.

    On local streets where through and fast traffic is to be discouraged, tree planting should provide shade. We can specify different types of plants and trees with abundant overhead folliage in an uneven spacing clusters. This will eliminate monotony and add variey and color in the streets for a pleasurable walking and biking.

Tree specie, shape and height can be used to denote differnt kinds of streets. Slight differences in tree types are not likely to be recognized by most people to be effective, the differences must be sharp. They can help also in providing georaphic boundaries around the neighborhood.

Use tree and plant types and planting patterns that can help lessen the noise and air pollution

Use trees and plants that can be easily maintained with less water consumption.

For places with soil that easily dries or with limited water:

Name	Scientific name
Magi (Tagalog)	Agave Americana
Aloe (English)	Aloe barbadensis
Agoho (Tagalog)	Casuatina equisitifolia
Singapore bush	Cupnea hyssopifolia
Corona de Espina	Euphorbia milii
Bloody Lily (English)	Haemanthus multifloris
Santan (Tagalog)	Ixora chinensis
Shanghai Beauty	Jatropha pandurifolia
Creeping Junipers	Juniperous horizontalis
Flame Kalanhoe	Kalanchoe integra
Lantana (English)	Lantana camara
Mammilaria	Mammilaria carnea
Pricky Pear (English)	Opuntia sp.
Luhang Dalaga (Tagalog)	Pedlanthus tithymaloides
Vietnam Rose	Portulaca grandiflora
Phyllanthus	Phyllanthus myrtifolius
Buntot Tigre (Tagalog)	Sanseviera trifasciata
Stapelia	Stapelia verrucosa
Spanish bayonet	Yucca aloifolia
Zinnia (English)	Zinnia elegans

Use trees with no wide and huge roots that may destroy our roads and streets.

Use plant speceis which will be tolerant of traffic fumes

Use plants that needs less management and maintenance

Choose trees that must be able to survive the restricted soil space in the town

Consider trees and plants with big branches to minimize the problem of damage by inconsiderate pedestrian,

Choose plants with big trunks to protect the edge of town from adverse weather conditions.

New species should harmonize with existing vegetation

Planting species that will mature to obscure significant views should be avoided

Plant Species for Roadsides and Streets

These plant species are considered highly resistant if when exposed to high traffic density areas they showed zero or almost zero percent injury and can grow well naturally in such situation

For streets along national roads, highways, and major roads/
"Highly pollution-resistant" trees:

Name	Scientific name
Acacia	Samanea saman
African Tulip (English)	Spathodea Campanulata
Caballero (Spanish)	Caesalpinia Pulcherrima
Golden Shower (English)	Cassia fistula
Fire Tree (English)	Delonix regia
Gemelina (Tagalog)	Gmelina arborea
Ipil-Ipil (Tagalog)	Leucaena leucocephala
Camachile (Spanish)	Pithecellobium dulce
Mahogany (English)	Swietania macrophylla
Manguim (English)	Acacia mangium
Narra (Tagalog)	Pterocarpus indicus
Palawan Cherry (English)	Cassia nodosa

"Highly pollution-resistant" plants that can be planted together with the above listed trees:

Name	Scientific name
Adelfa (Tagalog)	Nerium Oleander
Bandera Espanola (Spanish)	Canna x generalis
Bougainvillea (Spanish)	Bougainvillea spectabilis
Mayana (Tagalog)	Coleus Blumei
Pandan (Tagalog)	Pandanus amaryllifolius
Purple Heart (English)	Setcreasea pallida
San Francisco (Spanish)	Codiaeum variagatum
Tsitsirika (Tagalog)	Catharanthus roseus

Zigzag plant (English)	Pedilanthis tithymaloides

For streets along baranggay roads/Trees that are not too high and with branches that are evenly spread-out:

Name	Scientific name
Alibangbang (Tagalog)	Piliostigma malabaricum
Balibitan (Tagalog)	Cynometra ramiflora
Banaba (Tagalog)	Lagerstroemia spectabilis
Bunga (Tagalog)	Areca catechu
Cabalero (Spanish)	Casalpinia pulsherrima
Campanilla (Spanish)	Allamanda cathartica
Candle Tree (English)	Permentiera cereifera
Golden Shower (English)	Cassis Fistula
Tabebuia	Tabebuia pallida
Talisay (Tagalog)	Terminalia catappa

PARKS and PLAZAS

The Philippine townscape is a rich diversity of open spaces of ricefields, orchards, farms and the community with the church and plaza at its center. These are the image that reminds us of our hometowns. But, these had changed. Ricefields are being replaced by new developments such as subdivisions and business establishments. There are lesser and lesser open spaces where townfolks could meet to keep in touch with each other. Less space to gather together to celebrate the towns festivities, traditions and cultural activities.

Parks and plazas are usually in the center of a town. They are areas were people congregate and be seen at their best. They are witnesses to our growth, heartbreaks and triumphs. They are what we called ” Places of the heart”.

Urban open spaces were traditional Agora, Forum, Gymnasia, burial groves, Church Plaza, Piazza Renaissance–Private grounds, Rural Cemeteries. During the romantic movement, Park developed because for their concern for public health and morality. Later on during Parks movement led by Frederick Law Olmstead .

Parks demonstrate dramatically different scales and diversity.

Parks improve the microclimate of the area and staying in the park than inside of one's homes will lessen consumption of energy

Parks are more than just a place to stay and relax in, it has an array of cultural, recreational and entertainment amenities and most of all improve the health of the public.

Parks are important stimulants to economic development and seek amenities that that will attract tourists, local and international

Parks is often influenced by private sectors involvement in park financing and management coupled with increased emphasis on income generating uses to make parks more self sustaining.

Development of Brownfield sites to Urban Parks

Most of all Parks with more Trees and plants will help absorb carbon dioxide.

Government officials must be aware that the cities / town's park and open spaces as an important resource which improve the sense of well being and quality of life of its citizens. They are places in the towns and cities that should be preserved and protected for it involves the heart and soul of its people.

Design guidelines in Park Planning

Landscape planning for Parks and Plaza should not only incorporate the spatial relationship of nearby building and open space but they must be interconnected with the network of existing streets, sidewlks,arcades and pedestrian alleys.

There must be a variety of landscape elements such as, covered sidewalks, benches, water features, shaded trees, plantings, playgrounds and colorful street hawkers to complete a truly Filipino Park

A filipino park is open and welcoming, that is no fence nor gate.

Add and mix retail shops and community services such as an art and handicraft center,children's library and daycare center to the park

Proper solar orientation of the park will provide better environment for the community especially during big gatherings.

Using of local construction materials and plantings

Involve the community in planting trees and shrubs

Involve the community in planning park activities and decoratiions.

Planting guidelines in a Park

Proper positioning of trees in the Park will improve its microclimate. Like, placing tall shade trees in west side of the park will block the hot afternoon sun while opening a corridor for the wind to flow in the Park will lessen the heat.

Provide plenty of shade trees around the park. Shade trees are medium-sized trees with profuse branches and which extend laterally. They are usually at least four (4) meters high. Ornamental trees, on the other hand are medium sized trees attaining a maximum height of three meters. They have less primary branches

Provide low maintenance plantings.

Provide plants with strong branches and deeply rooted roots, to be able to stand the impact during various events being held in parks

Conduct teach-in for school children pertaining to the differend trees and plants in the park. Named the trees and plants with their common names and scientific names

Recommende number of tree – 1 Tree per 40 Sq mts.

From FMS Report, 1993, 1995 DENR NCR/ HLRB AO No. 2

For parks and plazas:

Name	Scientific name
Acacia	Samanea saman
African Tulip (English)	Spathodea Campanulata
Botong (Tagalog)	Casuarina equistofoila
Katmon (Tagalog)	Dillenia philippinensis
Narra (Tagalog)	Pterocarpus indicus
Dapdap (Tagalog)	Erythrina variegata
Golden Shower (English)	Cassis Fistula
Fire Tree	Delonix regia
Mahogany (English)	Swietenia macrophylla
Alibangbang (Tagalog)	Pilostigma malabaricum
Palawan Cherry	Cassia nodosa

For use as wind buffers/Trees with heights of 10-25 meters:

Name	Scientific name

Anahaw (Tagalog)	Livistona rotundifalia
Buri (Tagalog)	Corypha elata
Coconut (English)	Cocos nucifera
Agoho (Tagalog)	Casuatina equisitifolia
Narra (Tagalog)	Pterocarpus indicus
Tekla (Tagalog)	Tectona grandis
Gmelina (Tagalog)	Gmelina arborea
Molave (Tagalog)	Vitex parviflora
Antipolo (Tagalog)	Artocarpus blancoi
Santol (Tagalog)	Sandoricum koetjape
Sampaloc (Tagalog)	Tamarindus indicus
Kamatsili (Tagalog)	Pithecellebium dulce
Thailand Shower	Cassia siamea

Palms and trees with heights of 5-15 meters:

Name	Scientific name
Kaimito (Tagalog)	Chrysophyllum cainito
Chico (Spanish)	Manikara zapota
Kasoy (Tagalog)	Anacardium rumphiana
Agoho Monte	Casuarina rumphiana
Duhat (Tagalog)	Suzium cumini
Neem (England)	Azadirachata indica
Banaba (Tagalog)	Lagerstroemia speciosa
Ipil-ipil (Tagalog)	Leucaena leucocephala
Kakauete (Tagalog)	Gliricidia sepium
Dapdap (Tagalog)	Erythrina orientalis
Alibangbang (Tagalog)	Piliostigma malabaricum
Pili (Tagalog)	Anacardium ovatum

Small trees and bamboos with heights of up to 5 meters:

Name	Scientific name
Kawayang tinik (Tagalog)	Bambusa blumeana
Kawayang killing (Tagalog)	Bambusa vulgaris
Bolo (Tagalog)	Gigantochloa levis
Boho (Tagalog)	Schizostachachyum lumampao
Aroma (English)	Acacia famesiana
Bougainvillea	Bougainvillea spectabilis
Kalyos (Tagalog)	Cajanus cajan
Achuete (Spanish)	Bixa orellana

WATERWAYS

The early civilization begun near rivers. Rivers witnessed the first human settlements. Commerce flourished in the area and it transported the first trade to other places. Today, rives

are being used as dumping sites and waste tanks. They came from untreated domestic sewage, industrial waste, poor agricultural practices (use of pesticides and other chemicals) and waste from dumpsites. The water in our rivers are now pollutted, clogged and smelly. We built dams, river diversions and irrigation canal which also effect water quality and quantity. The curb and gutter, strom sewer and paved drainage are designed to safely conveyed the water runoff to the rivers but these modern development are unfavorable to our environment. These resulted to:

Increased water runoff
Increased flash flooding
Degradation of surface water
Polluted water from water runoff
Soil erosion
Forest destruction

Extreme stress on rural water resource brought about these environmental degradation. Most government agencies cannot monitor and control the waste from industries, livestock and poultry production, fishery and forest lands. They all end up into the canals, rivers and lakes-contaminated. The waste from markets and even from slaughterhouses drain directly into the canals and rivers. Thus the condition of lakes and bays are alarming since its pollution and sediment loads jeopardize their existing and potential uses. Our waterwyas provided us a picturesque landscape but now, the water itself may lead us to sickness and death. Proper management of waterways especially the river is one way to have a healthy and clean towns.

Degradation of rivers has usually begun with the loss of trees and plants. As the river goes down to the towns, it passes to various uncontrolled areas where waste simply flows to the river. In the town area, sewage from house septic tanks and agricultural wastes flow to drainage pipes then proceeded to the river and flows out to the lakes or sea. Thus most of the water in the river is untreated or maybe from factories and livestock farms partially treated.

To achieve sustainability in relation to water quality and quantity, we can prepare programs to alleviate our problems as follows.

1.0 Saving the watershed

Preservation and enhancement of the natural vegetation especially in the mountain area. But prioritize vegetation that will provide income to upland people.

2.0 Plant Fast growing Trees

The plants below are not only fast growers but multi-purpose trees used as fuel wood, construction materials, poles, erosion control, medicinal, manufacturing raw materials....

They are source of livelihood of rural people, thus it is beneficial to have better yield. More trees means more water to hold on trees roots and less water runoff.

3.0 Re-education in proper cutting and re-planting of trees

Thinning Thus requires carefull selection of trees to be cut in somewhat uniform pattern based on size, health, location and species mix.

4.0 Controlling the water runoff

In rural areas

Use perennial crops with permanent roots to hold the soil in place

Promotion alley cropping

It is a system of intercopping rows of foodcrops with fast growing trees or shrubs generally practiced in flat to gently rolling topography**6. For places with inter-cropping/Food crops and fast-growing trees that can be planted side-by-side:**

Name	Scientific name
Langil (Tagalog)	Albizia lebbek
Karikis (Tagalog)	Albizia lebbekoides
Akleng Parang (Tagalog)	Albizia procera
Alnus (English)	Alnus japonica
Neem (English)	Azadirachta indica
Kadios (Tagalog)	Cajanus cajan
Calliandra (Spanish)	Calliandra calothyrsus
Thailand Shower	Cassia siamea
Dapdap (Tagalog)	Erythrina orientalis
Kakawete (Tagalog)	Gliricidia sepium
Yemane (Tagalog)	Gmelina arborea
Acid Ipil-ipil	Leucaena diversifolia
Malunggay (Tagalog)	Moringa oleifera
Kamachile (Spanish)	Pithecellobium dulce
Bayabas (Tagalog)	Psidum guajava
Katuray (Tagalog)	Sesbana grandiflora
Siniguelas (Tagalog)	Spondias purpurea
Mahogany (English)	Swietenia macrophylla
Duhat (Tagalog)	Syzygium cumini

For planting in the mountains; fast-growing trees (for harvesting in less than 4 yrs.):

Name	Scientific name

Mangium	Acacia mangim
Agoho (Tagalog)	Casuarina equistifolia
Eucalyptus	Eucalyptus spp.
Madre de Cacao	Gliricidia sepium
Yemane (Tagalog)	Gmelina arborea
Giant Ipil-ipil	Leucaena leucocephala
Paraiso (Tagalog)	Melia azedarach
Datiles (Tagalog)	Muntingia calabura
Alibangbang (Tagalog)	Pilostigma malabaricum
Kamachile (Spanish)	Pithecellobium dulce
Bayabas (Tagalog)	Psidum guajava
Duhat (Tagalog)	Syzygium cumini
Anabiong (Tagalog)	Trema orientalis
Raintree (English)	Samanea saman

Site amelioration techniques

By plowing along the contours of sloping land, it is possible to hold water in furrows while it soaks into the soil

Terracing, by carving long steps into the hillsides and using relatively flat surfaces of the steps for growing crops.

Slowing stream courses (Check or gabbion check dams)

Keylining The keyline of a hillside. It is that line where slope visibly becomes less steep. On that line, water can easily be trapped by minor changes in the landform---a small ditch for example

Control water chemistry Water coming from agricultural and industrial areas must be controlled effectively at the source before polluted water they produce, enter tne waterways. Less use of agricultural fertizers and pesticides means cleaner water, better crops. For large farms, industrial and commercial establishments, they can eliminate the waste water before entering the rivers and shores using waste water treatment plant, a highly recommendable alternative is contructed wetland.

Constructed wetland is a passive pond or cell that filters and removes pollutants by routing waste water over substrate of gravel or similar material that supports plants that will filter and absorb pollution, then turning water fit for irrigation and fishes and marine life”

Here are the best plants for constructed wetland which can be used in the tropical country like ours, are as follows:

Cattails (Typha spp.)

They are vigorous growers capable of thriving under diverse environmental conditions, and are easy to propagate. Rhizomes (a thickened root) can be collected and planted and will produce plants in one growing season. As previously mentioned, cattail species are not likely to extend roots down to a depth greater than 1 foot and are thus not as efficient as bulrush in oxygenating a deeper gravel bed.

Common Reeds (Phragmites australis)

They are tall annual grasses with extensive perrenial rhizomatous roots that typically penetrate to a depth of 18 inches. Their height ranges from 6 to 12 feet, with flowers of spikelets in July to October. They are attractive plants, quite lush in experience and provide a good background when height is needed. Reeds have been extensively utilized in the root zone method of wastewater treatment and are very effective in the transferring oxygen due to the depth of penetration of the roots.

It is also important to provide other aquatic plants in different zones of the pond such as:

Common Name	Scientific Name	Family
Azolla	Azolla pinnata	Solviniaceae
Ceratoperista	Ceratopteris cordifolius	Porkeriaceae
Echinodorus	Echinodorus cordifolius	
Eichornea	Eichornia crassipes	Pontederiaccae
Hydrilla	Hydrilla verticillata	
Hydrocharitareae	Hygrophila difformis	
Duckweed/Lemna	Lemna paucicostata	Lemnaceae
Limnocharis	Limnocharis flava	Butomaceae
Limnophilia	Limnophillia indica	
Water Wistaria	Ludwigia natans	
Marsilea	Marsilea crenata	Marsileaceae
Moonochoria	Monochoria vaginalis	Polygonaceae
Myriophyllum	Myriophylum spicatum	
Nelumbo	Nelumbio nucifera	Nymphaeaceae
Nymphaea	Nymphaeae pubescens	
Pistia	Pistia stratiotes	Araceae
Arrowhead	Sagittaria	
Salvinia	Salvinia curiculata	Salviniaceae
Typha	Typha angustifolia	Typhaceae
Bladderwort	Utricularia	
Vallisneria	Vallisneria gigantea	

Source: ATIK #1 – SWC Technologies

In urban areas,

Use of detention and infiltration basins
Collect rainwater for re-use
Collect rainwater coming from gutters and downspouts
Use porous paving for walkways, sidewlks
Store excess water in cistern
Let water flow in swales than concrete

For controlling soil erosion and surface run-off:

Name	Scientific name
Villosa (Spanish)	Acacia villosa
Red Calliandra	Calliandra calothyrsus
Fireball (English)	Calliandra haematocephala
Thailand Shower (English)	Cassia siamea
Antsoan dilao (Tagalog)	Cassia spectabilis
Fire Tree	Delonix regia
Kakawete (Tagalog)	Gliricidia sepium
Ipil-ipil (Tagalog)	Leucaena leucocephala
Kupang (Tagalog)	Parkia roxburghii
Alibangbang (Tagalog)	Pilostigma malabaricum
Gumamela (Tagalog)	Hibiscus rosasinensis
Pinya (Tagalog)	Ananas comosus
Napier Grass (English)	Penicum maximum
Vetiver grass	Vetiveria zizanoides
Setaria	Setaria spp.

For those along rivers and streams to strengthen the riverbanks:

Name	Scientific name
Akle	Serialbizia acle
Anchoan dilao (Tagalog)	Cassia spectabilis
Antipolo (Tagalog)	Artocarpus blanco
Kawayan (Tagalog)	Bambusa spp.
Bangkal (Tagalog)	Nauclea orientalis
Bitaog (Tagalog)	Calophyllum inophyllum
Dita (Tagalog)	Alstonia macrophylla
Dao (Tagalog)	Dracontomelon dao
Gmelina (Tagalog)	Gmelina arborea

Gubas (Tagalog)	Endospermum peltatum
Ipil (Tagalog)	Intsia bijuga
Kalumpang (Tagalog)	Sterculia foetida
Kakauate (Tagalog)	Gliricidia sepium
Marang (Tagalog)	Litsea perrottetti

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Pinya (Tagalog)	Ananas comosus
Napier Grass (English)	Penicum maximum
Vetiver grass	Vetiveria zizanoides
Setaria	Setaria spp.

For places near oceans and bodies of water:

Name	Scientific name
Kasoy (Tagalog)	Anacardium occidentale
Agoho (Tagalog)	Casuatina equisitifolia
Coconut (English)	Cocos nucifera
Bakong (Tagalog)	Crinum asticum
Malobago (Tagalog)	Hibiscus tiliaceus
Screw Pine	Pandanus odoratissimus
Talisay (Tagalog)	Terminalia Catappa
B. Morning Glory	Ipomoea pes-caprae
Sea Grapes	Cocoloba uvifera
Linu (Tagalog)	Scaevola frutescens
Balatbat	Licuala spinosa
Bankudo	Morinda citrifolia
Nipa	Nypa fructicans
Pemphis	Pemphis acidula
Malabawang (Tagalog)	Eleutherine palmifolia
Umbrella plant	Cyperis alternifolius

Dumpsites

Growing quantities of garbage from households and business establishments pose great threats to human health and environment. Wastes pollute the air, land and water. Many diseases are caused by improper disposal of waste especially for people living near dumpsites. Dumpsites are source of soil and groundwater pollution.

The usual practice of towns pertaining their garbage is to dump the garbage in an area at least 2 km away from the poblacion. The proper way of sealing the bottom of dumpsites to reduce the chances of waste to get into the groundwater is futile. Problems of rodent, birds, odod and blowing debris in the dumpsites are caused by not providing a layer of soil each day. Savengers gathered there every day to gather waste they will be selling. Now, most towns have Sanitary landfills as prescibed by law.

An effective way to solve the waste problem is through education focused on change in lifestyles and consumption patterns. These programs in cooperation of the local government must ensure that wastes are reused, recycled and regularly collected.

Our good example, is in the city of Puerto Princesa in Palawan. It has an Oplan Linis Program which aims to clean up not only the city of Puerto Princesa but the soul of the people. Oplan Linis Program has six major components: cleanliness, beautification, sanitation, sagip-dagat, sagip-hangin, and information and education.

Value formation through massive information and education campaigns especially in schools are the best ways to start solving the waste problems.

There are two factors that will help apply regenerative studies the concept of reuse and environmental assimilation.

Reuse

Direct Reuse

There are materials goods especially coming from China that can be discarded easily due to its cheap cost. It somehow means “disposable”’ Thus they can be disposed during garage sales, buy and sell, tiangge swap meets like in Kamuning or the famous ukay ukay (second hand clothes/things from aborad) Some people will be buying this items, this means **direct reuse**.

The advantage of direct reuse is it saves energy in production and transport (by reuisng a product rather than making a new look or function)

Mechanical Recycling

This means reshaping and remanufacturing of old materials into new form. Some recycable meterials are paper, bttles, aluminum steel, plastics rubber, metals and wood.

Broadly speaking recycling:
Conserves natural resouces
Reduces the risk pollution
Reduces the demand of landfill sites

Enables foods to be produced more cheaply by embodying recycled material by using energy from waste.

Environmental reassimilation

By letting nature do the work, materials reintegrate into the landscape by its natural process of decomposition. This method depends on the decomposing activity of invisible bacteria and microbes. They are present in composting and natural sewage treatment.

Composting

Compost may come from vegetable peels, leftover food or leaves of plants. The first step to composting is to ground the materials to less than 1”. For household way of composting, we can place the grounded materials into the ground or a container. Let it stand for 3 weeks and then we have a good compost for our plants.

Natural Sewage Treatment

The wetlands is a natural sewage treating bodies of water. As the wetlands are

disappearing in our rivers and lakes, we look for a new solution, and it is constructed wetlands disccused earlier that may help in this matter

Trees for Dumpsites , will provide aesthetic improvement, site barrier and as well as deodorizer.

For use as site barrier and to control odor (near garbage areas):

Name	Scientific name
Dapdap (Tagalog)	Erythrina variegata
Balite (Tagalog)	Ficus balete
Ilang-ilang (Tagalog)	Canganga odorata
Palosanto (Tagalog)	Triplaris cumingiana
MacArthur Palm	Ptychosperma macarthurii
Bunga de China	Veichia merrillii

From FMS Report, 1993,1995 DENR-NCR

Here are some municipal/barangay policies to promote recycling and reuse

- Make it easier for residents and business establishments to have their recycled materials to be pick up or ecchange to some basic needs such as rice, sugar or milk

- Encourage maunicipalities to contstruct recycyling centers close to the residential area. This can be monitored by the Barangay officials.

- Buy goods marked recycled. The municipa government should set an example by practicing what it advocates.

- Encourage individuals or barangay officials to set up second hand shops.

- Impose ordinances pertaining segragated garbage and related activities. Conduct seminars on ways how to segregate garbage. Modify containeers for recycled materials. Inform garbage collectors to collect segrated garbage only.

- Make comparative cost analysis between maintaining the cost of landfill and implementing recyling schemes.

- Conduct environmental education seminar in Barangays and schools

The Handbook

The handbook focused in my hometown Tanay, in the Province of Rizal, Philippines.

The town of Tanay as a whole may be divided into two area, the lowland, urban and the upland rural. It is composed of 19 barangays with a population of 94,460 people in 15,720 households. Two of the total barangays are classified as fishing village, seven are lowland barangays and the ten are upland barangays.

Tanay is considered as an agricultural town for it ranks second among the 14 municipalities and city of the province of Rizal, in terms of the land area devoted to agricultural production. Tanay is leading rice producing municipality and a major vegetable producer. It is considered a coastal community for it depends on Laguna de Bay for fishing activities. However, the increasing deterioration of the lake has raised seious concerns on the quality of aquatic life.

Due to its geographical location, Tanay becomes a major grwoth center and transportation hub in the eastern part of Rizal. The commercial development of this town was due to the vast supply of fresh produce from the mountain barangays of Tanay and the fresh water fishes from Laguna de Bay. In the upland barangays which cooler and fresher, there are poultry and piggery farms, textile factories, chemical plants, mining concessionaires and agro-forestry ventures. In the lowland barangay barangay, Tanay has the biggest Public Market in the area, but recently, they are having a tough competitor, Shoe Mart – Save More commercial center. This establishment is killing the local businesses and the dry goods and grocery sections of the Public Market.

Tanay, Rizal, towards Sustainable Development

Tanay was chosen by the Philippine Council for Sustainable Development as the model site for Region IV in its mainstreaming program. It has a vital role in transforming the image of towns and upgrading its living conditions through the concept of sustainability. Tanay was chosen due to its rich agricultural and natural resources and varied commercial establishment. Its topography are varied from highland barangays to lowland lakeshore barangays, vast ricefields to mountainous farmlands. It's business district becomes the central business center of neighboring towns. Thus, good development planning is of prime importance to optimize its utilization and sustainability of its resources.

Local Government officials who approves development plans of businessmen, realtors and homeowners should possess knowledge on prevailing environmental issues and cosntraints specially if the proposed changes poses detrimental impacts on the ecological balance of a given area. This involves ecological-engineering study of Tanay through which various physical aspects such as nature, landscape, space and natural resources are evaluated for appropriate use while simultaneously conserving the environment and maintaining the area's diversity and ecological equilibrium.

In lowland Tanay, agricultural lands are being converted into residential and commercial uses at a relatively alarming rate. While, Tanay has diversified agro-industrial activities in the upland barangays.

Tanay's development is faced with physical limitationss attributed by existing land uses, public utilities, transportation systems, infrastructure and physical geographic features. Mainly, it is in the hands of the local government officials to plan the changes and impose strict compliance to ordinances, laws and plans with sustainable development as the theme. May the guidelines trigger the local units and townfolks to get up and express their desires for a better town environment.

Application of the Guidelines to the town of Tanay in a Handbook

In the handbook, I discussed how an urbanizing town of Tanay with valuable resources, farms, mountains, fishing town, commercial hub of eastern rizal, good and nice people, can improve the quality of life thru Trees / Plants and the Guidelines.

A leisure drive to Tanay, Rizal will reveal new developments. There are Jolibee and Chowking restaurant as you approach the Public Market. A new SM Save More, becoming the town center. There are many restaurants along the Manila East Road. Houses are sprouting in the ricefields. And traffic is here also.

Change is the theme of the town of Tanay, Rizal.

As landscape Architects, we have the oppurtunity to look beyond our normal views and help in assressing the changes in our midst. We can work with the LGU to:

Act as environmetnal educator
Help local community to visualize new ideas
Identify opportunities
Search for solutions

In the handbook, I discussed the following:

Preservation of the scenic and historic place – Tanay lakeshore Drive thru application of Visual Impact Analysis and Identification of Landscape Valueing

Conservation of a Natural Site – Daranak Falls

Improvement of Roads and streets Condition, provision of pedestrian and bike access

Enhancement of Barangay area – Tanay park, patios and plaza, design theme for Tanay historic Church vicinity

Maintenance of Waterways, Tanay rivers rehabilitation program, Laguna de Bay monitoring, Construction of a Constructed wetlands near Tanay Public Market and slaughterhouse

Elimination of the dumpsite to Sanitary Landfill...

Conduct Bioclimatic Evaluation of the town proper of Tanay, Rizal

Trees and plants for Tanay, Rizal

Conclusion

In 2003, I presented and passed my Thesis, Towards Sustainable Landascapes which provided guidelines for regulating Aesthetics and Environmental quality of the Landscapes. I focused in my hometown Tanay, in the Province of Rizal. In the handbook in Tagalog Dialect, I discussed how an urbanizing town of Tanay-the commercial hub in the eastern Rizal with its valuable resources, farms, mountains, orchards and varied community groups of fishermen,farmers, businessmen, livestock owners, indigenous people dumagats and remontados....peace loving people, can improve the quality of life through the guidelines on how to plant the right Trees and Plants in the right places and other valuable measures for sustainability.. After nine years, have I done my part in imparting these guidelines to my townmates?

No.

Remember the Ondoy Tradegy in 2009, a town that was devastated by the typhoon was my hometown Tanay. Some parts of upland Tanay is in tree less Sierra Madre Mountains. The terrain in these mountain area has lost its ability to absorb moisture and allow the growth of plants. The topsoil eroded. Fast and vast rainwater just drained off and ended up far below, in the lowland Tanay. So,the river overflowed and carried most of the houses along the riverbanks towards the lake. Stronger houses near the river area were flooded till second floor level. A 3-storey building standing near the edge of the river collapsed. Logs, animals, appliances flowed as the water rushed to the Laguna de Bay. So sad, many people drowned.

I failed to share my learnings and knowledge. My handbook never been published. I tried once to seek funds from World Bank, but my project was not selected. At the same time,our local government needs a major change in administration and management and/or be trained in good governance. There was huge gap in knowing how to implement these guidelines in towns and cities thru a simpified easily comprehensible Handbook or other worthwhile means for less literate poor people.

Sustainabiltiy issues with us for many years, now, we have to take concerted actions in its implementation to the most affected sector of the society – the poor. An understanding of climate change and the future scenario of our environment will truly help people to have a

change of heart. This may ignite them especially if the local government will assist them in finding them jobs or more effective a new source livelihood. This should be integrated in the works of the Local Government unit thru the Department of Interior and Local Government. Let us start with a simple, and effective Handbook that should be readily available and understood by all.

The growth and sustainability of towns and cities should delve deeply and quickly in development stage. We, Academicians, Architects, Professionals understood climate change and Green principles but this should be shared in the most effective way to majority of the people especially the poor.

After getting my masteral degree in 2003, I started teaching Architecture and Landscape Architecture, now, I am faculty member at the University of Santo Tomas in Manila–College of Architecture. At UST, we have a 3 semester specialization subject named Specialization in Urban landscape Architecture which I lead. This further my knowledge in the issues and problems pertaining climate change and sustainability. Similar with my thesis, we aim to improve the quality of the environment in by providing lessons in Roof Garden, Vertical landscaping, urban farming, Planting in Containers, Sustainable Landscape designing and constructing geared for the urban Metro Manila.

In our country, the most crucial issue is to reduce poverty of most of our countrymen. This will be the link to solve climate change and sustainabilty by educating them of these environmental problems. In my part I will continue this great pursuit to fully impart the real value of Plants and Trees for the betterment of our environment.

Thank you.

Maria Mynn Porciuncula-Alfonso
April 26, 2012