



Photo for the Month

TAO staff, together with COPE, surveyed the extent of the damage wrought by Typhoon Reming and mudflows from Mayon on Albay Province last December. This photo shows the TAO and COPE staff crossing the Yawa river to move in and out of the devastated areas. Note photo background which shows houses almost completely buried by lahar deposits.

Quote for the Month

"The environmental crisis is a design crisis. It is a consequence of how things are made, how buildings are constructed and landscapes are used. Our present forms of agriculture, architecture, engineering and industry are derived from design epistemologies incompatible with nature's own."

- **Sim Van der Ryn**, architect-educator, pioneer of sustainable architecture and author of the books, *Ecological Design* and *The Toilet Papers: Recycling Waste and Conserving Water*.

Sustainable is cool. Browsing through recent issues of design magazines reveal a growing trend for things eco and green. Apart from being the currently favored product marketing strategy, it seems the environment is the big issue these days.

February of this year, the UN released a landmark report by the Intergovernmental Panel on Climate Change that basically said climate change is real and linked to human activity. With excessive greenhouse gas emissions due to man's use of fossil fuels, we're melting the polar ice sheets and creating a warmer planet. Consequently, our actions are largely to blame for global warming's perilous effects --- rising sea levels, stronger tropical storms, devastating droughts and heat waves, floods and heavy rains --- and these would continue to get worse if measures are not taken to slow global warming. This was also the message of the recently-shown movie documentary, *An Inconvenient Truth*.

Environmentalists tell us that this grim picture of our planet's future not only should be a call for action for governments, policymakers and big businesses but also for each person to adapt a more sustainable lifestyle. One could start by knowing his/her *ecological footprint* and choosing eco-friendly alternatives. Recycle, take the MRT, use energy-efficient fluorescent lights, eat organic food or grow your own. Small actions undertaken together can make a profound difference.

For design professionals, the report on global warming should hopefully lead us to develop much better ways of doing things in the building industry. One way forward to more environmentally-responsible designs is *biomimicry* --- learning from nature or natural systems in employing technologies and innovations. (More on these concepts in our page 2 features).

Kermit the Frog sang in 1978, "It's not easy being green." Today, we say *there's no other way*.

In this month's e-newsletter:

- **Concepts on environmental sustainability: ecological footprints and biomimicry**
- **From the YP Workshop Lectures: Implications of Natural and Human-triggered Hazards on Human Settlements Development by Dr. Laura David**
- **IN PICS: TAO-YPP activities in February**

"It's time for us to go to the people rather than ask the people, especially the poor, to come to us."

Boost your eco-awareness with these two concepts on environmental sustainability:

How big is your **ECOLOGICAL FOOTPRINT**?

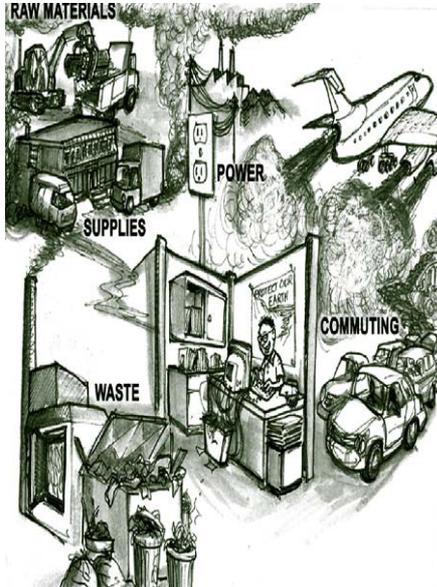


Illustration source: www.wri.org

Ecological footprint analysis approximates the amount of productive land and water resources needed to sustain a population in producing all the goods we consume and to get rid of the wastes and pollution generated. It accounts the use of energy, food, water, building materials and all other consumables and the calculations are presented as a measure of land area in *global hectares* (gha) per capita. It is used as an indicator of environmental sustainability.

Simply put, calculating your ecological footprint gives an estimate of how much “nature” is consumed from your everyday life choices and if the planet, given its limited resources, can actually sustain this lifestyle. A footprinting quiz is available on-line (check out www.myfootprint.org) and it determines if you're living a sustainable lifestyle or if you're putting the planet on the brink of extinction. The quiz result typically tells us “the number of Earths needed if everyone lived like you.” After taking the quiz, the on-line site also offers suggestions on how to reduce one's ecological footprint. It has been very useful in educating people about their resource use and the planet's carrying capacity and the awareness encourages people to counter their over-consumption and “leave smaller footprints”.

BIOMIMICRY

--- nature as model, mentor, and measure.



Tiny hooks on a Burdock seed and the Velcro hooks-and-loops. Photos from <http://en.wikipedia.org/wiki/Velcro>

Biomimicry (also called biomimetics) is the concept of taking inspiration from nature or natural systems and applying them in today's technologies. Perhaps the most famous example of this is Velcro, the brand name of fabric hook-and-loop fasteners used for connecting objects. The inventor of Velcro, Georges de Mestral, actually got the idea from Burdock seeds that kept sticking to his clothes and his dog's furs in their daily walks.

In architectural and engineering design, biomimicry can be seen applied in Harare, Zimbabwe's Eastgate Building designed by architect Mick Pearce. The mid-rise building has no air-conditioning but stays cool mainly because of its termite-inspired ventilation system. The building design mimicked the animal architecture of African termite (*Macrotermes michaelseni*) mounds which are self-cooling, maintaining the temperature inside their nests day and night while the external temperature varies.

(More information on biomimicry is available on <http://www.biomimicry.net>)



The Eastgate building in Harare, Zimbabwe and a diagram of the structure of an African termite mound. Photos from <http://www.rmi.org/sitepages/pid919.php> and http://www.aia.org/aiarchitect/thisweek03/tw0131/0131tw5bestpract_termite.htm

From the YP Workshop Lectures

In line with this issue's focus on environmental sustainability, we're sharing some of the lecture notes documented from the recent YP Workshop. The lecture presentations in .pdf format are available on-line for downloading at www.ypws.tao-pilipinas.org.

Notes on "**Implications of Natural and Human-triggered Hazards in Human Settlements Development,**" a lecture presented by Dr. Laura T. David during the 2006 YP Workshop on Social Housing, 17 October 2006, Antipolo City



Dr. Laura David, Deputy Director for Instruction of the University of the Philippines Marine Science Institute, provided the workshop participants with scientific data and practical information on water-related natural phenomena (tides, wave action, typhoons, storm surges, tsunamis) and called for architects, engineers and planners to take these into consideration when developing settlement areas. She first emphasized that the Philippines is an island country where land is not limitless and 67% of Filipinos live close to the seas and ocean, and that consequently, these have implications on how we develop our built environment. Some of the practical guidelines Dr. David presented were the following:

✓ Tides are actually related to earth's distance from the sun and moon. This means that when doing site assessment, the best time to visit a site is during a full moon in the period between the late December to early January because the tides are at its highest level. (January is the month when the sun is closest to the earth.) One can see the effects of tide especially in coastal areas at full moon.

✓ Wave action creates areas of embayment and protrusion in coastal land forms. It is considered better to locate a building site at the area of protrusion since embayment areas are constantly eroded by wave action.

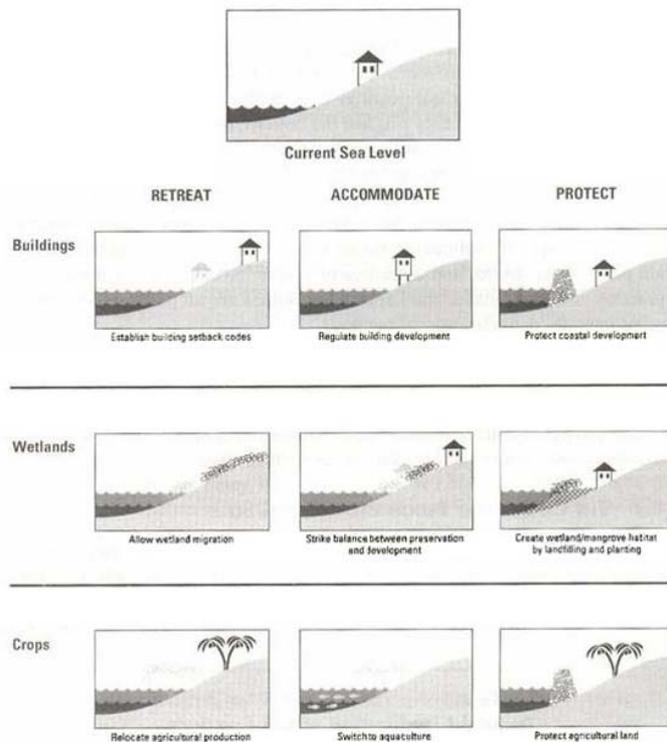
✓ Consider historical and scientific data on typhoons and storm surges, especially the significant wave height data because this can give us an indicator on how high above the sea level a structure should be built. A factor of three times the biggest wave height can be considered safe. (The house-on-stilts concept is actually a suitable design for coastal settlements because it allows waves to pass underneath a house.)

✓ Monitor the El Niño and La Niña cycles because these affect the soil condition of a site. If soil verification is done during an El Niño state, soil may appear consolidated or compacted but during normal weather condition or the rainy season it may turn loose and muddy.

✓ Occurrence of tsunamis cannot be predicted but scientists can compute the lag time before a tsunami can hit the coast to give people proper warnings. Tsunamis are common within the South China Sea and the Philippines' most recent tsunami experience was in 1994 at Mindoro. (It caused damage to some houses but notable was that the mangroves area served as a barrier and minimized its disastrous impact.) Appropriate responses to tsunami hazards are emergency evacuation and building structural barriers (like in Japan and Maldives) but which are rather costly.

Dr. David urged the participants to a) **respect nature** by taking nature's cue on when best to look at a site, where best to locate on a site, and how high above sea level a structure should be built; b) take into consideration the need for long-term historical data before making decisions as well as the possible need to employ/develop new and innovative technology; and c) be cognizant and adaptable to the issues that crop up due to increasing and local human pressures.

Sample Responses to Sea Level Rise



Illustrations from Dr. David's presentation



IN PICS: TAO-YPP Activities in February

PUP-CAFA 7th Foundation Anniversary (06-Feb-2007)



Polytechnic University of the Philippines – College of Architecture & Fine Arts celebrated their 7th Foundation Anniversary on Feb. 6 with a lecture series that included Arch. Faith Varona, TAO's Research and Publications program coordinator, as guest speaker.

FEU-IARFA Environmental Arts Week (12-Feb-2007)



Far Eastern University – Institute of Architecture & Fine Arts mounted an Environmental Organizations Fair on Feb. 12-14 at the IAS Promenade, with TAO-Pilipinas as one of the participating organizations.

UP-TFA at SAPSPA House Building (17-Feb-2007)



Members of the UP student org Task Force Arki (TFA) participated in the TAO-assisted project, SAPSPA house building in Tondo, Manila. These were the same houses that they helped design and draft architectural drawings for building permit.

Site Assessment and Mapping at SANAGMANA, Navotas (11-Feb-2007)



TAO's YP volunteers mapped out the 11-hectare proposed resettlement site for the people's organization SANAGMANA in Tanza, Navotas. Geodetic engineering students from UP and civil engineering graduates/students from UST assisted TAO-Pilipinas to carry out the on-site assessment.

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