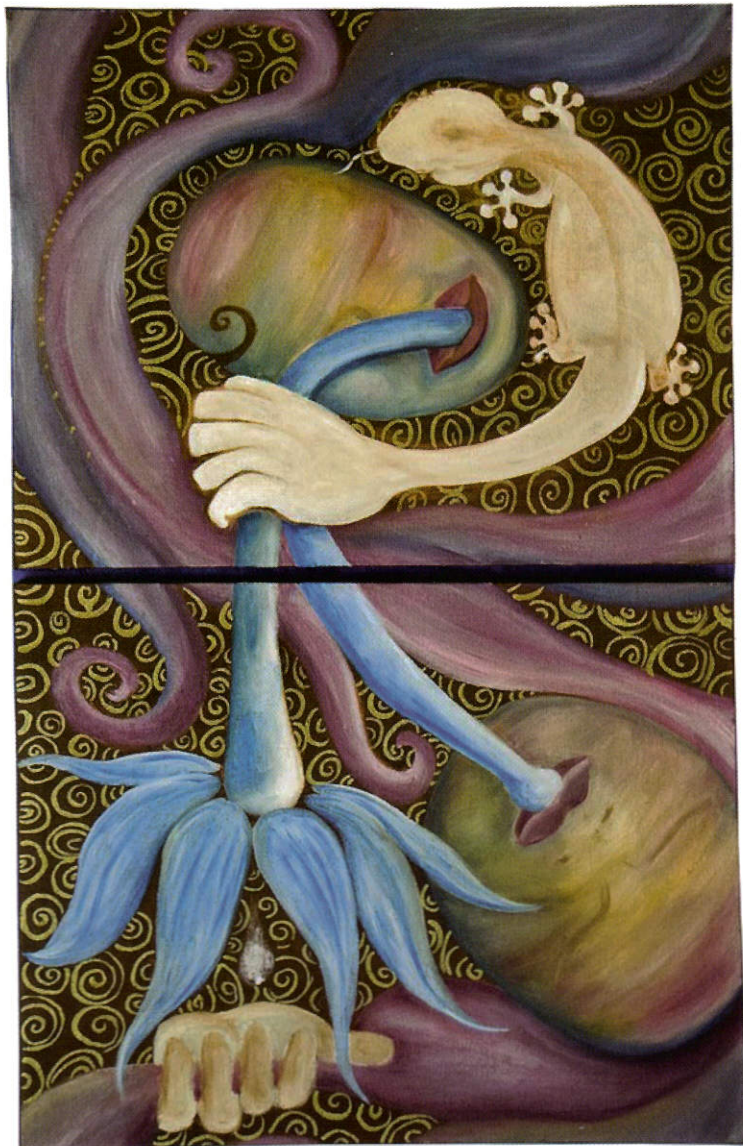


# SILLIMAN JOURNAL

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and Sciences

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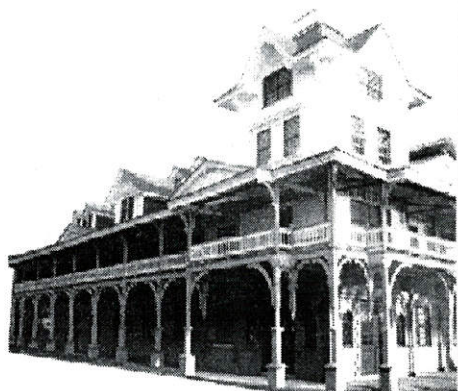
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"I find her becoming,  
this woman I've wanted,  
who knows she'll encompass,  
who knows she's sufficient,  
knows where's she's going  
and travels with passion.  
Who remembers she's precious,  
but knows she's not scarce—  
who knows she is plenty,  
plenty to share."

Jayne Relaford Brown  
Finding Her Here



## EDITORIAL NOTES

**I**n this issue. Welcome to this issue of *Silliman Journal*. In keeping with our desire to encourage inquiry and exploration of a diversity of topics, this *SJ* is a collection of articles that together address issues of consequence in assorted disciplines, both locally and on a national scale. The papers go from birds and environmental protection to farmers and farming, from integrity and accountability in government to the mathematical abilities of the college student, from innovations in health care and medical diagnosis to the personality in technology, and finally, from gender and religion in conversation to glimpses of a poet's interpretation of a lifestyle.

This issue opens with the topic of ecotourism, an area that many have found fashionable almost overnight and to which some of our scientist researchers and practitioners have quickly responded with interesting and serious endeavors. Project leader Ely Alcalá and his colleagues, in

"Assessment of the Biophysical Conditions of Caves Promoted for Ecotourism in Mabinay, Negros Oriental, Philippines," set out right away to stress that *ecotourism in ecologically sensitive areas should support the conservation of biodiversity on which it depends*. The concern stems from the observation of caves as natural habitats for bats and an important source of fertilizer and other resources and yet, construction activities, hunting, and cave visits are constant and frequent. Cave habitat protection must be promoted, but it will have to begin with educational programs for cave guides and visitors with the help of the local government's tourism office, the Department of Environment and Natural Resources, conservation groups, and academic institutions such as Silliman University.

Indeed, as the cousins Abner and Aladin Bucol state in the second article, "An Assessment on the Status and Distribution of Endemic and Threatened Birds of Siquijor Island," *birds are important in maintaining the ecological balance of the ecosystem*. Deforestation along with hunting and illegal wildlife trade pose a great threat to wildlife, including birds. If uncontrolled, the Bucols add, *extinction is highly possible* especially in severely deforested islands like Siquijor. Abner Bucol has previously written on these birds (SJ 2006). In the current paper, the authors see hunting as a continuing threat and education as a necessity, but there is also the matter of only one guard staffing the forest reserves on this island.

Two articles "Smallhold Coconut Farmers in Negros Oriental: Status, Problems, and Recommendations" and "Capitalizing on Organizational Knowledge: Imperatives for Decentralized Agricultural Extension Systems," take situationers straight into development perspectives in agriculture. In a time of global crisis, the agriculture professor Edwin Cubelo brings us back to basics—what are the realities of coconut farmers and farming? His report is grim: poor agronomic practices, underutilization of land resources, the absence of product diversification, inefficient marketing systems, and inaccessibility to support services. But Cubelo also says that the technologies for change and improvement exist and are accessible. Vital to development would have to be the creation of a provincial coconut industry council—multisectoral in nature—that can help address these problems and constraints, while at the same time coconut farmers' organizations may be strengthened. Meanwhile, Dr. Rowena Bacongus suggests a possible source for a solution in her examination of agricultural extension systems, stressing that these have been *a major tool in accelerating farm productivity and income* in providing agriculture producers superior scientific knowledge and skills. Based on a four-component (socialization, externalization, combination, and internalization) model of knowledge creation, Bacongus suggests socialization to be of utmost importance. Interpersonal exchange of tacit knowledge among extension workers, farmers, and key stakeholders is necessary to develop knowledgeable farming communities equipped to deal with complexity.

Then, close on the heels of Florin Hilbay's "Undoing Marriage" (SJ 2006) is another paper from the law discipline, though certainly of a completely different theme. Myrish Cadapan-Antonio's "Measuring the Concept of Civilian Observers under Philippine Procurement Law against International Procurement Instruments: A Compatibility Analysis" discusses institutional reforms founded on integrity, transparency, and accountability. The participation of civilian observers in the procurement process was enacted into law in the Philippines in 2003, and, by comparison, Antonio argues that such inclusion is compatible with international standards, showing that the concept can be used by different jurisdictions for establishing sound procurement systems. While the Philippines has taken a lead with this revolutionary idea, however, it continues to be plagued by procurement problems and corruption scandals leading Antonio to rightly recommend (though a tall order) that the Philippine government look more closely at WTO agreements and World Bank funded projects, and work at freeing the country from foreign debt dependency.

This paper is followed by an article from mathematics professors, Millard and Alice Mamhot and Kemmons Kilat entitled "The Pre-Algebra Course: A Bridge Program for Mathematically Under-Prepared College Entrants." The paper is actually an evaluation of a program that was implemented at Silliman University ostensibly to address the lack of mathematics skills (e.g., doing elementary operations such as decimal, percent, fractions) of students entering college. The process is clear and simple and may be used at other educational institutions who might find themselves in a similar dilemma.

This issue rounds up the full-length articles with two papers from the health sciences. Prof. Teresa Guinoo, in "Identifying Factors Related to the Sense of Coherence of Adult Asthmatics in Dumaguete City," believes that *sense of coherence*—a core construct composed of comprehensibility, manageability, and meaningfulness—is basic to health maintenance and that successful adaptability to illness is much dependent on it. In studying more than 150 young adults with asthma, she found that access to finances and safety is a key element in sense of coherence and therefore in health management as well. Guinoo suggests looking into the dynamics of sense of coherence in lifestyle diseases just as life-threatening such as diabetes mellitus, hypertension, coronary artery diseases, and obesity so that appropriate intervention and even prevention may be considered. Meanwhile, Dr. Dioscoro P. Marañon, Jr. from Negros Occidental and his colleagues at the University of the Philippines, in the paper entitled "Computer Simulation to Predict Possible Locations of Rupture in an Abdominal Aortic Aneurysm," bring forth vital research concerning the prediction of time and sites so that surgical grafting can be done before an aneurysm ruptures. While more studies are needed to confirm results, this report nevertheless highlights the life-and-death significance of early detection and diagnosis. Both of these papers signal a

sense of urgency not just to those in the nursing and medical profession, but to the rest of us who all live by choice and choose to live.

*Notes section.* The variety in this issue's offerings extends into the Notes section. Resident writer Ian Casocot in "The Psychology of Blogging" brings to print his understanding of an element of cyberspace, something of complete fascination to many and potentially a source ironically of self-protection. There is no question in my mind where Ian's focus may be when he says that **blogging** is *perhaps the only way for people in the Internet Age to offer a buffered kind of contact in a time when one easily drowns in the constant deluge of immediate communication.* Indeed, in such a statement one finds precisely the paradox of blogging and the author invites us to the blogging experience that, strangely, brings to mind what some have said of friendship—therapy for the poor.

A past contributor to *SJ*, Michael Hawkins excerpts from a larger work a brief exchange with "Soraya the Converted: A Conversation with a Maranao Muslim Woman in the Southern Philippines." Reading this dialogue, one might run through such contrasting emotions as hope and despair, disquiet and a strange kind of peace. Perhaps Michael will eventually allow us the benefit of his other experiences and thoughts in his resulting writeup of this examination of life and culture.

Finally, still in the *SJ* tradition, this issue also carries a book review, this time by Ralph Semino Galán of *The Queen Sings the Blues* (2007), Ronald Baytan's book of poems. Ralph journeys with the poet in "imaginary high heels" (for there is a black stiletto beside each page number), chronicling in 47 poems *the beautiful but bleak landscape of homosexual love and lust, queer desire's many blissful fruitions and equally numerous frustrations.* The book review, just as the book itself presumably, titillates and excites yet grounds one to life's realities, and makes one look forward to more, this being Baytan's *first* volume of poems.

#### Acknowledgments

I would like to thank all contributors to this issue. Indeed, they have made possible the *SJ* thrust to be all-encompassing—truly a journal devoted to discussion and investigation in the humanities, social sciences, and sciences. Our reviewers have also been very generous of their time, patience, and expertise. Their insights and comments contributed much to the finalizing of the articles on these pages and to all of them the individual authors and the *SJ* owe a debt of gratitude.

Ike Oracion, chair of the editorial board, has been most supportive of the work of *SJ* and I have been very happy that he accepted the position,

being himself a frequent contributor to *SJ* over the years and, given his familiarity with its mission and vision. I also wish to thank the members of the editorial board, past and present, with whom I have worked on the many special projects of the *SJ*, including its 50<sup>th</sup> anniversary publications in 2004 and the many lectures and workshops that were organized when our own writers paid Silliman a visit. Special thanks go to Philip Van Peel and Cobbie Palm. Ma'am Naty who has served on the *SJ* staff for longer than I can recall is rock-steady and always ready to whip out a financial report when we need one.

I wouldn't have been able to get this issue done without Gina and Ian. The three of us are just doors away from each other, but *SJ* work is full-time work on top of our full-time university responsibilities and so, thank goodness for personal computers, but even more, I thank God for such a talented and committed duo—friends indeed.

Most important, it is my pleasure to dedicate this editorial debut to Ceres Pioquinto, editor-in-chief of *SJ* since 1998—mentor of many including myself, colleague, friend, delicate but solid shoulder to lean on, emotive yet lucid, one of the wisest people I know. Ceres invited me into the editorial board at a time of great optimism for university publishing. Then SU President Agustin Pulido was concerned about the upgrading of the *SJ* and from him we drew inspiration. Ceres immediately ensured that every article included an abstract and almost single-handedly instituted a peer review process, brought about the creation of an overseas editorial board, researched and put together our current editorial policies, and especially, knocked on people's heads so we could produce in more haste than we're used to. And I'm not talking here about the sleepless nights she spent creating and re-creating with authors a final manuscript that would have wider appeal and made more sense than it did when it first appeared on her editor's desk, or rather, in her pc. Ceres' efforts have made it so much easier for us to address the requirements for journal accreditation now being set by the Commission on Higher Education, as well as, the concerns of the Philippine Social Science Council and other organizations about the development and production of journals for international recognition.

I find it interesting that Ceres and I share similar overseas visits. Her studies and work brought her to both Sydney and Tokyo; so did my own leadership fellowship grant from the United Board for Christian Higher Education in Asia. So in the long lonely days away from home and family, her advice about food and culture, including where to sit on the bus, in both Australia and Japan, were my companions. But also on those months abroad I was able to do more work on *SJ* than I have ever done before or after. Ceres' recommendation for me to take over the editor's job for *Silliman Journal* was

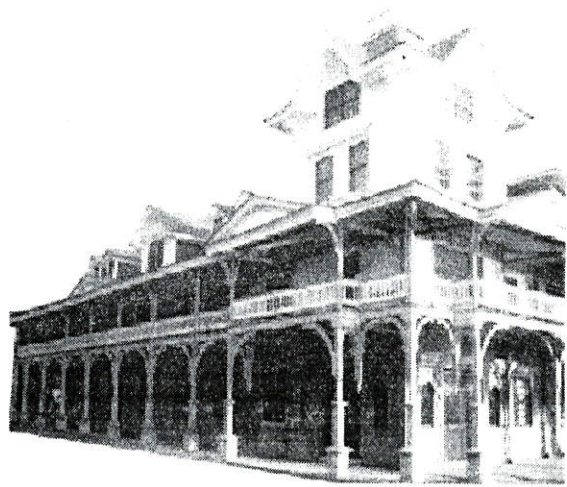
opportune and convenient, even therapeutic. I continue to rely upon her; thankfully, she is never more than an email or sms away. Everybody needs a security blanket; Ceres is mine. These days we are also collaborating on a book project—reflections on the Silliman experience from a woman's perspective—something I would never have thought of doing if it were not for Ceres' urging and absolute confidence.

I thank university administration, especially Dr. Ben S. Malayang III, VP for Academic Affairs Betsy Joy B. Tan, and VP for Finance Cleonico Y. Fontelo, for believing along with the editorial staff and board that the *Silliman Journal* is a vital component in the life of an educational institution, and for encouraging everyone in the academe to publish and to do so with quality. Many do not think they are cut out for writing, even though writing is what they did 85% (or maybe more) of the time in order to get to where they are now. I conclude this preface with the words of poet Marilyn Zuckerman in *After Sixty*,

*"But I am ready for the knife slicing into the future,  
for the quiet that explodes inside,  
to join forces with the strong old woman,  
to give everything away and begin again."*

**Margaret Helen Udarbe, Ph.D.**  
Dumaguete, Philippines







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and Michael Ocampo

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## **Assessment of the Biophysical Conditions of Caves Promoted for Ecotourism in Mabinay, Negros Oriental, Philippines**

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Five caves promoted for ecotourism in Mabinay, Negros Oriental were studied by a team composed of researchers, cave guides, and professional cavers to determine their viability for tourism and impact of caving activities. Several criteria were used including assessment of threats to bats and bat cave inhabitants. Cave assessment was supplemented with interviews of local residents. Results of the study indicated that all five caves were utilized by bats as roosting sites but were disturbed by hunting and caving activities. At least 11 species of bats were found in the study area. Of the five caves, three adjoining caves were identified as ideal caving destinations for moderate cavers. One cave is recommended for extreme caving activities, and another one for special cave destination (bat cave habitat viewing). Recommendations to improve the current cave tourism are provided.

---

### **Introduction**

**E**cotourism in ecologically sensitive areas should support the conservation of biodiversity on which it depends, for it is now clear that nature-based form of tourism has become a major source of revenue for local communities and has augmented funds supporting the management of protected areas (Catibog-Sinha & Heaney, 2006).

One form of ecotourism presently being developed on the island of Negros is caving. This rugged form of outdoor activity is usually engaged in by physically able sports enthusiasts who are skilled in climbing and rappelling. In Mabinay, caving is done by amateurs and professionals. Aside from these strenuous caving activities, photography and leisure visits have grown in popularity (Uy, personal communication).

The increase in the number of untrained cave explorers visiting the caves of Mabinay prompted the municipality to develop easy means of access to the caves. At one popular cave destination steel walkways for visitors were constructed. These walkways also prevented them from making unnecessary contact with the fragile cave structures.

However, infrastructure development and the alteration of caves were not subjected to an environmental impact assessment. The absence of such assessment has led to some speculation that negative impacts have occurred as a result of these activities. To rule out this speculation, a study was undertaken in November 2006 to determine the present condition of the five major caves promoted for ecotourism and to establish a proximate baseline. The study was undertaken by members of the Mabinay cave guide group, researchers, and representatives of the local tourism office.

### Review of Related Literature

Ecotourism as jointly defined by the Philippine Department of Environment and Natural Resources (DENR) and Department of Tourism (DOT) is "a low- impact, environmentally-sound and community-participatory tourism activity in a given natural environment that enhances the conservation of biophysical understanding and education and yields socio-economic benefits to the concerned community." This form of tourism has been largely dependent on the natural resources. As a major service-oriented industry in the country, it has attracted some 2.2 million visitors and generated almost 3 billion US dollars in gross income in 1997 (Libosada, 1998).

At least 2,500 caves throughout the Philippines have been listed by the DENR with several more being discovered and utilized by caving enthusiasts and individuals exploiting the resources inside the caves ((DENR Annual Report, 1994 and Libosada, 1998). On Negros island, at least 20 caves have been identified by European cavers in the central parts of Mabinay and Kabankalan (Slangen, 1991). Of these 20 caves, five are presently being promoted for caving by the Mabinay local government and has drawn close to 1,000 visitors generating about 60,000 pesos in 2006 (Mabinay Tourism Office, 2006).

Under Republic Act No. 9072, known as the National Caves and Cave Resources Management and Protection Act, the DENR is tasked to take the lead role in conserving, protecting, and managing natural wealth and heritage, including caves and cave resources. The task is undertaken in coordination with the National Museum (NM), National Historical Institute (NHI), the DOT, and local government units (LGU). Among the several functions delegated to DENR and its coordinating agencies are the conduct of nationwide planning, monitoring and evaluation of the implementation of the Cave Act through the protected Areas and Wildlife Bureau (PAWB); the forging of a memorandum of agreement (MOA) with any local government unit, other

government agencies, non-government organization, peoples' organization, academe, and other concerned entities for the preservation, protection, development and management of caves; and coordination or collaboration with concerned government agencies, non-government organizations, peoples' organizations, academe, and other concerned agencies in the conduct of cave assessment (DENR CAVE Act implementing rules and regulations, 2003). The Cave Act also provides guidelines for classifying caves (see DENR Memorandum Circular 2007-04).

The environmental impact statement (EIS) system promulgated through Presidential Decree No. 1586 by the late president Ferdinand Marcos is a policy that promotes a rational balance between socio-economic growth and environmental protection. The lead agency tasked to implement this order is the DENR. Among the several regulatory functions of the lead agency is to require project proponents to undertake environmental impact studies prior to project implementation, and to comply with the established environmental quality standards (Oposa, 2002; Feliciano, Tolentino, Labitag, Gloria, & Oposa, 1992). The EIS system is important because it provides critical baseline information on which mitigation measures are drawn from and implemented, especially after a negative impact has occurred (Asian Development Bank, 1996).

## Methodology

### Study area

The study site is located in central Negros Island (coordinates: 9° 39.63' N, 122° 59.12' E), in Barangay Bulwang, about 10 km southeast of Mabinay. It is a relatively flat limestone landscape dotted with caves and underground river systems.

The study focused on five large caves (caves with chambers measuring at least 15 m in diameter) promoted for ecotourism by the local government of Mabinay. These are Mambajo 1 (length 326 m; depth 35 m), Odluman (length 8,870 m; depth 82 m), Panligawan (length 143 m; depth 22 m), Pandanihan (length 282 m; depth 25m), and Crystal caves (length 165 m; depth 8 m). Cave length measurement is based on distance from cave opening while depth measurement is based on vertical distance from ground surface. Mambajo 1 cave has a permanent river flowing through it while Odluman cave receives water in its outer chamber during rainy season. The three other caves do not have streams flowing through them. Except for Mambajo 1, the other four caves are within close proximity to each other and are found within the reforestation site of the DENR.

### Methods and Approach

The study involved training of participants in the assessment of the caves and the identification of cave-dwelling bats. Emphasis was made in training the participants to collect and identify bats, evaluate cave conditions,

and orally present their findings to stakeholders. Cave-dwelling bats were used as indicator species in the biophysical assessment because of their propensity to inhabit caves and their prominence in the Philippine vertebrate literature. The five-day training was conducted from November 22-26, 2006.

*Bat identification and population estimates.* To identify bats, participants were taught how to collect and process live animals. This method involved the use of monofilament mist nets measuring 3cm x 3cm. The nets were set up in cave openings and flight paths. Netting was supplemented with direct observations on bat roosts during daytime. Captured individuals were identified using the bat key of Ingle and Heaney (1992), photographed, and marked prior to their release. Total bat population in a cave was determined by estimating the number of bats occupying a unit area (that is, 1 square meter) and then multiplying this value by the total number of one-square-meter areas occupied by the bats. Seventeen net nights were spent in the study area. In addition to this, on-the-spot interviews were conducted to supplement observations.

*Assessing caves as viable tourist sites.* Viability of the caves was based on three main criteria: (1) accessibility, (2) biophysical conditions, and (3) safety (refer to assessment tool used in the exercise).

- Accessibility was used as a major criterion because of the rugged karst limestone conditions of the area. The relative distances of the caves from the highway, the conditions of the footpaths leading to the caves, and the relative sizes of the cave openings were rated. This criterion assumes that the more accessible the cave, the better for the tourists.
- The biophysical criterion refers to the physical and biological features of the caves that determined their ability to attract tourists and visitors. It focused on the different attractive physical features of the caves including stalactite and stalagmite formations. It also took into consideration the exploratory aspect of the caves by rating their discoverable features. The criterion also assessed cave wildlife diversity (primarily bats) as indicator species and was supplemented with interviews to determine threats to the bats and their cave habitats, among others.
- Hazard and cave obstacles or safety assessments were made to determine presence of geophysical features that could threaten the safety of cave visitors. It took into consideration flooding episodes inside the caves and other conditions that could prove risky and hazardous to cave visitors.
- Cave use merely qualified the pattern of cave use in the area. This was supplemented with interviews from the locals utilizing the caves. The different uses of the caves were identified but not quantitatively analyzed (i.e., economic use valuations) due to time constraints.

Each criterion contained parameters that were scored from 1-3, with 3 as the highest score. The total accumulated scores from all three criteria were converted to percentage to define the viability of the cave. A score card summarizing the caves' viability, in percentage, was used in ranking the five caves. A team of 2-3 evaluators assessed each cave and the results presented

to the main group (cave guides and facilitators) who critiqued and validated the findings. The three teams took turns reporting and validating each other's report.

## Results

*Observed bats and threats to bat population.* Eleven species of bats were observed in the training sites (Table 1). These include 5 species of bats belonging to the Suborder Megachiroptera (fruit bats) and six species belonging to the Suborder Microchiroptera (insect-eating bats). The cave habitat with the most number of bat species observed is Mambajo 1 cave (9 species) while Crystal and Pandanihan caves had the least number of species observed (1 species each with few individuals). This cave (Mambajo cave) also has the highest number of aggregating bats (ca 4,200 individuals) and was dominated by the Common Nectar Bat or Dawn Bat (*Eonycteris spelaea*). Similarly, Odluman cave was observed to harbor fruit bats but of smaller number (ca 150 individuals) and fewer species compared to Mambajo 1 cave. Only the smaller species of fruit bats together with several species of microbats were observed to roost in Mambajo 1 and Odluman. The rest of the caves had only microbats living in them. Furthermore, the researchers noted that Crystal, Pandanihan and Panligawan caves showed indications that they were previously inhabited by several bats, as evidenced by the presence of bat stains on the cave roof.

The study found evidence of hunting in Odluman cave in the form of abandoned pieces of net and poles used for catching bats. This finding concurs with an earlier study by Alcala, Averia & Inocencio (in press) and Tababa et al. (in manuscript) which reported bat hunting in many parts of Mabinay. The bats species highly threatened by hunting are *Rousettus amplexicaudatus*, *Eonycteris spelaea*, and *Pteropus hypomelanus*. The first two species are cave-dwellers while the latter is known to roost also on trees.

Table 1

Bat species	Common name	Cave habitat				
		Mambajo 1	Odluman	Crystal	Panligawan	Pandanihan
<b>Megachiroptera</b> (fruit bats)						
<i>Eonycteris spelaea</i>	Common nectar bat	+++	-	-	-	-
<i>Eonycteris robusta</i>	Philippine nectar bat	++	-	-	-	-
<i>Rousettus amplexicaudatus</i>	Common rousette	++	+	-	-	-
<i>Macroglossus minimus</i>	Dagger-toothed flower bat	+	+	-	-	-
<i>Cynopterus brachyotis</i>	Common short-nosed fruit bat	++	++	-	-	-

<b>Microchiroptera (Insect bats)</b>						
<i>Rhinolopus virgo</i>	Yellow-faced horseshoe bat	+	+	-	+	-
<i>Rhinolopus philippinensis</i>	Enormous-eared horseshoe bat	-	-	+	-	-
<i>Myotis horsfieldii</i>	Common Asiatic myotis	+	+	-	+	+
<i>Miniopterus schreibersi</i>	Common bent-winged bat	++	+	-	-	-
<i>Pipistrellus tenuis</i>	Least pipistrelle	-	+	-	-	-
<i>Hipposideros diadema</i>	Diadem roundleaf bat	+	-	-	-	-
	No. of species present	9 spp.	7 spp.	1 sp.	2 spp.	1 sp.

- absent, + few individuals, ++ moderate nos.(hundreds), +++ many (in thousands)

*Cave tourism assessment.* The results of cave assessment showed that Crystal cave scored the highest (81%), followed by Pandanihan (78%), Panligawan (74%), Odluman (70%), and Mambajo (63%) (Table 2). Crystal cave scored high in terms of *Accessibility* and *Biophysical Attributes* because of the improved steps and constructed walkways (Figure 2). This cave, however, scored low on number of animals and was noted to have weak points as indicated by presence of broken pieces of stalactites detached from the cave roof. Weak points may be caused by vibration (transmitted from vehicles passing over the cave because the cave is situated close to the highway) and/or from seismic vibrations caused by geological movements. Further studies are needed to confirm this conclusion. On the other hand, Mambajo 1 (Figure 3) and Odluman caves scored high in terms of number of species of bats, but scored low in the hazards and accessibility criteria. Odluman cave has several unexplored inner chambers and passages that are relatively difficult to access.

Table 2 Score card and summary of results of cave tourism viability assessment.

Cave	Accessibility				Biophysical attributes					Hazards and obstacles			Total Score
	A.1	A.2*	A.3*	Score	B.1*	B.2*	B.3*	B.4*	Score	C.1*	C.2*	Score	
CRYSTAL	3	3	3	9	3	2	2	2	9	3	1	4	22 (81%)
PANDANIHAN	3	2	3	8	2	2	2	2	8	2	3	5	21 (78%)

PANLIGAWAN	3	2	3	8	1	2	3	1	7	2	2	4	20 (74%)
ODLUMAN	3	2	2	7	1	3	3	2	9	1	2	3	19 (70%)
MAMBAJO	3	1	2	6	2	2	3	2	9	1	1	2	17 (63%)

\* Refer to description of parameters in the Assessment Tool at the Annex.

Table 3 Summary of cave use in all five caves visited

Cave	Cave use				
	Source of water (Washing/bathing)	Hunting and collection (guano, bat, bird's nest, etc)	Caving activities (rappelling, swimming, trekking, etc.)	Wildlife habitat (roost site)	Others
Mambajo 1	+	+	+	+	-
Odluman	+	+	+	+	-
Crystal	-	-	+	+	-
Pandanihan	-	*	+	+	Treasure hunting
Panligawan	-	*	+	+	Treasure hunting

+ present - absent \* reported by local residents

Our observations on cave use (Table 3) indicated that all five caves were utilized by bats as roosting sites (species and population estimates are discussed under Bat observation and threats to their population). We also observed washing of clothes and drawing of water by local residents in Mambajo 1 and Odluman caves. We also found evidence of bat hunting in Mambajo 1 and Odluman caves and treasure hunting in Pandanihan and Panligawan caves. Although these activities were not actually observed, there was evidence of hunting in the first two caves in the form of bits and pieces of netting materials and bamboo poles left behind by hunters while indications of treasure hunting in the latter two caves was evident by the presence of dug holes. Caving activities appear to be prevalent in Crystal (Figure 2), Panligawan, and Pandanihan caves and were strongly associated with the presence of modified structures, like steel walkways and carved steps that improved accessibility. The other two caves were also known to be visited but unlike these three caves, they did not contain permanently modified structure.

### Discussion

*Threats to bats and their cave habitats.* The number of bat species (11) observed in the caves is comparatively lower than the known number of cave-dwelling bat species in the Philippines which is about 50 species (Vermeulen & Whitten, 1999). The apparent depauperate (low number of bat species and low population for some caves) condition strongly suggests that the caves were highly disturbed. The presence of few bats amidst the numerous bat-stained roofs of some of the caves described earlier strongly suggests that at some point in time several bats (at least in the hundreds) inhabited these caves. It appears that construction activities, hunting, and or constant cave visits have driven away most of the bats. No study has been done to determine which of the several surrounding caves have served as relocation sites for these bats. But it has been noted that no existing cave habitat protection mechanism is in place. This could mean that bats may have relocated to other caves but remain threatened by hunting and disturbance. However, this suggestion needs to be further investigated.

Our observations on Mambajo 1 cave indicated that bat composition had changed as a result of loss of forest cover and hunting. Large species of bats such as the rare Negros bare-backed fruit bat (*Dobsonia chapmani*) and Harpy's fruit bat (*Harpyionycteris whiteheadi*) are no longer present in this cave. Rabor (1952) reported the presence of these two species of bats during his visit in 1948 when the cave area was still covered with primary forest. At present, only the smaller fruit bat species like *Eonycteris spp.* and some few insect bats (Microchiroptera) have been observed in this cave. The change in species composition has been attributed to (1) selective hunting of larger species, thus allowing the smaller species to predominate, (2) the disappearance of forest food plants (e.g., Pandan and berry-fruited trees) that provide food for the larger fruit bat species, and (3) human disturbance.

*Ecotourism viability of caves.* The study showed that the three caves (Crystal, Pandanihan, and Panligawan) promoted for tourism are safe from floods and are relatively stable with few geophysical constraints that can pose hazards to cave visitors. A minor exception is Crystal cave, which has some weak points. This cave also contains steel walkways that improve passage for visitors but restrict them from coming into contact with cave structures. Furthermore, the three caves also contained unique and attractive geophysical structures that served as main attraction (Figures 2-5) and are located in low-lying hills with gradual slopes, making them easy to reach. Because of their close proximity, all three caves are usually visited at any one time.

*Importance of caves.* Caves do not only provide habitats to bats but are important sources of fertilizer (guano and phosphate rock) and other economically important resources like bird's nests that are made into soup. Guano is rich in nitrogen and phosphorous and is known to be superior over other organic materials because it is produced under cave conditions devoid of degrading factors like sunlight, wind, and the like. Furthermore, it contains



beneficial fungi and bacteria that help plants resist fungal infections when applied (Mithra, 2007). In addition, guano is utilized by other cave organisms as food and is an important material that sustains cave productivity (Wynne & Pleytez, 2005).

### Conclusion

The study provides a simple method for assessing cave conditions and for initially determining (without detailed analysis) threats to bats. Although the caves were found to be viable for ecotourism, threats to the bats living inside the caves need to be considered. Moreover, these observed threats need to be further studied for researchers to generate specific and effective recommendations to address such concern.

### Implications and Recommendations

The training helped in the development of the following activities to improve the cave program of the Mabinay tourism office:

- Promote cave habitat protection in caves known to be inhabited by important species of bats, such as Mambajo 1 cave which used to be inhabited by the rare Negros bare-backed fruit bat and is now inhabited by thousands of nectar-feeding bats. This particular cave can be promoted as a special cave destination for cavers interested in observing bats in their natural habitat.
- Promote the three caves - namely Crystal, Pandanihan, and Panligawan caves - for moderate caving. Their forest cover should be preserved to sustain cave humidity and provide water and moisture for the development of cave structures. In addition, cave structures like stalactites and stalagmites should be preserved and protected from destruction when building structures inside the cave. Furthermore, artificial lighting should not be introduced in caves containing wildlife. Intense and prolonged lighting can disturb cave animals, reduce moisture inside caves, and cause discoloration of the cave surface and structures due to photo-degrading activity.
- Promote Odluman Cave - the longest cave (ca 9 km) in Mabinay - for extreme caving because of its complex passages and relatively complex features. However, caution and proper advice should be given, and only professional cavers should be allowed to explore the cave.
- Conduct regular bat monitoring and cave habitat assessment. This may be done by cave guides. Reports on these activities should be submitted to the Mabinay tourism office and/or local DENR office and should be used to support policies that promote conservation and protection of bats and their cave microhabitats.
- Set up a bat educational program in the soon-to-be completed tourism information center in Mabinay. The center will provide information on

caves and bat species and their habitats. Bat information materials can be acquired from conservation groups like Haribon Foundation, Foundation for Philippine Environment, and Bat International. Bat specialists and biologists based in academic institutions like Silliman University can provide technical assistance.

- Advocate for legislation of local policies that will protect cave habitats and promote conservation of bat species. Advocacy should also include full implementation of the Wildlife Act and Cave Law.
- Incorporate wildlife conservation information as part of the cave guide groups' objective and commitment to educate clients and local communities.

In addition to the suggestions provided by the trainees, other recommendations are put forth in this study. The first is the incorporation of bat studies and habitat assessment in the environmental impact assessment of caves and limestone habitats proposed for development as indicated in the cave law and environmental impact assessment guidelines. The present cave viability assessment tool can be further improved to include baseline and additional impact parameters to suit this requirement. Second, further studies should be conducted to include threat assessment of cave bats and the investigation of bat relocation sites and other ecological studies like cave guano nutrient export and energetics. Third, socio-economic valuation of caves and cave resources in the area may be pursued. Finally, it is recommended that the criteria and parameters used be improved to coincide with ecotourism requirements and modified to fit certain research requirements. A practical way of doing this is to establish indices to serve as guide for evaluating and classifying cave types and usage.

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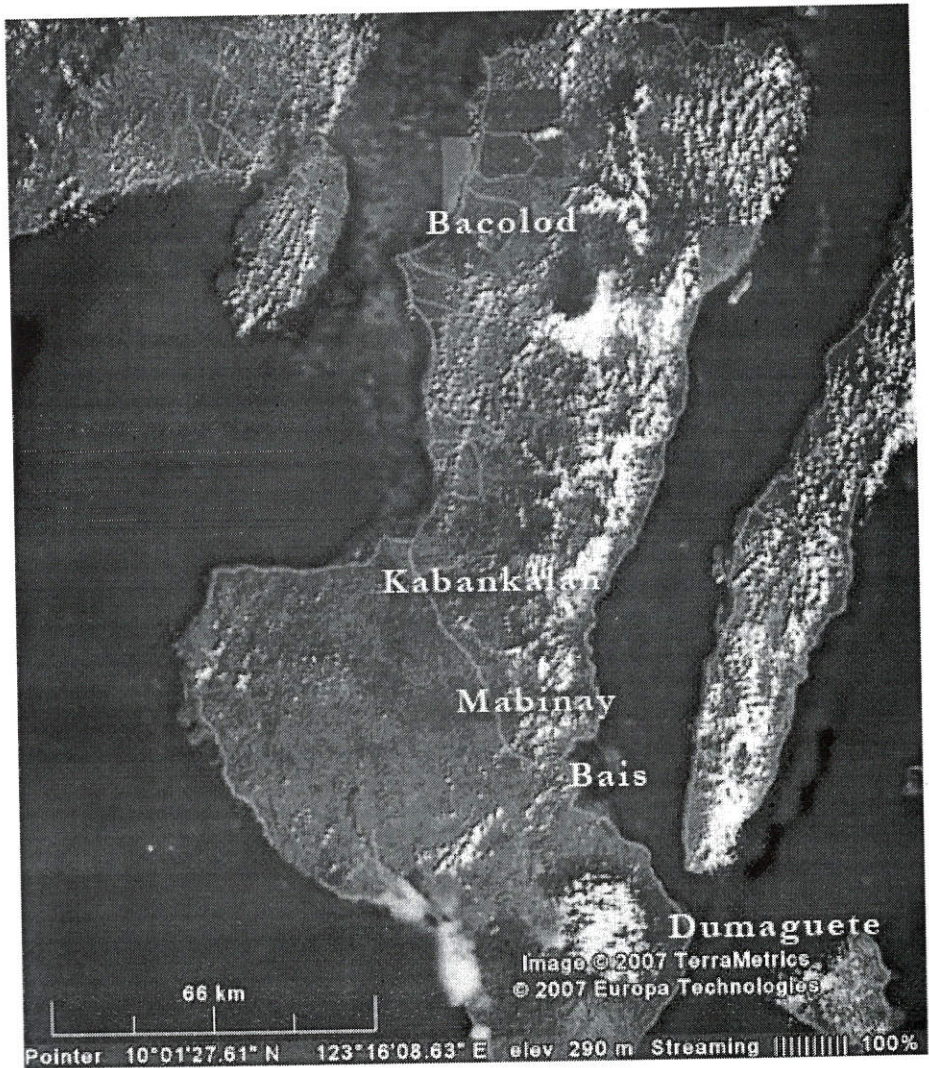
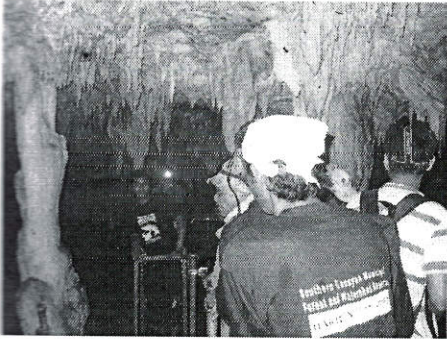


Fig. 1 Map of Negros showing location of Mabinay (Source: <http://earth.google.com>).

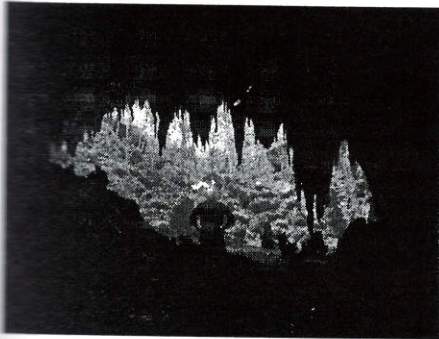
PHOTODOCUMENTATION



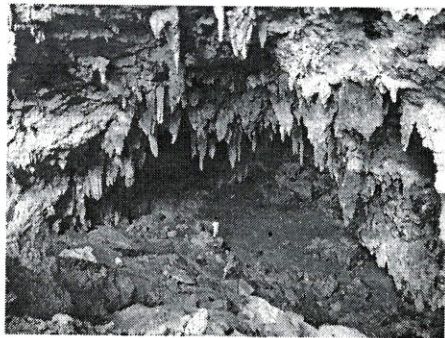
**Fig. 2** Crystal cave, a cave well noted for its pristine white stalactite formations. This cave is provided with steel walk ways to facilitate passage for visitors.



**Fig. 3** Mambajo 1 cave showing the large inner chamber with sky light (opening). The skylight serves as the main entry and exit for thousands of bats roosting in the chamber and is a favorite rappelling point for cave explorers.



**Fig. 4** Pandanihan cave viewed near the mouth opening. Steps were recently constructed leading to the cave mouth to improve access.



**Fig. 5** Panligawan cave viewed from the surface opening. This cave has a large opening and chamber.

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## An assessment on the status and distribution of endemic and threatened birds of Siquijor Island, Philippines: A progress report

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This paper presents the results of an on-going study on the avifauna of Siquijor Island utilizing point counts, transect walks, and MacKinnon Lists with ethnobiological surveys. The study covered the four major forest patches remaining on Siquijor and was visited during October – December 2007. A total of 44 species were recorded. Four of the five endemic subspecies were confirmed, namely: Streak-breasted Bulbul (*Ixos siquijorensis siquijorensis*), Yellow-bellied Whistler (*Pachycephala philippensis siquijorensis*), Orange-bellied Flowerpecker (*Dicaeum trigonostigma besti*) and Everett's White-eye (*Zosterops everetti siquijorensis*). The Philippine Hanging-Parrot (*Loriculus philippensis siquijorensis*) was not sighted at all and is presumed to be extinct. Of all the threatened species known to inhabit the island in the past, only the Streak-breasted Bulbul was sighted; it was found in all sites with relative indices of abundance of 1.0 in Bandilaan, Canghaling, and Liloan; and 0.92 in Salagdoong. Bandilaan Natural Park harbors the highest number of bird species (35) followed by Canghaling (33), Liloan (28) and Salagdoong (20). Habitat destruction due to firewood extraction and slash-and-burn farming as well as hunting were the observed threats to the island's avifauna and its unique biodiversity.

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**T**he Philippine archipelago's complex geological history and long periods of isolation from the rest of the world have contributed to its high biodiversity and endemism making it one of the 17 mega-diversity hotspots in the world (Ong, Afuang & Rosell-Ambal, 2002) with biological richness equivalent to that of Galapagos Islands times ten (Heaney & Regalado, 1998). For birds alone, the Philippines has 576 species of which 195 are endemic to the country (Mallari, Tabaranza, & Crosby, 2001).

Birds are important in maintaining the ecological balance of the ecosystem especially in terms of species dispersal of trees. Deforestation coupled with hunting and illegal wildlife trade pose a great threat to wildlife, including birds. If uncontrolled, extinction is highly possible (Albuero, *et. al.*, 2005) especially in severely deforested islands like Siquijor where only about 781 hectares of forest cover is protected.

Siquijor Island (09° 11' N; 123° 35' E) is one of the biologically diverse yet deforested islands in the Visayas. It is home to five endemic subspecies of birds namely: Streak-breasted Bulbul (*Ixos siquijorensis siquijorensis*), Yellow-bellied Whistler (*Pachycephala philippensis siquijorensis*), Orange-bellied Flowerpecker (*Dicaeum trigonostigma besti*), Philippine Hanging Parrot (*Loriculus philippensis siquijorensis*), and Everett's White-eye (*Zosterops everetti siquijorensis*). Aside from the Streak-breasted Bulbul, there are five more threatened species known in the island: Rufous-lored Kingfisher (*Halcyon winchelli*), Japanese Night-Heron (*Gorsachius goisagai*), Philippine Hawk-Eagle (*Spizaetus philippensis pinskeri*), Philippine Cockatoo (*Cacatua haematuropygia*) and Spotted Imperial-pigeon (*Ducula carola*). The result of this study could be used for further conservation efforts and forest management on the remaining patches of forest of Siquijor (Bandilaan, Canghaling, Salagdoong, and Lilo-an). To help the local government units (LGUs) in developing and promoting ecotourism industry, this study serves as an avenue to attract more tourists (especially birdwatchers) to visit biodiversity-rich sites. In effect, local residents may be provided more opportunities to generate income as tourist guides.

This study's aims included the following:

- Identify the bird species found in the above named areas of Siquijor Island;
- Determine the relative index of detectability of both endemic subspecies and threatened species found on each site; and
- Determine the status and distribution of endemic and threatened birds of Siquijor Island.

### Ornithological accounts on Siquijor

Steere in 1888 was the first to visit the island followed by the Menage Expedition in 1891. These were followed by visits such as those of the Philippine National Museum in 1907 and 1908. Rand and Rabor (1960) summarized Rabor's collection in 1949, 1952, 1953 and 1954. Both the Cambridge-Philippines Expedition and Silliman University-Center for Tropical Conservation Studies (CENTROP) conducted a thorough vertebrate sampling in the area in the early 1990s (Jakosalem *et al.* 2002).

Rand and Rabor (1960) presumed that Philippine Hawk-Eagle (*Spizaetus philippensis*) and the Japanese Night-Heron (*Gorsachius goisagai*) as extinct because these were no longer recorded since 1896. The Philippine Cockatoo (*Cacatua haematuropygia*) and Spotted Imperial Pigeon (*Ducula carola*) were recorded in

1959 (Rand & Rabor, 1960) but were no longer observed by Jakosalem *et al.* (2002).

Meanwhile, Evans, Magsalay, Dutson, and Brooks (1993) recorded that the Siquijor endemic subspecies Streak-breasted Bulbul were sighted in three study sites: Lilo-an, Bandilaan and Canghaling. In the study by Paalan (1994), a pair of juvenile Rufous-ored Kingfisher was observed Lilo-an.

The most recent survey was that of Jakosalem *et al.* (2002) on three of the four major forest patches of Siquijor Island, recording 53 species of birds including four of the five Siquijor endemic subspecies: Streak-breasted Bulbul (*Ixos siquijorensis siquijorensis*), Yellow-bellied Whistler (*Pachycephala philippensis siquijorensis*), Orange-bellied Flowerpecker (*Dicaeum trigonostigma besti*), and Everett's White-eye (*Zosterops everetti siquijorensis*). The Streak-breasted Bulbul was the only one of the six threatened species known in Siquijor. A study on the biology of the Streak-breasted Bulbul *I. s. siquijorensis* was conducted by Bucol in 2006.

## Methodology

### Description of the Study Sites

Mt. Malabahoc in Bandilaan Natural Park is the highest point of Siquijor Island at 557m above sea level. It is surrounded by farm lots and abandoned cropland. The area is dominated mainly by *Ficus sp.*, molave (*Vitex parviflora*), dap-dap (*Erythrina sp.*) and tangile (*Shorea polysperma*) along with several exotic species such as mahogany (*Sweetenia macrophylla*), gmelina (*Gmelina arborea*), and teak (*Tectona grandis*). The undergrowth is thick with saplings of large trees, shrubs, and grasses. It was observed that some of the trees, especially the pine tree (*Pinus sp.*), were ringed and burned, despite the fact that the area is considered protected.

The forest of Canghaling is characterized by a more plain topography at an elevation of 250m a.s.l. The vegetation is composed of natural forest species like ilang-ilang (*Cananga odorata*) and various *Ficus* species such as bahi, taloot and labnog. A small patch of less than 10ha still retains mature secondary limestone forest with canopy trees at 20m or higher. The understory is dominated by the "ubod" palm (*Heterospatha spp.*).

Salagdoong forest is located on the eastern side of the island in the town of Maria, and is among the local tourist spots. Leading to the cliff of Salagdoong is an asphalted road that bisects the man-made forest. The remaining large trees in the area are composed of planted species such as lumbang (*Aleurites moluccana*) and molave (*Vitex parviflora*). Agricultural fields are also visible.

Liloan forest reserve is also located in the municipality of Maria. The vegetation of this forest is dominated with mahogany (*Sweetenia macrophylla*) with dbh of 15-20cm; total height 15-20m, "bungalod" [dbh 60-90cm; total height 20-30m], and "magtalisay" (*Terminalia sp*) with dbh ranging from 15 to 20cm and total height 10-15m. Some other species includes lumbang (*Aleurites*



*mollucana*), neem tree (*Azadirachta indica*), eucalyptus (*Eucalyptus* sp.), Brazilian Fire-tree (*Schizolobium excelsum*), "talasai" (*Terminalia cattapa*), and "linog" (*Alstonia macrophylla*). The undergrowth is relatively thick with shrubs, herbs and fallen leaves. Domesticated animals (e.g., cow and goats) were also visible in the area.

### Data Gathering Techniques

The avifaunal survey was done using point counts, transect walks, and MacKinnon list method (MacKinnon & Phillips, 1993). A list was made by recording each new species until a predetermined number of species was reached. A species can only be recorded once in each list but may be recorded in a subsequent list. Surveys were repeated until a minimum of ten lists were completed on each site (as adapted by Turner, Tamblyn, Dray, Ledesma, Maunder, & Raines, 2003). Data were gathered using MacKinnon lists that were analyzed to give an index of relative detectability (IRD) for each species. The relative detectability of each species in each site is equivalent to the fraction of the list on which a species occurs. This index can vary between 0 (species not recorded) and 1 (species recorded on every list) (Bibby, Jones & Marsden, 1998).

Mist nets were unavailable and were not included in the study. Binoculars were used to closely observe birds for identification. Birds were identified to species level and trinomial classification was provided to the endemic subspecies based on the field guide on birds of the Philippines by Kennedy, Gonzales, Miranda, & Fisher (2000).

Anthropogenic activities (e.g., slash and burn farming, clearings, forest extraction) near or within the forest were also noted and documented by means of photos. Ethnobiological surveys were also conducted to solicit additional information on species found on each forest block. Data were obtained using informal oral interview with local residents, particularly bird hunters.

The survey was conducted in 2007 on the following dates: October 18 and 26 and November 27 (Canghaling); November 2 and 29 (Liloan and Salagdoong) and December 16 and 29 (Bandilaan Natural Park).

### Results

Of the subspecies endemic to the Island, four were sighted during the survey namely: Streak-breasted Bulbul (*Ixos siquijorensis siquijorensis*), Yellow-bellied Whistler (*Pachycephala philippensis siquijorensis*), Orange-bellied Flowerpecker (*Dicaeum trigonostigma besti*), and the Everett's White-eye (*Zosterops everetti siquijorensis*). The Streak-breasted Bulbul was sighted in all four sites. Orange-bellied Flowerpecker was sighted in two sites (Bandilaan and Canghaling). Both the Yellow-bellied Whistler and the Everett's White-eye were sighted in Bandilaan Natural Park only. However, the Philippine Hanging

Parrot was not sighted at all and is presumed to be extinct. This observation supports a similar claim by Dickinson *et al.* (1991).

Table 1. Number of endemic taxa in Bandilaan, Canghaling, Salagdoong, and Liloan in Siquijor Island.

Common Name	Scientific Name	2002 survey			2007 survey			
		Bandi - laan	Cang - haling	Salag - doong	Bandi - laan	Cang - haling	Salag - doong	Liloan
1. Philippine Hanging-Parrot	<i>Loriculus philippensis siquijorensis</i>	-	-	-	-	-	-	-
2. Streak-breasted Bulbul	<i>Ixos siquijorensis siquijorensis</i>	X	X	X	92	69	38	59
3. Yellow-bellied Whistler	<i>Pachycephala philippensis Siquijorensis</i>	X	X	-	14	-	-	-
4. Orange-bellied Flowerpecker	<i>Dicaeum trigonostigma besti</i>	X	X	X	30	27	-	-
5. Everett's White-Eye	<i>Zosterops everetti Siquijorensis</i>	X	-	-	9	-	-	-

(X) sighted; (-) not sighted; (numbers) represent the number of individuals encountered (Adapted with modification from Bibby *et al.* 1998); 2002 survey was that of Jakosalem *et al.* (2002).

Among the Siquijor endemic subspecies (Table 2), only the Streak-breasted Bulbul was common in all study sites with index of abundance ranging from 0.92-1.0. The other species, on the other hand, have limited distribution. The Yellow-bellied Whistler was found only in Bandilaan (0.38), although it can be found also in Canghaling (Jakosalem *et al.* 2002) and its absence during the study might be due to poor weather conditions. The Orange-bellied Flowerpecker was also common but only in two sites, Bandilaan and Canghaling with abundance of 1.0 in both areas. The Everett's White-eye was found to be restricted in Bandilaan with abundance index of only 0.54. It should also be noted that the threatened Rufous-lored Kingfisher (*Halcyon winchelli*) found on the island in the 1990s was not recorded by the surveys in 2002 and 2007. The other taxa are resident elsewhere in the country (their indices of relative detectability are also in Table 2). Appendix A lists in detail birds encountered during this survey, including species not directly encountered at the time of the study but confirmed by the locals.

Table 2. Index of relative detectability of birds observed during the surveys in Bandilaan, Canghaling, Salagdoong, and Liloan, Siquijor Island.

Common Name	Scientific Name	Index of Relative Detectability			
		Bandilaan	Canghaling	Salagdoong	Liloan
Streak – breasted Bulbul	<i>Ixos siquijorensis siquijorensis</i>	1.0	1.0	0.92	1.0
Yellow – bellied Whistler	<i>Pachycephala philippensis siquijorensis</i>	0.38	---	---	---
Orange – bellied Flowerpecker	<i>Dicaeum trigonostigma besti</i>	1.0	1.0	---	---
Everett's White – eye	<i>Zosterops everetti siquijorensis</i>	0.54	---	---	---
Brahminy Kite	<i>Haliastur indus</i>	0.08	---	---	---
Red Jungle Fowl	<i>Gallus gallus</i>	0.31	---	---	---
Barred Rail	<i>Gallirallus torquatus</i>	---	---	0.08	---
Black – Chinned Fruit Dove	<i>Ptilinopus lechancheri</i>	0.08	---	---	---
White –eared Brown Dove	<i>Phapitreron leucotis</i>	0.92	0.69	0.5	0.54
Reddish Cuckoo Dove	<i>Macropygia phasianella</i>	0.08	---	---	---
Emerald Dove	<i>Chalcophaps indica</i>	0.46	0.23	0.42	0.15
Island Collared Dove	<i>Sreptopelia bitorquata</i>	---	0.08	---	---
Spotted Dove	<i>Sreptopelia chinensis</i>	0.38	0.38	1.0	0.69
Zebra Dove	<i>Geopelia striata</i>	---	0.08	1.0	0.92
Philippine Coucal	<i>Centropus viridis</i>	0.77	0.85	0.58	0.46
White Collared Kingfisher	<i>Halcyon chloris</i>	---	0.08	0.75	0.69
Black Hooded Pitta	<i>Pitta sordida</i>	0.31	0.61	---	0.31
Pied Triller	<i>Lalage nigra</i>	---	0.38	0.75	0.85
Black – naped Oriole	<i>Oriolus chinensis</i>	---	0.08	0.58	0.38
Oriental Magpie Robin	<i>Copsychus saularis</i>	0.08	0.77	0.25	0.57
Arctic Warbler	<i>Phylloscopus borealis</i>	---	---	---	0.31
Grey Streak Flycatcher	<i>Muscicapa griseisticta</i>	0.08	---	---	---
Mangrove Blue Flycatcher	<i>Cyornis ruficastra</i>	0.54	---	---	---
Pied Fantail	<i>Rhipidura javanica</i>	---	0.23	0.83	0.69
Black – naped Monarch	<i>Hypothymis azurea</i>	0.54	0.54	---	---
Brown Shrike	<i>Lanius cristatus</i>	0.23	0.92	0.5	0.85
Asian Glossy Starling	<i>Aplonis panayensis</i>	0.46	0.92	1.0	0.85
Coledo	<i>Sarcops calvus</i>	0.31	0.08	---	---
Olive – backed Sunbird	<i>Nectarinia jugularis</i>	0.92	1.0	0.83	0.69
Purple-throated Sunbird	<i>Nectarinia sperata</i>	0.31	---	---	---
Red-rumped Swallow	<i>Cecropis daurica</i>	---	---	---	0.08
House Martin	<i>Delichon urbicum</i>	0.08	---	---	---
Number of Mactinnon lists		13	13	12	12

Note: Siquijor endemic subspecies in bold letters

## Discussion

Forty-four species were identified in the four forests in Siquijor island. This number may increase as the number of sites surveyed also increases and as the duration of the survey is extended. To date, among all of the six threatened species known to occur in Siquijor, only the Streak-breasted Bulbul was sighted. Although the data presented here are preliminary, these are suggestive of declining avifaunal composition in each study site. In spite of being government-owned, the forest reserves have continually been subjected to the encroachment of agriculture and hunting. Hunting with the use of air-guns was found to be rampant in Lilo-an but recently regulated in Canghaling. While hunting of this kind was not observed in Bandilaan, slash-and-burn farms are visible near the perimeter of the park.

Certain localities in Siquijor still hold stunted secondary growth such as the steep slopes in Cang-isad. However, these are privately owned and have yet to be surveyed intensively. In addition, the scrubs in foothills of severely deforested sites may also support other tolerant species.

The fact that the majority of the hunters in Siquijor are out-of-school youth means that there is a need to educate the general public in order to increase awareness of Siquijor's unique biodiversity. In addition, protection of the above-mentioned forest reserves is of immense importance and requires immediate action. With only one forest guard assigned to these reserves, encroachment is a recurring problem.

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Appendix A.  
 Avifaunal species recorded in Bandilaan, Canghaling, Salagdoong, and Liloan, Siquijor Island.

Species	Common Name	Site			
		Bandi - laan	Canghaling	Salagdoong	Lilo - an
<i>Gorsachius goisagi</i> ***	Japanese Night Heron	---	---	---	---
<i>Spizaetus philippensis</i> ***	Philippine Hawk Eagle	---	---	---	---
<i>Ducula carola</i> ***	Spotted Imperial Pigeon	---	---	---	---
<i>Cacatua haematuropygia</i> ***	Philippine Cockatoo	---	---	---	---
<i>Halcyon winchellii</i> ***	Rufous - lored Kingfisher	---	---	---	---
<i>Ixos siquijorensis</i> <i>siquijorensis</i> ***	Streak - breasted Bulbul	92	69	38	59
<i>Loriculus philippensis</i> <i>siquijorensis</i>	Philippine Hanging Parakeet	---	---	---	---
<i>Pachycephala philippensis</i> <i>siquijorensis</i>	Yellow - bellied Whistler	14	---	---	---
<i>Dicaeum trigonostigma besti</i>	Orange - bellied Flowerpecker	30	27	---	---
<i>Zosterops everetti</i> <i>siquijorensis</i>	Everett's White - eye	9	---	---	---
<i>Halastur indus</i>	Brahminy Kite	1	R	---	---
<i>Accipiter virgatus</i>	Besra	---	---	---	---
<i>Accipiter golaris</i>	Philippine Sparrow Hawk	---	---	---	---
<i>Falco severus</i>	Oriental Hobby	---	---	---	---
<i>Falco peregrinus</i>	Peregrine Falcon	---	---	---	---
<i>Gallus gallus</i>	Red Jungle Fowl	5	R	---	---
<i>Coturnix chinensis</i>	Blue - breasted Quail	R	R	---	---
<i>Gallinallus toquatus</i>	Barred Rail	R	R	I	R
<i>Porzana eurizonoides</i>	Slaty - legged Crane	---	---	---	---
<i>Treron pompadora</i>	Pompadour Pigeon	---	---	---	---
<i>Treron vermans</i>	Pink - necked Green Pigeon	---	---	---	---
<i>Ptilinopus lechancheri</i>	Black - chinned Fruit Dove	1	---	---	---
<i>Ducula bicolor</i>	Metallic Wood Pigeon	---	---	---	---
<i>Phapitreron leucotis</i>	White - eared Brown Dove	29	15	10	15
<i>Macropygia phasianella</i>	Reddish Cuckoo Dove	1	R	---	---

<i>Macropygia phasianella</i>	Reddish Cuckoo Dove	1	R	---	---
<i>Chalcophaps indica</i>	Emerald Dove	6	3	---	2
<i>Streptopelia chinensis</i>	Spotted Dove	6	5	22	14
<i>S. bitorquata</i>	Island Collared Dove	---	1	---	R
<i>Geopelia striata</i>	Zebra Dove	R	1	38	34
<i>Cateonnis nicobarica</i>	Nicobar Pigeon	---	---	---	---
<i>Tanygnathus laticionensis</i>	Blue-naped Parrot	---	---	---	---
<i>Ninox philippensis centralis</i>	Philippine Hawk Owl	1	R	R	R
<i>Centropus viridis</i>	Philippine Coucal	20	14	10	15
<i>Centropus bengalensis</i>	Lesser Coucal	---	---	---	---
<i>Cacomantis sepulcralis</i>	Rusty-breasted Cuckoo	---	---	---	---
<i>Eudynamis scolopacea</i>	Koel	---	---	---	---
<i>Caprimulgus affinis</i>	Savanna Nightjar	---	---	R	R
<i>Collocalia exulenta</i>	Glossy Swiftlet	*	*	*	*
<i>Collocalia troglodytes</i>	Pygmy Swiftlet	*	*	*	*
<i>Collocalia vanikorensis</i>	Island Swiftlet	---	---	---	---
<i>Cypsiurus balasensis</i>	Asian Palm Swiftlet	---	---	---	---
<i>Hirundapus celebensis</i>	Purple Needletail	R	---	---	---
<i>Hirundo rustica</i>	Barn Swallow	---	---	---	---
<i>Hirundo tahitica</i>	Pacific Swallow	---	---	---	---
<i>Cecropis daurica</i>	Red-rumped Swallow	---	---	---	1
<i>Ariamus leucorhynchus</i>	White-breasted Wood Swallow	---	R	---	R
<i>Megalaima haemacephala</i>	Crimson Barbet	---	---	---	---
<i>Pitta sordida</i>	Black Hooded Pitta	4	11	---	4
<i>Pitta erythrogaster</i>	Red-bellied Pitta	---	---	---	---
<i>Merops philippinus</i>	Blue-tailed Bee-eater	---	---	---	---
<i>Eurystomus orientalis</i>	Dollarbird	---	---	---	---
<i>Lalage nigra</i>	Pied Triller	---	8	19	25
<i>Pycnonotus goaivier</i>	Yellow-vented Bulbul	---	---	---	---
<i>Corvus macrorhynchus</i>	Large-bellied Crow	---	R	---	---
<i>Oriolus chinensis</i>	Black-naped Oriole	R	3	7	7
<i>Copsychus saularis</i>	Oriental Magpie Robin	1	18	3	13
<i>Saxicola caprata</i>	Pied Buschat	---	R	---	R
<i>Phylloscopus borealis</i>	Arctic Warbler	---	---	---	4

(X)-sighted; (-) - not sighted; (\*) - too numerous to quantify; (R) - reported by locals but not encountered during the survey. Letters marked with \*\*\* refer to threatened species and letters in bold refer to subspecies endemic to Siquijor Island.

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## Smallhold Coconut Farmers in Negros Oriental: Status, Problems, and Recommendations

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The study analyzed the status and constraints of smallhold coconut farmers in Negros Oriental, Philippines to provide the basis for interventions geared towards boosting their productivity and income. Primary data were obtained from key informants at the Philippine Coconut Authority (PCA), and from coconut farmers in nine municipalities in the province using survey methodology. Secondary data were also collected. The participating farmers are small scale with coconut landholdings averaging 1.40 hectares, slightly larger than the provincial average of 1.32 ha, but about a hectare smaller than the national average of 2.4 ha. Almost all are members of small coconut farmers' organizations (SCFOs). Among the PCA-initiated programs, majority (56.4%) have availed of the corn seed dispersal project for intercropping, 39.8% participated in trainings on coconut-related technologies, and not many (19.5%) have availed of the "plant-now-pay-later" program (PNPL) involving improved coconut varieties. Majority have experienced a decline in coconut yield that was mainly attributed to poor crop nutrition, the most neglected agronomic practice. Many follow a corn-coconut intercropping scheme in about one-third of their coconut land holdings. Practically no product diversification and very little value-adding activities are taking place with almost everyone opting to produce and sell only copra from their coconut trees.

Based on the existing realities of the responding farmers, the following problems and constraints were ascertained: 1) low coconut yield due to poor agronomic practices; 2) low farm productivity due to underutilization of land resources; 3) low farm income due to, among others, the absence of product diversification and value-adding activities; 4) inefficient marketing system; and 5) lack of access to support services, particularly in the area of production credit. A set of interventions is suggested to address the plight of this farming sector.

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**T**he Philippines is one of the top two coconut producers in the world contributing 24.40% of the total global coconut production, and a 59% share in the world coconut exports. Coconut products are one of the country's top five net foreign exchange earners. It remains as the leading



agricultural export averaging US\$760 million a year. Close to 80% of the production are exported to 114 countries and only 20% are consumed domestically (Agustin, 2005, cited in Dy & Reyes, 2006).

The coconut industry is considered a major pillar in employment generation for the country (Aragon, 2000). In 2005, the Philippine Coconut Authority (PCA) reported that more than 25 million Filipinos are directly or indirectly dependent on the coconut industry for their livelihood. In 2006, coconuts occupied some 3.243 million hectares (24.89 %) of the country's arable agricultural land, an increase of 3.06% (99,369 ha) from 2000 (Table 1). These are distributed in 68 out of a total of 79 provinces, and owned by more than 3.5 million coconut farmers. Of the three major island groups, Mindanao has more than half (51.93%) of the country's coconut lands, followed by Luzon (27.18%), and Visayas (20.89%). For the same period, the country had a total bearing coconut tree population of 328.657 million trees, up by 8.46% from 2000, yielding a total volume of production of 14,824,485 metric tons, an increase of 12.34% from the year 2000.

The Filipino coconut farmers are among the largest stakeholders in Philippine agriculture but are among the most impoverished (Dy & Reyes, 2006). Bernal (2006) reported that around 90% of coconut farmers and farm workers in the country live below the poverty line earning an annual average income of about P12,000 or around P33 per day. Reportedly, this marginalized sector is suffering due to, among others, declining coconut yield and farm productivity spawned by many interrelated factors, and unstable markets for copra as a result of increased competition from other vegetable oils in the world market (Bernal, 2006 and Santos, et al. 1999, cited in Aragon, 2000). Despite what appears to be a bleak picture of the industry, the country still continues to produce coconuts in view of its importance not only as an exportable commodity, but as a social crop. Certainly, the coconut industry plays an indispensable role in economic development and poverty alleviation particularly among the rural population (Suharto, 1998).

Indeed, a number of studies have diagnosed and analyzed the performance and issues confronting the Philippine coconut industry as a whole, and have put forward a number of recommendations (Habito, 1988; David, 1992; Batugal, 1998; Aragon, 2000; and Dy & Reyes, 2006). However, the situation of the coconut industry in Negros Oriental in general and of the smallhold coconut farming sector in particular, specifically those that are situated in the province's poorest municipalities, is not empirically well established. There is a dearth of location-specific information and studies focusing on this particular sector in the province are scant. To help alleviate the plight of smallhold coconut farmers in the province, certain gaps in information have to be addressed to formulate an informed set of recommendations or interventions. Specifically, this study was conducted in order to describe the status and performance of small scale coconut farmers in selected municipalities of the province, and to provide relevant data that

may be used as bases for generating recommendations geared towards uplifting their productivity and income.

### Methodology

Data for this study were collected from primary and secondary sources. Primary data were obtained from key informants in the PCA such as the provincial manager, senior agriculturist, and coconut development officers (CDOs) through a combination of unstructured interviews and self-administered questionnaires. To generate data on the status and conditions of small coconut farmers in the province, a random sample of 134 coconut farmers who are members of small coconut farmers' organizations (SCFOs) from the municipalities of Bindoy, Tayasan, La Libertad, Ayungon, Vallehermoso, Jimalalud, and the city of Guihulngan in the north, and Sta. Catalina and Bayawan City in the south were invited to participate in the study. These nine municipalities/cities were chosen because they were among the priority municipalities of the Peace Equity Access for Community Empowerment Foundation or Peace and Equity Foundation (PEF), a non-stock, non-profit governmental organization whose development agenda are focused on the needs of the rural and urban poor. These municipalities/cities are considered among the province's ten poorest based on PEF's development index that includes infant mortality and malnutrition rates as two of the key indicators. The PEF commissioned the conduct of the study with the intent of identifying possible interventions that could help alleviate the plight of smallhold coconut farmers in these areas. The CDOs assigned in these municipalities took the responsibility of setting up the meetings with the farmers in each of the municipalities/cities. Most of the meetings were scheduled to coincide with the regular monthly meetings of the CDOs with the SCFOs. A two-page questionnaire written in the vernacular was handed out to each one of the farmers to generate basic background information. The farmers were individually guided through each part of the questionnaire as each item in it was read aloud with the assistance of the CDO. After the basic background information was gathered, each of the farmers' groups discussed the problems they are facing in relation to their coconut production activities, and on possible programs that can be implemented to improve their conditions. Secondary data were obtained from the provincial and regional PCA office, as well as from the Bureau of Agricultural Statistics (BAS) online statistics database.

### Results and Discussion

#### Profile of the Coconut Industry in Negros Oriental

*Production Area.* The province of Negros Oriental is politically divided into three districts consisting of 19 municipalities, six cities, and 557 barangays, of which 337 are cococal barangays. It has a total land area of 540,230 hectares

(ha) of which 80,518 ha (12.6%) are planted to coconuts (Table 2). In 2006, the province had a total of 8.85 million coconut trees, where 7.08 million were bearing and 1.77 million non-bearing. About 708,557 trees (8%) were considered senile meaning that they were over 60 years old, past their peak productive years.

Although the area planted to coconuts in the province is relatively small compared to the total land size, these trees are grown in practically all the municipalities and cities of the province's three districts. District I, comprising seven municipalities and two cities in the north, has a slightly bigger area planted to coconuts at 28,695 ha (35.64%) compared to District II (25,918 ha) and District III (25,905 ha). Correspondingly, District I had the highest total coconut tree population of 3,156,450 trees (35.63%), followed by District II and III, respectively. The top three municipalities both in terms of area planted to coconuts and total number of bearing and non-bearing coconut trees are Pamplona—11, 022 ha planted with about 1.2 million coconut trees, followed by Guihulngan—9,100 ha (about 1 million coconut trees), and Valencia—5,478 ha (602, 580 coconut trees).

*Coconut Farmers.* In 2006, the province had a total of 61,072 (68.5%) coconut farmers and about 28,058 (31.5%) coconut farm workers. Coconut farmers owned the land on which their trees are growing, while farm workers are caretakers or tenants of coconut farms. Based on this characterization, it would appear that the coconut farmers in the province have an average coconut farm size of 1.32 hectares, grown to an average of 145 bearing and non-bearing coconut trees. However, if land ownership was disregarded, the average coconut farm size of each farmer falls below a hectare (0.90 ha) with less than a hundred trees each (99.37 trees.)

*Coconut Production.* In 2005, PCA reported that the entire province had a total production of 283,200,000 nuts, down by 3.5% from the previous year's production of 293,200,000. This level of production translates to about 39 nuts/bearing tree/year that is below the national average nut production per tree of 40 nuts per tree/year, but higher than Region VII's average of 35 nuts/tree/year. For the same period, the province produced a total of 70,800,000 metric tons (MT) of copra. About 4.5 nuts are required to produce a kilo of copra (PCA). Based on the provincial level of nut production, the province stood to produce 46,728,000 MT of coconut shell, about 102,800,000 MT of husks, and 68,534,000 MT of coco water (PCA Negros Oriental).

*Copra Marketing and Processing.* In 2005, there were 106 registered copra buyers and traders in the province. With the exception of a small coconut farmers' cooperative that has also ventured into direct copra marketing, those registered were private entities. Most of the barangay and municipal copra traders sold their assembled products to either of the two major wholesalers (ACM Commodities and JOEBON Marketing) which, in turn, supply the bulk of the copra requirements of the province's lone oil mill, the Dumaguete Coconut Oil Mill, Inc. (DUCOMI). A number of relatively large-scale municipal copra buyers/ traders have direct arrangements with the oil mill. According

to a PCA staff in the province, practically all of the copra produced in the province are bought by the lone coconut oil mill. That the oil mill is sourcing additional copra from neighboring provinces is an indication of the insufficiency of local copra supply.

During the same period, there were 117 lumber processors and 63 lumber dealers all over the province, somehow indicative of the extent to which coconut trees are being cut down. There were two coco coir processors situated in the municipalities of Bacong, and Guihulngan. Having accumulated some 80 MT of unsold coco fiber, these coir processors discontinued their operations in 2006 after less than a year of production operation due to marketing problems.

In 2005, PCA had identified 16 home-based Virgin Coconut Oil (VCO) producers with an aggregate average production of 256 liters per month, or an average of 16 liters of VCO per processor per month. However, more recent reports indicate that not all of these producers have continued their operations, with some opting to do so intermittently. On the other hand, there were three commercial VCO producers in the province with an aggregated average production of 940 liters/month. However, BUGLAS VCO which used to produce 1,380 liters/month had ceased production operations in July 2006 due to marketing difficulties. On the other hand, BLISSCOFA, a farmers' association that used to have an average production of 1,200 liters/month has scaled down its operation due to decreasing product demand.

*Support Services.* The PCA is the sole government agency that is primarily tasked to provide the leadership for the development of the country's coconut industry. However, staff from the PCA provincial office indicated that there has been minimal public investment in the coconut industry thereby affecting the extent and quality of their programs for the countryside. This attached agency of the Department of Agriculture has its own cadre of agricultural technicians referred to as Coconut Development Officers (CDOs) who are assigned to various coconut producing areas of the country. They perform tasks in line with the mandate, mission, and programs of the PCA. For the entire province of Negros Oriental, a total of only nine CDOs are fielded. Although small in number, these CDOs are experienced having served as CDOs for an average of 17.22 years, putting them in a good position to render an assessment as to the problems and needs of the coconut farmers. These CDOs are assigned to serve two to four municipalities each, equivalent to 44 to 89 barangays each. This large coverage raises questions as to how frequently the CDOs get to interact with farmers in a particular barangay that bears implications on the quality of service that they are able to provide to the client farmers. Among the projects being implemented by the CDOs in the areas involved in this study are the following: OPV corn seed dispersal for intercropping with coconut; coco planting/ replanting (Plant Now Pay Later); Cocolife Insurance Coverage; organization and strengthening of SCFOs; and trainings on production and post harvest technologies.

The PCA has been instrumental in facilitating the formation of Small Coconut Farmers Organizations (SCFOs) and their development into Cooperatives. PCA records show that it has organized and accredited a total of 260 SCFOs with a total membership of 21,846 coconut farmers for the entire province. A total of 63 SCFOs (24.23%) were able to register with the Bureau of Rural Workers (BRW). Some SCFOs obtained dual memberships in the Cooperative Development Authority (CDA) and the BRW. The number of SCFOs per municipality or city ranges from two to 22, with an average of 10.4 per municipality or city. A number of the SCFOs have evolved into regular, multipurpose cooperatives or credit cooperatives through which a number of PCA programs like the CFSNP-Micro Finance and Credit Matutupad programs, among others, are channeled.

### Profile of Smallhold Coconut Farmers in Negros Oriental

*Socioeconomic Characteristics.* The farmer respondents are quite old, averaging 56.73 years old in age (Table 3). They have an average of 9.36 years of formal education meaning that they have attained some secondary level of formal education. On the average, they have 3.62 children, slightly lower than the average household size of 5.09 persons. The farmer respondents operate farms with sizes ranging from as small as 300 square meters (.03 ha) to as large as 16 ha, with an average farm size of 2.49 ha. The size of their coconut farms was about a hectare smaller than their total farm size averaging only 1.40 ha, slightly larger than provincial average of 1.33 ha, but about a hectare smaller than the national average of 2.40 ha. On the average, the farmers own 134 coconut trees, mostly the "local tall" variety, estimated to be about 38.26 years in age. On the average, only about 103 (74.8%) of the farmers' coconut trees were bearing nuts, meaning that there are trees that are not yet at the bearing age or have already turned senile.

*System of Land Ownership.* Various land tenure arrangements characterize the farmers' system of land ownership of the lands they farm. Majority (84.2%) of the farmers owned the land that they till, or portions thereof, including those that were not necessarily planted to coconuts. More than half (60.1%) of the farmers owned the whole land they were tilling, while about one-fifth (21.4%) were merely part-owners, suggesting that the lands have not yet been legally divided among the other owners. Tenants constitute only 15.8% of the farmer respondents.

*Means of Livelihood.* The farmer respondents were not exclusively engaged in coconut farming; they also grew other crops such as corn, fruit trees, vegetables, sugarcane, and so on, although not necessarily on the same land as their coconuts. The varying degrees of the respondents' dependence on their farms, including but not limited to their coconut farms, as a means of livelihood, or their sufficiency as a source of family income, are revealed by the involvement of some farmers in other off-farm or non-farm income generating endeavors. Only about half (53%) of the farmer respondents were

wholly dependent on the farms they were working on for their livelihood, while 34.3% had other non-farm sources of income such as driving, buy and sell, occasional employment in LGU projects, and so on. A small number of the respondents were government retirees (teachers, clerks, and the like) and are therefore enjoying pension benefits. A number of farmers (12.7%) were also engaged in off-farm employment by working as laborers for other farms to augment their income sources. The foregoing scenario indicates that farming alone may not have been sufficiently providing for their household needs, hence, the need to supplement their income sources.

*Membership in Coconut Farmers' Association.* In the study area, PCA has organized and duly accredited a total of 106 SCFOs, with an average of 10.6 SCFOs per municipality, with each SCFO having an average of 42.13 farmer members. Almost all (97.7%) of the farmer respondents were members of the SCFOs. The establishment of the SCFOs and their evolution into Cooperatives in a few areas is one of the key program thrusts of PCA. The CDOs are tasked to facilitate the organization and strengthening of these farmers' organizations. These are done through various coconut-related extension services, capability building activities, and implementation of farmers' safety net programs such as OPV corn seed dispersal, upgraded insurance, microfinance and credit.

*Farmers' Participation in Coconut-Related Projects.* Farmer respondents had opportunities to participate in different projects from the time of the study and within the last five years (Table 4). Among the projects presented, it appears that the corn seed dispersal project, implemented in partnership with DA, benefited more coconut farmers (56.4%) than any other project. The project involved the distribution of corn seeds to coconut farmers to be planted as intercrops in their coconut plantations. This was intended to provide them the opportunity to generate additional income from their coconut lands. More than one-third (39.8%) of the respondents participated in trainings/seminars that were conducted by CDOs on various topics related to the technical aspects of coconut production and post harvest handling practices. As the program celebrated its second year in 2006, the plant-now-pay-later program (PNPL), a project funded by the provincial government and implemented through the PCA, was availed by only about one fifth (19.5%) of the farmer respondents. The project involved the dispersal of improved varieties of coconut seedlings under three schemes: "full payment" at reduced price per seedling, "50% payment" with remaining balance payable in seven years at a slightly higher price per seedling, and "pay later" at slightly higher price per seedling also payable after seven years either in cash or in kind (seedling). Other projects that were reportedly availed of, albeit by very few coconut farmers, include animal dispersal and microfinance or lending. The list does not include the insurance coverage that was open to all qualified members of SCFOs.

*Coconut Management Practices.* Farmers have employed a variety of production management practices (Table 5) in managing their coconut trees based on the last 5 cropping years. Less than one-tenth (6.7%) of the farmers applied fertilizers (organic or inorganic) on their coconut trees within the last

5 years. Reportedly, the last time most of the farmers applied fertilizers on their trees was more than seven years ago. This was in conjunction with the World Bank-funded coconut rehabilitation project through fertilization that was implemented by PCA at that time. This information suggests that coconut farmers were largely dependent on the availability of publicly funded fertilization projects. The almost-zero fertilization on coconut tree within the last 5 years was largely attributed to the farmers' lack of financial capital; the unstable, often low price of copra that makes further investment seemingly unattractive or lacking in viability, and the notion that the trees will bear fruits anyway, with or without nutrient supplementation.

On the other hand, majority of the farmers claimed to have occasionally performed weeding or brushing operations to remove unwanted plants from their coconut plantations. The farmers who practiced intercropping performed inter-tillage operations on their fields although they were not originally intended for the coconut trees but for the intercrops, e.g. corn. It should be noted that the farmers who practiced intercropping did so on an average of less than one third of their coconut landholdings, leaving a considerable portion of the land underutilized. At the recommended planting distance of 10 meters by 10 meters, the coconut trees can only occupy about 20% of the total space, thereby leaving ample space (80%) for the production of other crops or for the integration of livestock in the farming system (Suharto, 1998).

Pest management practices were not popularly practiced either. Rat and beetle infestation, considered major pests, were practically unmitigated by most farmers. The aforementioned scenario lends credence to the pervasive notion that coconuts are one of the most neglected crops, often times, attended to only during harvest periods and virtually left to fend for themselves most of the time.

*Perceived Trend in Coconut Yield Performance.* If the cultural management practices implemented by the farmers on their trees were to be solely used as a basis for determining yield, one may readily conclude poor yield performance as the outcome. Indeed, in comparing this year's yield with the preceding years', majority of the farmers have noticed a decline in coconut yield, with less than one tenth claiming to have observed an increasing trend (Table 6). It must be noted that about the same number of farmers (6.7%) claimed to have fertilized their trees at least once within the last three years. Farmers primarily attributed the reduction in yield to their failure to provide for the nutrient requirement of the trees. As mentioned earlier, the bulk (93.3%) of the respondents have not been able to fertilize their trees within the last seven years. In view of the fact that a significant proportion of these trees are standing on marginal, infertile areas, the decline in yield was inevitable. Also considered a contributory factor is the increasing percentage of senile trees that have apparently gone past their peak productivity periods. Indeed, provincial data indicate that the average nut yield per tree has declined from 41 nuts per tree/year in previous years down to 39 nuts per tree/year.

*Knowledge and Practice of Value-Adding Activities.* The farmers were asked whether they know something about certain coconut processing activities in order to determine possible value adding activities that they can potentially perform on their coconut-based products. It appears that many of the farmers did possess some knowledge about certain post production practices that have the potential of generating more revenues from their produce, but did not necessarily practice them (Table 7). For instance, all the farmers knew the process of producing dried copra, but less than half practiced them, opting instead to sell their produce immediately after meat extraction to copra traders. It is the copra traders who benefit economically from drying the coconut meat to add value to the product. This practice has clearly deprived the farmers of the opportunity to earn additional income. Similarly, many of the farmers knew charcoal making, participated in VCO processing demonstrations, and had the raw materials for both activities, but none of them engaged in business out of them. This may be attributed to a number of interrelated factors such as the possible lack of entrepreneurial spirit and skill, or the lack or absence of capital and marketing opportunities. Meanwhile, the processing of coconut coir into coconut fiber and coco peat, and the making of *nata de coco* appeared to be unfamiliar to most of the farmers.

*Product Diversification Activities.* The farmers involved in this study may be classified as traditionally-oriented in terms of the kinds of coconut products they produced. Based on the last three years, none reported to have sold products other than copra (which are mostly marketed as fresh copra), whole mature nuts, or young coconuts. It has been pointed out that coconut meat is only about 30% of the nut yield depending on the variety. Specifically, the dominant "local tall" variety of coconut produces nuts that average about 1.416 kilos each in weight. By proportion of the total nut weight, the meat is 32.5%; the husk 24.7%; shell 16.5%; while coconut water is about 26.3% (PCA). Despite the farmers' exposure to seminars on virgin coconut oil making, and the knowhow on charcoal making, broomsticks production, handicrafts, and so on, it appears that none of the farmers have engaged in entrepreneurial activities out of these potential income-generating activities, with the exception of a few farmers who have set aside a few trees for the production of coconut toddy and made some business out of it.

There appears to be a lack of appreciation among these farmer respondents of the potential of certain value-adding activities. A case in point is the tendency of most of the responding farmers to sell their copra fresh despite the knowledge that they could get greater value for their produce if they move a step further by drying their copra. This is attributed to the immediate need for cash to meet basic needs, and/or the absence or lack of access to post-harvest facilities. The common practice of getting the cash in advance prior to product delivery from copra traders may be offered as another explanation. This is one possible area that needs intervention because it does not entail much to implement.



The lack of initiative to engage in a business ventures using coconut by-products such as shells, midribs, spathe, husks, and the like, may be due to the fact that some of these materials are also used by majority of the farmers for their household fuel needs. This lack of interest on basic forms of product diversification may have sprung from what the CDOs regarded as the farmers' lack of entrepreneurial skills. It may also be attributed to the lack of success stories among local coconut farmers engaging in product diversification. Farmers with inspiring stories could serve as powerful examples worthy of emulation. As indicated by responses to the question on what projects can help boost their productivity and income, it appears that most of the farmers are not looking at value adding activities as a way to augment their income, but on increasing the yield of their trees, and by venturing into farming systems that increase the production efficiency per unit area.

### **Problems and Constraints of the Coconut Farmers**

Having worked with the coconut farmers for a considerably long and sustained period of time, the CDOs are in a good position to know their plight and concerns. The CDOs were asked to identify what they thought were the major problems confronting the coconut farmers based on the circumstances of their respective localities. Although intertwined, the identified problems were categorized in relation to productivity, income, and marketing (Table 8).

The CDOs recognized the low yield and productivity performance of coconut farms in the province. There are many contributory factors to yield such as aging of trees, marginal or infertile lands, pest problems, genetically poor varieties, and so on. However, there appears to be a pervading notion that low yield is due to farmers' inability to implement recommended cultural management practices for the trees which, in turn, is blamed on the farmers' lack of means and access to production inputs and support services.

Low productivity and yield inevitably leads to low income. The interrelatedness of yield, productivity, and income is further illustrated by the relationship of factors causing them such as the relationship between the availability of capital and farmers' ability to provide for vital inputs for production. However, there are other factors that influence farmers' income. From the CDOs' perspective, low income of coconut farmers is also due to fluctuating, often low, price of copra. Indeed, price is a major determinant of income because even with high productivity, income could still be low if the price of the product is extremely low such as often the case for copra. Moreover, the farmers' penchant for monoculture prevents them from taking advantage of still utilizable spaces between coconut trees. The CDOs also lamented the farmers' lack of value adding and product diversification activities that is related to their perceived lack of entrepreneurial skills.

There are also problems related to marketing. In addition to the problem of unstable, often low, price of copra, the CDOs also noted the presence of numerous copra traders and their marketing intermediaries who control the

farm gate price. Moreover, farmers have to contend with the high cost of transporting their products. This is due to the bulkiness of copra or whole coconuts and their being produced, to a significant extent, in far flung areas that may not have direct access to passable farm to market roads. In addition, the farmers' lack of access to post harvest processing facilities affects the quality of their produce. PCA reported that Philippine copra have been found to contain an average aflatoxin B1 content of 62.6ppb, while EU requirement is at 20ppb. The absence of postharvest facilities also prevents farmers from engaging in other value adding activities because they are forced to sell their products immediately after harvest, thus depriving them of additional returns.

### **Yield, Productivity, and Income-Enhancing Measures as Perceived by CDOs**

The CDOs were asked to identify measures that have the potential of helping coconut farmers increase the yield and productivity of their coconut farms. Two of the most frequently mentioned are technology-oriented, involving the fertilization of coconut trees and the planting and/or replanting of improved or promising high yielding varieties (Table 9). The farmers' failure to fertilize their coconut trees for so long and the consequent observed decline in coconut yield over the years have clearly precipitated the recognition of the indispensability of fertilizers as a productivity-enhancing factor. The CDOs are also recommending that an ongoing LGU funded program on coconut seedling dispersal involving promising coconut varieties for planting and replanting purposes (PNPL) be sustained and expanded. Understandably, the current program has not yet reached the majority of the coconut farmers in the province due to funding limitations. As explained by the CDOs, this proposed project is long-term in orientation and is geared towards the long term viability of the coconut industry.

The CDOs also viewed intercropping, mixed cropping, multicropping systems, or livestock integration schemes as ways to improve overall farm productivity. They have also seen the need for microfinancing to provide farmers with credit facility to invest in production inputs, and in other possible livelihood ventures to augment income from their coconut farms. One recommendation veers toward copra trading or dried copra marketing by the SCFOs. In effect, the CDOs are saying that the coconut farmers can dry the copra themselves and therefore add value to their products. They can also engage in copra trading collectively for additional income. This proposal can be realized if farmers have the requisite drying and storage facilities.

### **Summary and Conclusion**

Based on the aforementioned data, the smallhold coconut farmers involved in this study may be characterized by the following:

*Low yield performance.* The low coconut yield (average of 39 nuts/tree/year) of the small coconut farmers is attributed to a possible confluence of the

following factors: a) poor or non-existent agronomic and farm management practices, particularly in the area of crop nutrition due to the farmers' lack of means and access to production inputs, and support services, or indifference to recommended agronomic practices; b) poor growing conditions such as those in drought prone, pest infested, infertile, marginal sloping areas, and so on, the effects of which are compounded by the non-implementation of recommended cultural practices; and c) poor genetic attributes of local traditional varieties most of which are aging, with some turning senile.

*Low Farm Productivity/Underutilization of land resource.* The farmer respondents have failed to maximize use of their land resource due to their adherence to a largely monocropping scheme. Although a number of the respondents claimed to have planted either annual or perennial crops, or both, alongside their coconut trees, the majority did so in less than a third of the total size of their coconut landholdings. This leaves ample space for the production of other crops or the integration of livestock in the farming system. In a number of studies, Magat (1990) demonstrated the greater economic advantage of intercropping, multiple cropping or mixed cropping systems compared to coconut monocultures. However, such are not widely practiced by the farmers involved in the study explaining why they are deprived of additional sources of income

*Lack of Value-Adding and Product Diversification Activities.* Setting aside market forces, the farmers' low income is also attributable to the farmers' lack of value adding activities and product diversification. For instance, the tendency of most farmers involved in this study to sell fresh copra as opposed to dried copra has deprived them of the opportunity to add value to their product. Their dependence on copra as the main product from their trees has limited their earning potential. Practically all of the farmers included in this study have not made productive and profitable use of other tree abundant products like the shell, husks, coconut water, twigs, midribs, spathe, and the like. Their lack of skills or interest in making full use of these harvestable products have diminished their income generating potential.

*Inefficient Marketing System.* The presence of well-entrenched, multi-layered participants in copra trading contributes to low farm gate prices. Geographically dispersed, less organized, owning very small coconut farms, and individually producing small volumes of copra products, the coconut farmers in this study are at the mercy of local coconut traders when it comes to the price of their product. Often needing the cash immediately, the farmers are forced to sell their products at a price dictated by the traders with a very small margin of profit. This local particularity operates under the more serious problem of fluctuating often low world prices of copra that all the more puts the already marginalized local farmers at a disadvantaged position.

*Inadequate Support Services.* The lack of access to capital or production credit was identified by the CDOs and farmer respondents as major problems besetting coconut farmers in the province. Due to farmers' current low coconut yields and low farm productivity that consequently translates into low income,

the average coconut farmer has no capital to invest in improved crop management practices, processing and marketing ventures, and in alternative cropping or farming systems that have the likelihood of improving overall productivity and income. The very small number of CDOs fielded all over the province has serious implications on the quality and intensity of extension service that is being provided to the coconut farmers. The limited public investment in the coconut industry has limited the support services available to this sector. According to the CDOs, they have to make do with whatever government support PCA gets in terms of programs regarding post harvest facilities, such as dryers and other farm facilities and infrastructure. The absence of good post harvest facilities has resulted in poor post harvest practices. There is a need for government support in terms of production credit to which most of the farmers in this study have no access, market information, and other marketing interventions.

### Recommendations

Given the problems and constraints that beset the smallhold coconut farmers involved in this study, the following are recommended:

*Multisectoral Planning For Support Services.* The problems coconut farmers face are many and multifaceted. The coconut farmers need support services that may not be provided by only one agency or institution such as the PCA, given its own logistical constraints. It is recommended that a provincial coconut industry council be created to assess the industry, draw up recommendations, review and create local policies, develop short- and medium-term development plans, and pursue the implementation of programs for the local coconut industry. Representatives from the provincial and municipal local government units (LGUs), government agencies such as the Philippine Coconut Authority, Department of Agriculture, Agricultural Training Institute, Department of Trade and Industry, Department of Science and Technology, Fiber Industry Development Authority, Philippine Information Agency, and Department of Public Works and Highways; non-governmental organizations, state universities and colleges, various coconut-based agribusiness sectors and other stakeholders in the province should form part of the council. This is to address the multifaceted needs of small coconut farmers or pursue some of the recommendations of this study.

*Promotion of Alternative Coconut-Based Cropping Systems.* Coconut-based cropping systems such as intercropping, mixed cropping, or multi-storey cropping, and livestock integration have been demonstrated to bring significant improvement in coconut farmers' income compared to monoculture schemes. In addition, the planting of crops between coconut palms has been found to be advantageous because it promotes intensification of cultural management, not only of the intercrops but also of the coconut that results in improvement of the coconut yield (Batugal, 1998). These technologies exist

and are accessible. Thus, it is recommended that an assessment on the most suitable cropping system or coconut-livestock integration scheme be made in collaboration with the farmers so that the most technically feasible, socially acceptable, and economically viable production system can be implemented. This should be coupled with the requisite support services in terms of appropriate technology, production credit, and market linkages.

*Push for Product Diversification and By-product Utilization.* Coconut farmers can have opportunities to augment their income by engaging in value-added activities and product diversification. The coconut farmers involved in the study need to be informed and be convinced that coconut production is not just about copra. It is thus recommended that farmers be given opportunities to develop livelihood skills out of other coconut products and raw materials like juice or vinegar making (from coconut water), charcoal making (shell), handicrafts (shell, husks, midribs, and the like), VCO, and so on. This should be coupled with programs focusing on the development of entrepreneurial skills to make productive and profitable use of abundant supplies of raw materials in order to augment income sources. The fledgling coir processing ventures in the province need to be supported in terms of marketing linkage so as to provide farmers with possible market outlets for their waste products such as husks. An integral part of a program encouraging product diversification is the provision of support services in terms of appropriate technology, production credit, and market linkages.

*Improved Agronomic Practices to Increase Coconut Yield.* If coconut yield were to be improved or maintained at a satisfactory level, improved agronomic practices should be introduced. One of these is soil nutrition because the trees have been deprived of adequate nutrients for seven years or more. Other recommended practices are inter-tillage, pest management, and others. Both the CDOs and farmers have clamored for a project on fertilizer dispersal to rehabilitate the trees. A program that would afford farmers access to this vital production input will certainly help improve coconut yield. However, in the absence of such programs, it is recommended that low-cost farm technology that is within the capacity of the farmer to implement has to be introduced. Bio-farming or organic farming has been found to reduce production cost by as much as 50%, not to mention its ecological soundness and sustainability (Suharto, 1998). Programs of this nature need a strong extension support service to create awareness and promote adoption of available technology.

*Strengthening and Mobilization of Coconut Farmers' Organizations.* The small-scale orientation and geographical dispersion of coconut farmers in the province creates an impression that they are less organized and have lesser bargaining and economic clout. They are therefore vulnerable to unfair tactics and manipulation by private traders. The establishment of Small Coconut Farmers Development Organizations in the coconut growing areas of the province by the PCA is a welcome development that needs to be sustained and strengthened. These organizations must be mobilized to go beyond being

more channels of information or providers of extension services. They should take a more proactive stance in accessing vital support services such as post-harvest facilities and infrastructure, production credit, the establishment of cooperative marketing ventures for copra and other products, and other income generating projects that will serve its members. Programs that would enhance the capability of these organizations to function as independent and self-managed organizations capable of organizing, directing, and managing its own programs are needed.

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Table 1. Philippine coconut production situation, 2000 – 2005.

Year	Area (Hectares)	No of Bearing Trees	Volume of Production (Metric Tons)
2000	3,143,909	300,833,466	12,944,654
2001	3,148,651	297,438,528	13,146,052
2002	3,181,670	312,944,023	14,068,495
2003	3,216,528	324,324,277	14,294,203
2004	3,258,576	331,465,540	14,366,184
2005	3,243,278	328,657,399	14,824,485
Average	3,198,769	315,943,872	13,940,679

Source: BAS; PCA National Office

Table 2. Coconut statistics for Negros Oriental, 2006

District/ Municipalities	Total Land Area (has)	Coconut Area (has)	Number of Trees		Total	Senile	No. of Farmers		Total
			Bearing	Non-Bearing			Coco Farmers	Farm Workers	
District I	176,155	28,695	2,525,160	631,290	3,166,450	262,516	21,392	9,830	31,222
Ayungon	15,360	4,390	386,320	96,580	482,900	38,632	2,554	2,482	5,036
Bindoy	17,370	2,904	255,552	63,888	319,440	25,555	3,830	2,857	6,487
Canlaon City	16,070	280	24,640	6,160	30,800	2,464	100	50	150
Guihulangan	42,275	9,100	800,800	200,200	1,001,000	80,080	2,728	492	3,220
Jimalalud	13,950	2,255	198,440	49,610	248,050	19,844	3,178	1,456	4,634
La Libertad	13,960	1,725	151,800	37,950	189,750	15,180	3,356	1,050	4,408
Manjuyod	26,480	2,681	235,928	58,982	294,910	23,593	1,525	285	1,810
Tayasan	15,420	3,590	315,920	78,980	393,900	31,592	3,728	758	4,486
Vallehermoso	15,290	1,770	155,760	38,940	194,700	15,576	593	400	993
District II	153,360	25,918	2,280,784	570,196	2,850,980	228,078	19,878	8,823	28,701
Amlan	5,940	1,793	157,784	39,446	197,230	15,781	800	2,160	2,960
Bais City	31,690	3,370	296,580	74,140	370,700	29,656	2,838	392	3,230
Dumaguete City	5,580	1,184	104,192	26,048	130,240	10,419	3,575	651	4,126
Mabinay	14,290	218	19,184	4,796	23,980	1,918	202	19	221
Pamplona	20,220	11,022	969,936	242,484	1,212,420	96,992	2,466	4,360	6,826
San Jose	5,440	1,534	134,992	33,748	168,740	13,499	3,064	487	3,531
Sibulan	16,300	2,767	243,496	80,874	304,370	24,349	3,981	551	4,532
Tanjay	53,900	4,030	354,640	88,660	443,300	35,487	2,952	323	3,275
District III	210,715.0	25,905	2,279,640	589,910	2,849,660	227,963	19,802	9,405	29,207
Bacong	2,500	2,283	209,704	52,426	262,130	20,970	4,040	1,906	5,946
Basay	23,780	1,458	128,304	32,076	160,380	12,830	525	147	672
Bayawan	63,795	2,250	198,000	49,500	247,500	19,800	1,612	294	1,906
Dauin	11,410	5,331	469,128	117,282	586,410	46,913	2,569	885	3,454
Sta. Catalina	52,310	3,470	305,380	76,340	381,700	30,536	1,388	368	1,756
Siaton	33,540	4,100	380,800	90,200	471,000	36,080	1,695	3,258	4,943
Valencia	14,830	5,478	482,064	120,580	602,644	48,206	6,672	2,044	8,716
Zamboanguita	8,550	1,435	126,280	31,570	157,850	12,628	1,311	503	1,814
GRAND TOTAL	540,230	80,518	7,086,584	1,771,398	8,856,980	708,557	61,072	28,058	89,130

Source: PCA, Negros Oriental

Table 3. Socio-economic characteristics of small coconut farmers.

Particulars	Circumstances	Characteristics
Age (Years)	Quite old	Average of 56.73 years Range: 26-81 years SD: 12.59
Educational Attainment (Years)	With some secondary education	Average of 9.36 years of formal education Range: 2 - 16 years SD: 3.45
Number of Children	Few	Average of 3.62 children Range: 0 -12 children SD: 2.20
Household Size	Relatively small	Average of 5.09 household members Range: 1 -15 members SD: 2.50
Farm Size (hectares)	Small total farm size	Average of 2.49 hectares Range: 0.03 - 16 hectares SD: 2.64
Number of Land Parcels	Few	Average of 1.79 parcels Range: 1 - 4 parcels SD: 0.91
Size of Coconut Farm	Small coconut landholding	Average of 1.40 hectares Range: 0.15 - 8 hectares SD: 1.31
Number of Coconut trees	Few coconut trees	Average of 134 coconut trees Range: 5 - 800 trees SD: 126
Number of Bearing Coco trees	Fewer bearing trees	Average of 103.25 bearing trees Range: 0 - 608 trees SD: 91.92
Age of Coconut trees	Middle aged	Average of 38.26 years old Range: 2 - 70 years old SD: 16.16
System of Land Ownership	Majority are farm owners	84.2% of the farmers owned the farms they operate, either as whole owners (60.1%) or part owners (21.4%). The rest (15.8%) are tenants.
Livelihood	All are farmers, but many are engaged in off-farm and non-farm work.	53 % lived off their own or tenanted farms; 12.7% get additional work from other farms (off-farm); while 34.3% have other non-farm livelihood.

Table 4. Proportion of farmers who have participated in coconut-related programs of PCA, DA, or LGU

Coconut Related Projects	f	% (n = 134)
Corn Seed Dispersal for intercropping	75	56.4
Training / seminars	53	39.8
Coconut Seedling Dispersal	26	19.5
Animal Dispersal Project	9	6.8
Microfinance/lending	5	3.8



Table 5. Cultural management practices employed by coconut farmers within the last five years

Farmers' cultural practices	f	% (n=134)
Weeding/ brushing	107	79.9
Replanting / replacement of senile trees	70	52.2
Tillage/ Cultivation	63	47.0
Pest Management Practices	18	13.4
Irrigation	9	6.7
Fertilizer Application	9	6.7

Table 6. Perceived trend in coconut productivity based on the last 5 years

Trend in Coconut Productivity	f	% (n=134)
Increasing	12	9.2
Stable/basically the same	23	17.6
Decreasing	96	73.3

Table 7. Farmers' knowledge and practice of coconut -related processing activities.

Processing Activities	% With knowledge (n = 134)	% Who actually practiced them (n = 134)
Drying of Copra	100	39
Coco Shell Charcoal Making	57.9	15
Virgin Coconut Oil	36.1	0
Coco coir (coco fiber & coco dust)	12.0	0
Nata de coco	2.3	0

Table 8. Farmers' problems as perceived by CDOs.

Yield and Productivity-Related Problems	% Reporting (n = 9)
Low yield and productivity	100
Lack of means and access to farm inputs (fertilizers, planting materials etc) and technology	100
Lack of technical knowhow, improper mgt practices, farmers' resistance to new technologies, still using traditional methods	77.8
Lack of technology transfer/ lack of farmers' training	33.3
Declining soil fertility/ land degradation	33.3
Pest damage	33.3
Lack of sustainability of certain projects e.g. seeds/ some farmers do not have access to government programs	22.2
Income-Related Problems	
Low income	100
Lack of capital	88.9
Fluctuating price of copra	88.9
Non-utilization of whole area for other crops or for livestock (Monocropping orientation)	77.8
Lack of other sustainable livelihood projects	66.7
No market for coconut byproducts	55.6
Lack of entrepreneurial skills to pursue business ventures	55.6
Production focus on traditional product e.g. copra	55.6
Marketing-Related Problems	
Low prices of copra and other coconut products	88.9
Presence of many middlemen and traders dictating the price	66.7
Access to farm to market roads	66.7
High transportation costs while price of products remains the same	55.6
Lack of post harvest facilities/ poor quality of products; threat of aflatoxin due to poor processing of products by oil millers	55.6
No ready market for farm products/lack of strategy and methods for marketing products	33.3
Absence or lack of cooperative business undertakings	33.3

Table 1. Philippine coconut production situation, 2000 – 2005.

Year	Area (Hectares)	No of Bearing Trees	Volume of Production (Metric Tons)
2000	3,143,909	300,833,466	12,944,654
2001	3,148,651	297,438,528	13,146,052
2002	3,181,670	312,944,023	14,068,495
2003	3,216,528	324,324,277	14,294,203
2004	3,258,576	331,465,540	14,366,184
2005	3,243,278	328,657,399	14,824,485
<b>Average</b>	<b>3,198,769</b>	<b>315,943,872</b>	<b>13,940,679</b>

Source: BAS; PCA National Office

Table 2. Coconut statistics for Negros Oriental, 2006

District/ Municipalities	Total Land Area (has)	Coconut Area (has)	Number of Trees		Total	Senile	No. of Farmers		Total
			Bearing	Non-Bearing			Coco Farmers	Farm Workers	
District I	176,155	28,695	2,525,160	631,290	3,166,450	262,516	21,392	9,830	31,222
Ayungon	15,360	4,390	386,320	96,580	482,900	38,632	2,554	2,482	5,036
Bindoy	17,370	2,904	255,552	63,888	319,440	25,555	3,830	2,857	6,487
Carlaon City	16,070	280	24,640	6,160	30,800	2,464	100	50	150
Guihulngan	42,275	9,100	800,800	200,200	1,001,000	80,080	2,728	492	3,220
Jimalalud	13,950	2,255	198,440	49,610	248,050	19,844	3,178	1,456	4,634
La Libertad	13,960	1,725	151,800	37,950	189,750	15,180	3,356	1,050	4,408
Manjuyod	26,480	2,681	235,928	58,982	294,910	23,593	1,525	285	1,810
Tayasan	15,420	3,590	315,920	78,980	393,900	31,592	3,728	758	4,486
Vallehermoso	15,290	1,770	155,760	38,940	194,700	15,576	593	400	993
District II	153,360	25,918	2,280,784	570,196	2,850,980	228,078	19,878	8,823	28,701
Amlan	5,940	1,793	157,784	39,446	197,230	15,781	800	2,160	2,960
Bais City	31,690	3,370	296,580	74,140	370,700	29,656	2,838	392	3,230
Dumaguete City	5,580	1,184	104,192	26,048	130,240	10,419	3,575	651	4,126
Mablnay	14,290	218	19,184	4,796	23,980	1,918	202	19	221
Pamploña	20,220	11,022	969,936	242,484	1,212,420	96,992	2,466	4,360	6,826
San Jose	5,440	1,534	134,992	33,748	168,740	13,499	3,064	487	3,531
Sibulan	48,300	2,767	243,496	80,874	304,3706	24,349	3,981	551	4,532
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Table 9. Coconut yield/ productivity enhancing projects for small farmers as perceived by CDOs.

Suggested Projects	% Reporting (n = 9)
Fertilization	77.8
Coconut planting and replanting program (promising varieties, hybrids)	66.7
Intercropping/ multiple cropping	66,7
Continuous pest management	33.3
Agricultural credit financing	33.3
Organization and empowerment of coconut farmers	33.3

Table 10. Income-enhancing projects for small coconut farmers as perceived by Coconut Development Officers (CDOs).

Suggested Projects	% Reporting (n = 9)
Coconut processing/value-adding activities	66.7
Livestock integration/ dispersal	55.6
Microfinance, livelihood financing, credit	55.6
Dried copra marketing / copra trading, marketing tie ups	55.6
Skills development – post harvest processing	33.3
Post harvest facilities	22.2



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## **Capitalizing on Organizational Knowledge: Imperatives for Decentralized Agricultural Extension Systems**

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Agricultural extension services have been organized to provide producers scientific farming technologies and knowledge to give them competitive edge in making farming decisions. Such an edge would have the effect of transforming the agriculture sector into a modern and profitable industry where the rural poor graduate from poverty into the middle class. However, because such is not the case in many countries like the Philippines, extension systems worldwide have been under scrutiny for falling short of their objectives.

The current study looked into a decentralized municipal agricultural extension system in a layer and swine based municipality—San Jose, Batangas, Philippines. Secondary data from 1993 (or two years after the enactment of the Decentralization Law) were complemented by interviews and focused group discussions. It was found that the municipality has active private extension for its swine and layer industry, the major source of agriculture income, but the government agricultural extension system needs to re-evaluate its traditional role from a monolithic producer of traditional services to that of an enabler where it catalyzes the effective involvement of public and private agencies or organizations to build the intellectual capital of the locality to make superior business decisions. Such a shift in perspective by the municipality requires a shared vision among the key stakeholders in the community. It is argued that extension systems, whose function is primarily to develop human capacities in agriculture, need to maximize strategies to create knowledge that addresses the multi-functional nature of agricultural development. Knowledge creation strategies should be prioritized as these could significantly improve extension's contribution to facilitating a learning community adept at addressing complex problems at the municipality level.

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**A**gricultural extension has been a major tool in accelerating farm productivity and income by providing agriculture producers superior scientific knowledge and skills. Worldwide, it has helped shape the transformation of the agricultural landscape by providing choices to farmers, including selecting what commodity to produce and when to



produce, what technologies to use, and where to market and at what price to sell. In other words, agriculture extension has helped enhance the economic rights of farmers, in turn motivating them to make good business decisions. But such is not always the case of agriculture extension in many countries such as the Philippines.

The persistence of rural poverty and hunger, environmental degradation and the growth of the private sector coupled with the drive to reduce government interventions have forced extension to re-examine its traditional role. In the light of all these plus the financial crises facing developing countries, extension organizations are pressed to address issues that are not only limited to increasing food production but now include those associated with the food chain such as food safety and security, global competitiveness as well as environmental issues, and social issues including poverty alleviation, social equity, and empowerment. The transformations needed in terms of thrust and the governance required are what Chambers (1993) calls a paradigm shift.

The success of the transfer of technology (TOT) model in the European and American organizations became the prototype for developing countries. Realizing that farmers in developing countries have more diverse landscapes, capabilities and resources, agricultural extension along with other policy instruments, focused on the removal of constraints. This gave rise to the farming systems and extension (FSRE) approach that eventually led to the participatory approach like farmer-led extension that seeks to ensure farmer participation in decision making (Chambers, 1993). However, the still dominant technology transfer mode, despite the complexity of issues surrounding the agricultural sector, has sparked criticisms from extension professionals and among those involved in rural development. As Rivera, Qamar and Van Crowder (2001) asserted, "Extension systems have been failing or are barely functioning at all". Extension professionals have a key role to play, but must seek models and strategies that would help improve their organizational skills, given the complexity and magnitude of the situation.

The Philippine agricultural extension system underwent a major shift when extension was devolved to the local government units (LGUs) through the passage of Local Government Code (LGC) of 1991. Under the code, LGUs take on the central role of formulating plans and managing the delivery of services that aim to improve the lives of their constituencies. The Agricultural and Fisheries Modernization Act (AFMA) of the Philippines enacted by President Fidel V. Ramos in 1997 and the Philippine Fisheries Code of 1998 stipulated major policy interventions to modernize agriculture. Section 87 of the AFMA stated that extension services to farming and fishing communities included provision of training, farm advisory, demonstration services and information, and education and communication through tri-media. AFMA is the main policy guide for the agricultural sector (Refer to <http://www.da.gov.ph> for the full document).

While decentralization was seen as a move towards democratizing the system, it was likewise perceived as having further fragmented the extension system as local government units struggled to prioritize human, financial and logistical resources in order to cover their expanded responsibilities and, at the same time, create a positive political impact on the voting populace. Given the wide scope of extension as advocated by leading rural development workers (Farrington, Christoplos, Kidd & Beckman, 2002) and the pressure to become relevant amidst lack of financing, it was interesting to note how a fifth class municipality was addressing the challenge of modernizing agriculture based on the goals stipulated in AFMA.

### Objectives of the Study

The main rationale for the devolution of agricultural extension was to improve the delivery system by ensuring that management functions are decided upon at the local level. By doing so, programs could be tailored to the particular needs of the community and problems could be addressed at the local level. In principle, the move was seen as a solution to managerial problems such as relevance, efficiency and effectiveness. Considering that the main function of extension is to develop the human capacities of the populace for improved decision making, this study used the knowledge creation model of Nonaka and Takeuchi (1995) to determine how improvement in the knowledge system is addressed. In this context, an investigation was made into the dynamics of providing agricultural extension services and assessing the knowledge creation system of San Jose, Batangas using the model of Nonaka and Takeuchi with the objective of making practical recommendations for the improvement of agricultural extension service at the local level.

### Methodology

Focused group discussions (FGDs) and key informant interviews were conducted. Two FGDs were held with the personnel of the office of the municipal agriculturist (OMAg). There were iterative interviews with the municipal agricultural officer (MAO), the provincial agriculturist, and the provincial veterinarian and their staff. There were also interviews with the Municipal Mayor, the Municipal Planning Development Officer, Budget and Licensing Officers, two outstanding farmers, two successful black pepper growers, four vegetable and fruit growers, two cooperatives in the area, all of the eight veterinary suppliers in the area, two veterinary sales persons in the area, the owner of a poultry dressing plant, the owner of a private slaughter house, the vice president of a cooperative feed milling, the President of the Feed millers Association, meat shop owners, two swine and three egg *viajeros*, eight small, five medium, and four commercial hog raisers, and seven small, two medium and two large layer owners.

### Theoretical Framework

Knowledge provides the competitive edge in any undertaking as it is the source of decisions and actions that allow people, groups and organizations to plan, manage, control, and evaluate activities and reinvent and create something new. According to Davenport and Prusak (1997), knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information.

In the study of knowledge creation, a distinction between tacit and explicit knowledge is often made. Tacit knowledge refers to what a person knows, including habits, insights, intuition, assumptions, beliefs, values, judgment, and intelligence. On the other hand, explicit knowledge refers to numbers and words translated as manuals, documents, and so on. Explicit knowledge can be articulated, codified or stored in certain media and thus is more easily shared than tacit knowledge. While tacit knowledge is acquired primarily through socialization, explicit knowledge is generated through formal study of codified knowledge. Accordingly, tacit and explicit knowledge are complementary and when they interact dynamically, they produce organizational knowledge (Nonaka & Takeuchi, 1995).

Knowledge creation is a central challenge to development practitioners. In the past, diffusion of knowledge was assumed to take place using a top-down approach. Linear models assumed that knowledge proceeds from generation, transformation, integration, storage and retrieval (Roling, 1990). On this basis, development initiatives attempt to manage the exchange of information from the research to the general users. However, failures in the top-down model proved that knowledge cannot be simply transferred. Tacit knowledge for its part results in the processing of information as a result of interaction with the environment. In this context, knowledge creation can only proceed if spaces for interaction are provided among different individuals and organizations. For knowledge to be created, there should be reflexive learning that allows exchange of ideas and experiential learning where reflection and revision of original proposed actions are encouraged.

Nonaka and Takeuchi (1995) defined organizational knowledge creation as the capability of a company as a whole to create knowledge, disseminate it throughout the organization and embody it in products, systems and services. The dynamic interaction and conversion of tacit to explicit knowledge leads to organizational knowledge creation. This dynamic process involves four modes of knowledge conversion represented as a spiral having five phases. The dynamic, spiral process includes first of all 1) the First mode, socialization (tacit to tacit), involving the sharing of tacit knowledge or the interpersonal exchange of tacit knowledge (first phase) and 2) the Second mode, externalization (tacit to explicit), referring to the transformation of tacit to explicit knowledge through codification into metaphors, analogies or diagrams thereby developing a common understanding (second phase: creating

concepts). This eventually leads to collective reflection of the concepts and comparing and evaluating it with other explicit organizational concepts (third phase: justifying) models and practices with the intent of coming up with an innovation. The Third mode is combination (explicit to explicit): This leads to the integration of the new knowledge to existing knowledge structure or the formalization of the new knowledge (i.e. concept, process or system) within the organizational context (fourth phase). Finally, the Fourth mode is internalization (explicit to explicit), where the new knowledge is interpreted and is manifested in practice within the organization (fifth phase). The process eventually kicks off again and starts the cycle of knowledge creation.

### **Findings of the Study: How the Municipal Agricultural Extension Office is Getting By**

San Jose is an agricultural municipality known mainly for its robust livestock, and poultry and egg industry. It generates an estimated 2.2 million eggs daily and supplies hogs to the nearby cities of Batangas, Lipa and Metro Manila. Residents actively engage in backyard poultry and swine raising activities because the proximity of the town assures them of commercial linkages and markets.

#### **Personnel Profile, Activities and Expenditure Pattern**

With one municipal agriculturist and five extension workers, there were approximately 937 farmers and 878 hectares (ha) of agricultural land for each extension technician. However, based on functional responsibilities, there was only one technician in charge of each of the livestock and crop production sectors. The remaining technicians functioned as meat inspectors. This meant that there were 2,811 farmers for every extension worker and 2,634 ha for every technician. There was, however, no data on how many farmers were involved in the swine and/or layer industry and/or crop raising or on how many hectares are devoted to a particular crop.

Based on focused group discussions, the Office of the Municipal Agriculturist (OMAg) spent 50% of its time doing inspection, 20% monitoring of Department of Agriculture (DA) downloaded projects, and the remainder of the time was spent for dispersals, vaccination, techno-demonstrations, training and farm visits and linkage. Training in this sense is a coordinative activity as these are mostly sponsored by the private sector. Vaccination of dogs was mentioned as one of the major activities. Farm and home visits remain as the major extension method. A major chunk of the budget for extension (74%) went to personnel services, leaving only 24% for operational expenses (MOOE) and 1% for capital outlay. Analysis of the MOOE showed that funding allocation was politically oriented as funds were distributed among different barangays, at times, spread very thinly. The influence of the DA came in the form of funding for selected national projects, normally crop

based. As funding for locally initiated projects are limited, the OMAgs are only too happy to participate in national-led projects.

### Extension Providers

There were many extension providers catering to the layer and swine industry, most of them coming from the private sector, such as personnel from the feed mills, veterinary and feed companies, private veterinarians, and private consultants and associations. Other raisers, feed mill personnel and veterinary suppliers were in constant contact with the farmers. The OMAg was considered only as an occasional source of information by small raisers. A septagram validated by small, medium and large farmers indicates that the prime movers of the industry were the feed mills, other growers, veterinary companies, *viajeros* (middle-persons) and banks.

### Planning, Monitoring, and Evaluation Activities

Planning is done regularly at the end of the year (as a requirement for the annual budget) by the Municipal Agricultural Officer (MAO) in consultation with the Mayor. It was normally based on the budget released and accomplishments during the year. There were no planning sessions that involved the staff at the OMAg; neither were there any long-term extension plans.

Although second only to inspection, monitoring and evaluation activities were identified as important by the OMAg. However, there is no record of these activities and none about the scope and outcome of interventions. It appears that monitoring and evaluation of projects were done mainly to comply with requirements of the provincial office. Ironically, documentation of project progress was not a priority. The only source of data for past activities was the accomplishment report of the outgoing mayor, listing all activities of the LGU from 1992 to 2001, the list of which came from the memory of the MAO. There was no system of monitoring and evaluation, making it difficult to account for the accomplishments as well as problems of the office.

### Conceptual Understanding of Extension and Agricultural Goals

While the LGUs (provincial and municipal) agreed that extension activities centered on distribution of brochures, conduct of techno-demonstrations, farm visits, dispersals, monitoring and conduct of training, the private sector articulated other activities they believed should be the concern of agricultural extension. For instance, the large raisers expected the OMAg to be more active in the prevention and control of diseases, to provide updates on strategies of industry players from other countries, to offer information on new policies relevant to the industry, to provide timely price information and to protect the industry from foreign competition through

active lobbying. Clearly, there are disparities in terms of what is being offered by the government and what is expected. There are also overlaps in functions as the private sector, represented by feed millers, and feed and vaccine companies, do their own extension work as well.

### Understanding AFMA Goals and Objectives of OMAg

The municipal agricultural officer (MAO) was able to articulate four of the goals listed in AFMA: food security, sustainable development, global competitiveness, and poverty alleviation. The MAO failed to mention two other important goals: social equity and empowerment.

In the pursuit of these goals, the MAO saw the role of the national government as one that sets policy directions, provides funds, and ensures low lending interest rates. On the other hand, the private sector saw the role of the local government as implementers of projects to fit national and local priorities, distributors of goods and providers of tax incentives. While unable to identify any of the goals, the other staff members were able to explain the goals. However, it is questionable how these national goals can be translated at the local level if members of the OMAg fail to identify them in the first place.

In summary, the OMAg suffered from traditional, reactive and politicized planning, budgeting and project fund allocation, report-oriented monitoring and evaluation, lack of systematic data sets, a mainly production-oriented concern and farm-and-home-visit-focused extension, lack of common understanding of AFMA goals among the staff as well as lack of congruence on the kind of extension the private sector expects versus what is currently delivered. All of these point to a poor emphasis on knowledge creation.

### Summary, Conclusions, and Recommendations

The San Jose OMAg is largely focused on the regulatory aspects of extension with 50% of its time spent on monitoring slaughter houses and one dressing plant. In addition, a major activity is the vaccination of hogs and dogs to curtail the spread of diseases though funding for this is minimal. Farm and home visits remain a major extension method. Thus, with the limited number of technical persons, technical advice and government programs reach only a select few. Distribution of material inputs is politically influenced.

The OMAg does not have a systematized set of agricultural data about San Jose, about its major accomplishments, its best practices, nor of the current projects and the monitoring of these projects. Monitoring and evaluation are seen mainly as obligatory functions that are not anchored on improving project planning and implementation. The status, budget, performance of its projects, best practices monitored and major problems encountered are not properly documented. Organizing and storing of these data for retrieval and the use of stakeholders are not prioritized. Relative to this, planning becomes a listing activity by the MAO and the Mayor. As

such, there is no common understanding of what AFMA goals are within the OMAg. Likewise, shared activities with the private sector are not maximized as OMAg serves mainly as organizers of farmer participants. Without the proper sharing of knowledge and the storing of data, knowledge creation could not proceed, in turn leading to failure in the knowledge creation process (Figure 1).

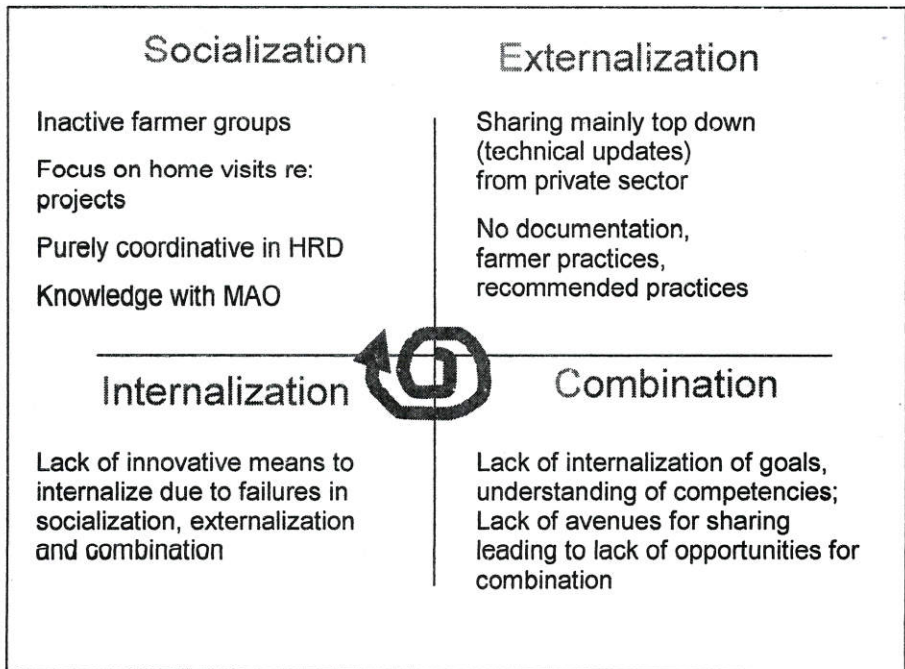


Figure 1. A summary of inadequacies in knowledge creation at the study site (Based on the Nonaka and Takeuchi Model)

In the history of agricultural development, extension have been credited for playing a significant role in increasing the availability of foodstuff and in increasing income of farmers through introduction of new technologies and provision of technical advice. However, in the case of the swine and layer industry, technologies and information are becoming more specialized. This has of course been a significant challenge to government workers who suffer from poor funding and inadequate and regular technical training. It has to be recognized, however, that the private sector has been more than willing to take over this government function as a result of positive market growth. As the private sector is pushed to achieve higher production efficiency and effectiveness, the kind of support it needs from the government sector changes.

No longer are they just interested in production related information, they are very much expecting support on price monitoring, trade policy updates, and lobbying.

In the advent of globalization, the demand for efficiency and effectiveness remains the biggest challenge for both the private sector and the government. While the private sector has to contend with issues such as local market inefficiencies and global competitiveness, government grapples with financial inadequacy and changing expectations and roles. Knowledge creation becomes imperative.

### Organizational Knowledge: Platform for Reform

An analysis of the four modes of knowledge creation requires certain fundamentals. For one, the model implies that there should be opportunities for learning among people—whether formal or informal—in order to proceed to the second mode of the knowledge creation process. Secondly, it becomes necessary that the organization systematically collects, documents, and stores explicit knowledge in written documents or data bases accessible to the people. It likewise documents and stores information related to their business coming from such sources as books, journal publications, policy discussion papers, policies, and policy briefs. People know where to locate these and can access information without difficulty.

The third implication is that the organization explicitly states its vision, principles, culture core knowledge, and skills that people should internalize to serve as framework for planning and implementation of programs. It also requires that the context for any changes in vision and plans is recorded in order to provide basis for strategic planning. The absence of these would lead to the failure of the third mode in the knowledge creation model. Finally, the last requirement is that the organization documents innovations, the context of its success (or failure), and the mechanisms supporting it that lead to the last mode in the model.

It should be noted that all these imperatives are absent in the San Jose case. In relation to the first imperative, for example, only the MAO attends meetings with other MAOs in the province and there is no evidence in the sharing of the knowledge among the other members of the group. Most of the data and information derived were mainly from the MAO, illustrating that expertise is embodied in only one person. As observed in the study, the OMAg does not have a filing cabinet or a filing system, for that matter. It does not have documentation of its accomplishments and history whether in print or in a soft database. It likewise does not have documents related to agricultural extension other than flyers. The vision part is likewise problematic as evidenced by the response of "Ask the MAO as he knows" by members of the OMAg. Addressing the imperatives in each of the phases of knowledge creation becomes imperative if extension focuses on developing human capacities.



## Identifying knowledge creation strategies

Socialization, or the interpersonal exchange of tacit knowledge, is an important mode if not the most important mode in the spiral model of knowledge creation. Hence, opportunities for creating a forum of exchange among and/or together with extension workers and other key stakeholders in the form of communities of practice (COPs), formal work group, project teams, and informal networks become necessary (Wenger & Snyder, 2000). Wenger and Snyder emphasized the importance of COPs as these are self-selecting members who share a concern or passion for something they do and learn. In such gatherings, exchange of ideas is not pre-determined or piecemeal as inter-relations of problems and opportunities are discussed. To complement these, opportunities for cross farm visits, and formal and technical knowledge sharing are necessary activities that open up spaces for dialogue and collective learning to take place.

The transformation of tacit to explicit knowledge is considered a focus of research scientists. It was only during the 1980s that the rural peoples' knowledge (RPK) became recognized (Scoones & Thompson, 1994). The dominance of the transfer of technology in agricultural extension, however, prevented the dynamic exchange of ideas among the stakeholders in the knowledge information system as information in this case was often predetermined by agricultural extension workers. The farmer-first advocates, however, changed this perspective by documenting farmer knowledge. While Scoones and Thompson (1994) speak of the danger of such activities, especially taking into consideration the contextual and differentiated nature of knowledge, Chambers (1983) earlier cited some innovations resulting from exchange of knowledge between farmers and researchers. While such possibilities are exciting, Scoones and Thompson (1994) caution development workers about the political dimensions of knowledge sharing. Nevertheless, opportunities that promote better understanding among researchers, extension workers, and farmers, provide avenues for development of relevant interventions towards contextual problems. Understanding and documenting rural people's knowledge and the context of this knowledge is necessary. Participatory planning, monitoring, and evaluation and farmer-led extension models provide spaces for such exchanges and documentation of knowledge.

On the organizational side, any extension system should have its vision, cultural norms and well codified and stored materials coming from external environment. Among the extension workers, there should be easy access of their organizations' knowledge base and those of the other organizations that are deemed public in nature (e.g., technical bulletins, recommended practices, price monitoring, and the like). These exchanges should no longer be within government agencies only but in partnership as well with the private sector, civil society, and people's organizations as they have become more active in the provision of extension services. Such sharing could further lead to a better

complementation among the various stakeholders and help define the catalytic and supportive role of the government extension system. Technological support (Intranet, Internet, SMS) should be considered as enablers.

Mode three requires the combination of different sources of knowledge (research, extension, farmers) to form a new technology, methodology or practice. Co-management of demonstration farms and sharing among farmers should be emphasized. Documentation of such meetings, practices and sharing should likewise be stored to serve as basis for learning. The example given by Chambers (1993) as to how documenting rural people's knowledge can lead to innovative solutions led to improved conceptualization of research problems. Mode four requires the strategies and activities identified in mode one in order for the internalization process to proceed. Dialogue, involving sharing and reflection, is a very important process for both modes 1 and 4 in the knowledge creation model. For mode 4, it likewise becomes imperative that extension workers enhance their knowledge and skills through formal training, by working closely with farmer groups and by continuous updating through various reading materials. This is necessary to ensure that extension workers are able to internalize new knowledge and skills and at the same time, facilitate internalization of these to COPs. Again, the spiral knowledge creation model (Figure 2) of Nonaka and Takeuchi (1995) provides a useful framework for ensuring the facilitation of agricultural learning communities. It likewise alerts leaders and administrators on the weaknesses of an organization.

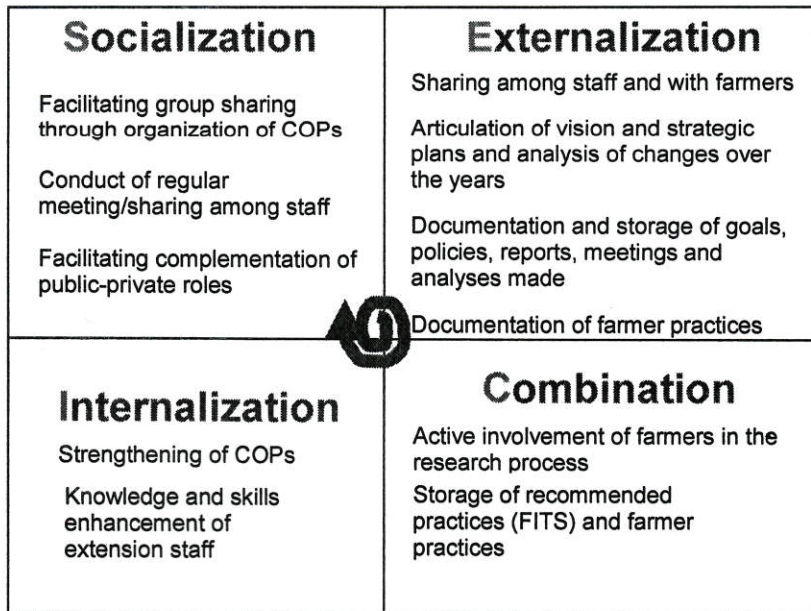


Figure 2. The knowledge creation model of Nonaka and Takeuchi (1995).

Using the knowledge creation model could bring about improvement in the development of knowledgeable farming communities who are more able to address complexity. These activities approximate the focus of extension as facilitators of learning communities, not just conduits between research and farmers. Research studies in documenting best practices in pursuing strategies in the different modes, particularly the creation of COPs, and the effect of changes in leadership and technology in knowledge creation, are researchable areas that could further help facilitators of learning in various fields map out better strategies to bring about learning communities.

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## Measuring the Concept of Civilian Observers Under Philippine Procurement Law Against International Procurement Instruments: A Compatibility Analysis

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Procurement systems of the world are creating a new world order that propagates the principles of transparency and integrity. The Filipino contribution is a concept of involving civilians in the entire procurement process. Specifically referred to as civilian observers, the presence of these non-governmental and private organizations was originally intended as a transparency measure to monitor the observance of procurement rules throughout the bidding process. This paper presents this unique concept of the Filipino procurement system and measures it against international procurement instruments like the World Trade Organization Government Procurement Agreement, the World Bank Procurement Rules, the Organization for Economic Cooperation and Development Country Models and the United Nations Convention Against Corruption. This comparison is intended to show its compatibility with international norms.

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### Introduction

**T**he basic task of the Medium Term Philippine Development Plan for the period 2004-2010 is to fight poverty and build prosperity for the greatest number of the Filipino people. We must open up economic opportunities, maintain socio-political stability, and promote good stewardship—all to ensure a better quality of life for all our citizens. We will focus on strategic measures and activities that will spur economic growth and create jobs. This can only be done with a common purpose to put our economic house back in working order.

-Pres. Gloria Macapagal-Arroyo  
Republic of the Philippines<sup>22</sup>

Integrity and transparency in public procurement is a worldwide concern. Developing countries like the Philippines<sup>3</sup> has its own share of procurement issues and corruption scandals. Even in first world countries like the United States, corruption scandals continue to unfold.<sup>4</sup> Any democratic nation in the world has channeled its efforts at ensuring accountability of the players in public procurement. In the Philippines, institutional reforms are part of the national government's medium term goals.<sup>5</sup> Government has bonded with the private sector to establish a sound procurement system founded on integrity, transparency and accountability.

In 1999, the Philippine government launched a procurement reforms agenda aimed towards the enactment of a procurement code to serve as a "substantive [step]...to address the legal mess that was government procurement."<sup>6</sup> Civil society groups were mobilized to ensure the passage of a procurement code.<sup>7</sup> Such groups consist primarily of anti-corruption non-governmental organizations<sup>8</sup> like Procurementwatch, Inc.,<sup>9</sup> the Coalition Against Corruption,<sup>10</sup> the Transparency and Accountable Network<sup>11</sup> and even the Roman Catholic Church. They lobbied media, Congress and civilians for support of the passage of a Procurement Reforms Code.

Civil society groups were then given a major role in shaping the proposed reform agenda. Thus, for the first time in the history of procurement law, the concept of civilian observers in the public procurement system was enacted into legislation with Section 13, Article V of Republic Act 9184, otherwise known as the Procurement Reforms Code of 2003 (the Reforms Code).<sup>12</sup> Civilian observers are used to enhance the transparency of the bidding process<sup>13</sup> through public monitoring and implementation of the contracts. The law further indicates that those involved in the acquisition process<sup>14</sup> must conform to the general principle of accountability.<sup>15</sup>

The concept of civilian participation in government acquisition champions the significant role of civil society in national development. The Reforms Code mandates that they participate in the entire procurement process which includes:

- I. Pre-Procurement Conference
- II. Invitation to Bid
- III. Receipt and Opening of Bids
- IV. Bid Evaluation
- V. Post-Qualification
- VI. Award

The magnanimity of the civilian observers' participation in the procurement process, however, raises certain issues concerning their accountability that must be addressed by the government. If the Philippine government is serious about establishing a sound procurement system, it must go beyond measures of integrity and transparency. It must also address competition, trade barriers, and international trade policies. These principles form the new world order of public procurement. The size of the world public procurement market<sup>16</sup> has increased through the years to the point that it can

have a significant impact on the social and economic development of any country.<sup>17</sup>

This paper presents the Philippine concept of civilian observers in public procurement and measures the same against international procurement instruments including the World Bank procurement rules, the Organization for Economic Cooperation and Development (OECD)<sup>18</sup> Country Assessment Strategy, the United Nations Convention Against Corruption and the World Trade Organization (WTO)<sup>19</sup>-Government Procurement Agreement. Specifically, the paper argues that civilian observer provisions of the Reforms Code are compatible with these international procurement instruments. These comparisons are made to show that the concept can be used by different jurisdictions as a tool for establishing a sound procurement system.

### **The Philippine Concept of Civilian Observers in Public Procurement<sup>20</sup>**

#### **Brief Historical and Policy Background**

The roots of community participation in Philippine governance may be traced in the *bayanihan*, a "traditional system of cooperation wherein community members join hands in undertaking an activity that cannot be done by just one or a few individuals, each one contributing labor or materials in accordance with individual capacities and need of the undertaking."<sup>21</sup> This system was first used during the administration of Pres. Ramon Magsaysay from 1954-57. He mobilized the people to help implement a community development program aimed at combating the growing communist insurgency in the countryside at that time.<sup>22</sup> The program made use of an organization in the *barangay*<sup>23</sup> called the *Barangay Development Workers (BDW)* whose members were assigned to coordinate the delivery of public services in the *barangays*. The program adopted a "self-help" approach wherein projects were "identified, planned and implemented by community members based on their expressed "felt-needs."<sup>24</sup>

The growth of civil society began when the Philippines was placed under martial law regime by then President Ferdinand Marcos in 1972.<sup>25</sup> People's organizations, NGOs and the private sector banded together to fight the dictator.<sup>26</sup> Pres. Marcos was ousted from power in 1986 through the famous People Power Revolution, catapulting the Philippines' first woman President, Corazon Aquino, into power.

As a concept, civilian participation in governance finds basis in the fundamental laws of the Philippines, the most recent of which is the 1987 Philippine Constitution which expressly embraces the principle of sovereignty. Thus, Section 1 of the Declaration of Principles and State Policies specifies that "Sovereignty resides in the people and all government authority emanates from them." To underscore its importance, this mandate is the very first declaration in the Constitution.

The Constitution then goes on to recognize the indispensable role of the

private sector in nation-building,<sup>27</sup> the inherent right of the people to directly propose and enact or reject and oppose laws enacted by Congress<sup>28</sup> or by a local legislative body<sup>29</sup> and the right of the different sectors among the constituency to have a voice in the legislative body.<sup>30</sup>

Basis for civilian observers in public procurement is also found in constitutional mandates recognizing the role of civil society groups such as people's organizations,<sup>31</sup> non-governmental organizations, community-based or sectoral conglomerations that promote the welfare of the nation.<sup>32</sup> In fact, the formulation of the Reforms Code included a coalition of government and civil society groups composed of anti-corruption non-governmental organizations.<sup>33</sup>

### Civilian Observer Regulation

The most significant feature of the Reforms Code is Section 13, Article V, which mandates the presence of civilian observers in all stages of the procurement process. There is a general prohibition against any direct or indirect interest of the civilian observers in the bidding process.<sup>34</sup> These observers are required to be members of either a duly recognized private group in a sector relevant to the procurement at hand or a Non-Governmental Organization (NGO). The Implementing Rules and Regulations (IRR) of the Code enumerate examples of what constitute "duly recognized private groups related to the procurement." For infrastructure projects, the following entities are recognized: (1) the National Constructors Associations duly recognized by the Construction Industry Authority of the Philippines (CIAP)<sup>35</sup> and (2) the Philippine Institute of Civil Engineers (PICE). With respect to the procurement of goods, the IRR allows for observation by "any specific relevant chamber-member of the Philippine Chamber of Commerce and Industry". Finally, for consulting services, the IRR stipulates that only a recognized project-related professional organization accredited or duly recognized by the Professional Regulation Commission (PRC) or the Supreme Court,<sup>36</sup> or the Confederation of Filipino Consulting Organizations (COFILCO) may observe the procurement process. Philippine law<sup>37</sup> prohibits the chief accountant and personnel of any accounting unit of a government agency to be a member of the Bids and Awards Committee (BAC). There is no listing for NGOs.

Moreover, these private sector observers must register with the Securities and Exchange Commission, must meet certain character criteria,<sup>38</sup> and must generally be notified at least two days before the stages<sup>39</sup> of the procurement where their presence is required. The absence of observers in the stages mentioned will not, however, nullify the BAC proceedings, provided that invitations in writing were duly sent. Neither the Code nor the IRR requires presentation of proof as to whether or not invitations were received. However, if no observers are present during any stage of the procurement process, the BAC may request bidders to identify an individual who shall act as a third-party witness.<sup>40</sup> There are no other details on how this exercise will

be undertaken. It would seem that the BAC members and the bidders present during the procurement process are given wide discretion in its implementation.

#### Analyzing the Nature and Extent of Civilian Observer Participation<sup>41</sup>

The responsibilities of the observers include the assessment of the extent of the BAC's compliance with the provisions of the Code and its implementing rules and regulations as well as recommendation of areas that can be improved.<sup>42</sup>

Civilian participation is also mandated for electronic procurement done through the government portal called the G-EPS. Civilian observers are required to monitor the on-line proceedings.<sup>43</sup>

The participation of civilians as observers in public procurement was originally intended as a transparency measure.<sup>44</sup> Procurement experts have seen transparency as integral to a sound procurement system. Professor Steven Schooner posits that transparency is a system that "employs procedures by which offerors and contractors (and even the public at large) ensure that government business is conducted in an impartial and open manner."<sup>45</sup> Transparency has also been referred to as "the ability of all interested participants to know and understand the actual means and processes by which contracts are awarded and managed ... and requires the release, as a minimum, of all information to allow the average participant to know how the system is intended to work, as well as how it is actually functioning."<sup>46</sup>

Experts enunciate that the principle of transparency necessitates the existence of an appropriate oversight, which may include Inspectors General under the U.S. system,<sup>47</sup> or a Parliament watchdog to look into conflicts of interest<sup>48</sup> or civilian observers in the Philippine and Peruvian systems<sup>49</sup>.

The benefits of a transparent system have been repeated time and again. It enhances the predictability of procurement decision and observance of rules,<sup>50</sup> fosters competition,<sup>51</sup> curbs corruption and helps attract more investments.<sup>52</sup> As a measure, however, there are those who see it negatively. For example, there are proponents who posit that a transparent system where the bids are opened publicly will promote corruption, as it allows members of a bid rigging cartel to "detect whether its members have complied with their private agreement."<sup>53</sup> During the DOHA Round negotiations of the World Trade Organization, developing countries refused to negotiate on transparency measures for "fear that a multilateral agreement would be used to address questions of market access and therefore only serve the export interests of developed countries."<sup>54</sup>

As an anti-corruption measure, however, the need for transparency in public procurement cannot be overestimated. In fact, for developing economies like the Philippines which places a high premium on curbing corruption, maximum oversight both from the government and civilian sectors is deemed imperative.



While other jurisdictions may have their own system of oversight, what really differentiates the Philippine concept of civilian observers is the use of a third person, who virtually has no participation or interest in the procurement process. This independence creates credibility, integrity, and authority necessary to an effective control system.

Civilian observers contribute to the transparency of the Philippine procurement system by assessing the extent of the BAC's compliance with the provisions of the law<sup>55</sup> and providing proposals for the improvement of the proceedings that will be contained within a report. They are also required to sign the abstract of bids to signify that the procedures have been followed, and to sign the post-qualification summary report if they are amenable to the results. These provisions imply a "whistleblower"<sup>56</sup> role for civilian observers. In fact, the law allows the observer to submit a report to the Ombudsman if in his or her judgment there is a justifiable ground that the award will not redound to the benefit of the government.

There is no regulation in the Philippines equivalent to the *qui-tam* rules<sup>57</sup> under the U.S. system. However, there are persons who report unlawful acts of public officers. For these persons, the only protection afforded by the law is under the Witness Protection, Security and Benefit Program Law.<sup>58</sup> This is probably the reason why almost no one reports violators of the law to the government. A legal hiatus is then created that needs to be filled. There are currently eight pending whistle blowing bills in the Philippines before Congress. None has yet been passed since 2001.<sup>59</sup> The author recommends that the Philippine Congress enact a whistleblower law that can be implemented effectively. The Philippine Legislature should study the U.S. False Claims Act<sup>60</sup> especially provisions giving the relator a certain percentage of what government collects from the violator and a Draconian penalty such as three times the value of the contract subject to the violation. It is also highly recommended that the law provide a mechanism to ensure the safety and security of relators<sup>61</sup> and their families.

Under the Implementing Rules of the Reforms Code, oversight of the procurement process is done by two parties: the Commission on Audit and Civilian Observers.<sup>62</sup> The latter (civilian observers) must come from two groups: (1) a duly recognized private sector or discipline relevant to the procurement at hand and (2) a non-governmental organization. Any such organization must be registered with the Securities and Exchange Commission.

The Commission on Audit (COA) is a constitutional commission tasked with examining, auditing, and settling all accounts pertaining to the revenue and receipts of, and expenditures or uses of funds and property, owned or held in trust by, or pertaining to, the Government of the Philippines as all its subdivisions, agencies, or instrumentalities, including government-owned or controlled corporations.<sup>63</sup> It generally conducts post-audit of government transactions, with the exception of autonomous regions, state universities and colleges, and NGOs receiving funding directly or indirectly from the government.<sup>64</sup> Thus, the COA expertise is only on internal control over the

public funds. In most cases, their representatives do not inherently have any expertise on the conduct of the procurement or its technicalities.

The composition of civilian observers is a mechanism intended to determine substantial compliance with procurement laws. The presence of a member of a private sector relevant to the procurement at hand is necessary to determine whether the technical evaluation conducted by the BAC is satisfactory. The BAC composition provides that all three members must presumably have knowledge, experience, and expertise in procurement. One of them is supposed to have a legal or administrative background and another, on the financial aspect. There are also provisional members who should have technical expertise as well as a representative from the procuring entity. These regulations indicate that the legislature saw that the BAC cannot ensure the necessary technical expertise in a particular procurement. The presence of civilian observers who are practicing the field involved in procurement is expected to fill the technical gap. Those in the private sector may be more up-to-date with the newest trends in the procurement such as the availability of new construction materials and their present market prices and efficiencies. Second, those in the practice of their profession (contractors, architects, engineers for construction contracts, consultants and consulting organizations for services) are usually more extensively exposed to the most cost-effective mechanisms of a particular procurement. Lastly, including these firms as observers on a voluntary basis instead of hiring them as consultants would save the Philippine government financial resources that may be funneled to appropriate government programs.

On the other hand, there are issues as to whether this group of civilian observers will serve their purpose: disclosing unlawful practices of contractors. The list in the Implementing Rules includes organizations like the Chamber of Commerce ("Chamber"), and the Association of Architects and Engineers, Consultants and Constructors.<sup>65</sup> A scenario of conflict can be created simply with a reading of these types of organizations. A member of the Chamber may participate in the procurement of goods. By including the Chamber as observer, the law establishes the situation of a member of the Chamber observing or evaluating a fellow member. Not only is the interest clear, the conflict is also as pristine. This situation can be applied in construction contracts as regards construction, architect and engineer contractors and observers, and consultancy firms and observers. This is not to say that all contractors are members of their field's professional organizations. It is intended to establish that the propensity of their alliance is very high in the Philippine setting, especially in local governments where "everybody seems to know everybody."

NGO representatives have a lot to do with government's anti-corruption efforts. They are intended to provide additional oversight that may be provided by the other private sector representatives. Unlike the first group, however, whose presence might spur an obvious conflict of interest issue, NGOs often exist for advocacy. By definition, they are presumed to have no interest in the

procurement process as they are normally not engaged in any business, nor are their members usually involved in procurement activities. This is, however, not to indicate that they may not know (by friendship, acquaintance or support) any bidder or that their family members cannot be involved as potential bidders. If the extent of their interest in the procurement they are observing is adequately defined so that ethical boundaries are established, they will certainly serve the purpose for which they are intended.

Indeed, the disclosure of government procurement information to civilian observers is necessary to achieve transparency. This enforces the right of the public as stakeholders to know what government considers in its contracts necessary as effective assessment of the procurement.<sup>66</sup> Procurement experts Nash and Cibinic (1998) emphasized that the disclosure of information to the public permits it to evaluate whether government is getting best value out of taxpayer's funds or whether they have succumbed to waste and abuse of the public trust.<sup>67</sup> Caution should, however, be made that this disclosure will serve its purpose of deterring corruption. It is deemed necessary that, in order for transparent information to achieve its purpose of curbing graft, it should be properly defined as to (a) what type of information is released, (b) to whom it is released, and (c) at what stage of the procurement process is the release made.<sup>68</sup>

Additional and independent oversight in the procurement process enables government to assure its taxpayers that government action is for their benefit. Such monitoring, when done by stakeholders themselves, creates a culture of unity towards the goals of national development. To maximize the civilian observers' role in transparency, their independence must be unquestionable. It also becomes necessary that they become adept on the procurement process.

### **The Concept of Civilian Observers: Assessing Compliance with International Procurement Instruments<sup>69</sup>**

#### **The WTO Government Procurement Agreement**

The Government Procurement Agreement (GPA) is a plurilateral agreement entered into by members of the World Trade Organization. It was developed in parallel with the Uruguay Round of multilateral trade negotiations and is intended to replace and supersede the "more limited agreement or "code" on government procurement of goods that was developed in the course of the Tokyo Round of multilateral trade negotiations in the 1970s."<sup>70</sup>

The GPA includes general rules by which the country signatories abide like non-discrimination, transparency and technical specifications for tendering and delivery. Member countries may, however, define their coverage under the Agreement in Appendix I which includes five annexes: Annex 1 (central government agencies), Annex 2 (sub-central government entities),

Annex 3 (all other entities that procure), Annex 4 (services) and Annex 5 (construction services).

The main focus of the GPA is on non-discrimination, competition and transparency. There are, however, provisions that relate to integrity in relation to competition. For example, Section 4 of Article VI prohibits entities from seeking or accepting advice which may be used in the preparation for specifications of a specific procurement from a firm that may have a commercial interest in the procurement, which act may have the effect of precluding competition. Entities are also prohibited from providing any suppliers with information regarding a specific procurement that may have the effect of precluding competition.<sup>71</sup> This regulation may be replicated in specific integrity provision for the Contracting Officer under Philippine Law, in addition to already-existing provisions on integrity violations of private persons who participate in the procurement process and who collude with public officials and employees.

There is an entire chapter in the GPA devoted specifically to transparency<sup>72</sup> that spans provisions encouraging all parties to indicate all terms and conditions as well as deviations from competitive tendering, publication of procurement notices, and ensuring that procurement regulations should not change during the procurement. What is most interesting about the transparency provisions is the recognition that they apply to suppliers situated in countries that are not parties to the agreement and that non-parties that comply with these conditions may participate as observers.<sup>73</sup> This is probably the only provision that is relevant to the Philippines as, to date, the Philippines has not yet acceded to the Government Procurement Agreement. The Philippines was, however, among those that entered into the Government Agreement against Tariffs and Trade Uruguay Round, and it is a member-country of the World Trade Organization (WTO).<sup>74</sup> The United States is its major trading partner, accounting for roughly 17-18% of its total exports and imports.<sup>75</sup>

Table 1. Country Table: Philippines (Merchandise Table)<sup>76</sup>

Breakdown in the Country's Total Exports		Breakdown in the Country's Total Imports	
By Main Destination		By Main Origin	
United States	18.0	United States	17.5
Japan	17.5	Japan	17.1
European Union	17.0	Singapore	7.9
China	9.9	European Union	7.8
Hongkong, China	8.1	Taipei, Chinese	7.3

In the conduct of negotiations, integrity is preserved by a mandate under the Government Procurement Agreement that all entities must treat tenders in confidence and are mandated not to provide any information intended to assist specific participants in bringing their tenders up to the level of other participants.<sup>77</sup> This is very akin to the regulations under both U.S. and Philippine procurement systems on maintaining the integrity of the procurement process and preventing bid rigging.

### UN Convention Against Corruption

The United Nations Convention Against Corruption (Anti-Corruption Convention) is primarily about integrity and transparency. This is clearly stated in the preambulatory clauses. The Convention was adopted by the General Assembly of the United Nations unanimously on October 31, 2003. To date, it has been signed by 140 countries and ratified by 38 countries, leading to its entry into force on December 14, 2005.<sup>78</sup> The concept of civil society participation in public procurement is most amplified in this international agreement. In its preambulatory clause, the Convention recognizes the support and involvement of individuals and groups outside the public sector, such as civil society, non-governmental organizations and community-based organizations.<sup>79</sup> The role of the private sector is discussed in Article 12 of the Convention, which acknowledges the involvement of the private sector in the fight against corruption. Among the specific measures recommended towards this end is the promotion of standards and procedures to safeguard the integrity of relevant private entities including the prevention of conflict of interest.<sup>80</sup>

The most relevant provision in the Convention relating to the concept of civilian observers is the entire article on the participation of society.<sup>81</sup> As in the rationale on civilian observers, this part of the Convention recognizes the participation of individuals and groups outside the public sector such as civil society, non-governmental organizations and community-based organization in the fight against corruption. In relation to curbing corruption in public procurement therefore, the concept of civilian observers under the Philippines Procurement Reforms Code is clearly in application with this provision. Further, the Convention recognizes that society participation has contributed to good decision-making processes, effective access to information and non-tolerance methods.<sup>82</sup> Anti-corruption bodies are also encouraged to proliferate.<sup>83</sup> Presidential Commission for Good Government Chair Nicasio Conti, in a speech delivered before the Global Organization of Anti-Corruption Parliamentarian, emphasized the unique application of this provision: Article 13 on Participation of Society is a confirmation of our working philosophy that no anti-corruption campaign will ever succeed without the direct and active involvement of civil society, the NGO's, and community-based organizations as well as all those outside the

mainstream of the public sector. After all, the ill effects of dishonesty in public service jeopardize every sector of society.<sup>84</sup>

The UN Convention Against Corruption was signed by President Gloria Macapagal-Arroyo on February 25, 2005, on the occasion of the 19<sup>th</sup> Anniversary of the famous peaceful EDSA Revolution that brought democracy back to the Philippines.<sup>85</sup>

### World Bank Procurement Rules

The World Bank (the "Bank") requires conformity with procurement rules denominated as Guidelines for Procurement Under IBRD Loans and IDA Credits on every loan it offers to nations that will use the funds in the procurement of goods, works, and services.<sup>86</sup> This is done to "ensure that the proceeds of any loan are used only for the purposes for which the loan was granted, with due attention to consideration of economy and efficiency and without regard to political or other non-economic influences or considerations."<sup>87</sup>

While integrity does not appear among the four principles of the Bank, the rules on fraud and corruption emphasize that all borrowers, bidders, contractors and subcontractors must observe the highest standards of ethics during the procurement and execution of bank-supported contracts. There are provisions on confidentiality of bid information, and surprisingly, one on community participation in procurement. The Bank's description of instances where community participation is encouraged include (a) calling for participation of local communities and/or nongovernmental organizations (NGOS) in the delivery of services, (b) increasing the utilization of local know-how and materials, or (c) employ labor-intensive and other appropriate technologies, the procurement procedures which will be efficient and acceptable to the Bank.<sup>88</sup> This enumeration seems to indicate that the concept of community participation is a form of local set-aside and not indicative of the same principle as the Philippine concept of civilian observers.

Based on the concept outlined above, it would seem that the concept of civilian observers might have been formulated to conform to World Bank Rules. The Philippines has relied on the Bank's financial and technical assistance to fund public service projects.<sup>89</sup> A more careful reading of the way the provision has been phrased will, however, indicate some ambiguity. While it mentions the participation of local communities and NGOs from which civilian observers come, the Bank relates such organizations to the delivery of basic services. It is the intent of the Bank to involve civilians in the implementation of projects involving services (e.g., labor or employment) and not necessarily involvement in the procurement process. Nevertheless, it may be argued that the Bank also underscored that borrowers are encouraged to employ appropriate procurement procedures acceptable to the Bank. The concept may come within this principle and also within the Bank's general policy of promoting procurement systems with transparency and integrity.

In fact, no less than the World Bank Country Director for the Philippines Joachim von Amsberg hailed the Philippine public sector procurement framework as an international success story.<sup>90</sup>

### OECD Country Models

The Organization for Economic Cooperation and Development (OECD) has developed a tool to be used by borrower countries and borrower organizations with regard to their procurement system. Called the OECD Methodology for Assessment of National Procurement Systems, its goals include the capacity-building of beneficiary-countries to "improve its procurement system."<sup>91</sup>

The rules provide for four pillars, among which is the integrity of the procurement system. Aside from these pillars, there are several indicators and sub-indicators. The most relevant to this paper's discussion is that dealing with "a sustainable strategy and training capacity ... to provide training, advice and assistance to develop the capacity of government and private sector participants to understand the rules and regulations and how they should be implemented."<sup>92</sup> This provision relates very closely to the concept of civilian observers in Philippine public procurement who come from the private sector. In fact, the member nations of the OECD have recognized the participation of the private sector in procurement<sup>93</sup> and have even encouraged capacity building to maximize their role. Among its goals from sustainable development are trust and the engagement of stakeholders "to build their capacity to identify issues, include local values, and communicate their experience".<sup>94</sup>

In many of its projects, the OECD aims to incorporate civil society cooperation. For example, in a project in Namibia involving a partnership between the latter and Finland, the OECD cited the significant contribution of NGOs in the management and performance of the sectors involved by enhancing the level of education and increasing citizen awareness.<sup>95</sup> The OECD has, as a result, been cited as a top performer in its engagement with civil society by the 2006 Global Accountability Project, funded by One World Trust.<sup>96</sup>

In addition, government-members of the OECD in the Asia-Pacific region particularized their anti-corruption measures in government transactions through an Anti-Corruption Plan for Asia and the Pacific during a conference held in Manila, Philippines in October 1999 and in Seoul, South Korea in December 2000. The conferences identified three pillars for the said initiative: Pillar 1 on developing effective and transparent systems for public service, Pillar 2 on strengthening anti-bribery actions and promoting integrity in business operations, and Pillar 3 on supporting active public involvement. The said pillars specifically provide the enhancement of institutions for public scrutiny and oversight<sup>97</sup> and encourage the support of non-governmental organizations and civil society groups to promote integrity in government

transactions. The involvement of NGOs in monitoring public sector programs and activities is highly encouraged.<sup>98</sup>

### Measuring Compliance of Civilian Participation in Philippine Public Procurement

The foregoing demonstrates that the concept of civilian observers in Philippine procurement law is consistent with the principles of International Model systems and conventions. As a borrower-country of the World Bank and a grantee of OECD programs, the regulation specifically dealing with oversight by civilian groups of government acquisition is highly appreciated and is in fact encouraged. This will likely impact to an increased credibility of the Philippines to be a grantee of development projects from the major development banks and other international grant organizations. These financing institutions are often wary that the national governments they lend money to or whose projects they finance might not use the resources granted for the purposes for which they were given. Civilian oversight in the process becomes a valuable tool to ensure this goal.

As to the WTO Government Procurement Agreement, this may not be relevant to the Philippines since the country has not acceded to this international agreement to date.

Determining positive compliance with international standards on integrity is, however, not enough. There is a greater mandate to ensure that civilian observers who play a significant role in acting as vanguards of a sound procurement system must also be of highest credibility and integrity. Such a mandate requires that the law must provide adequate mechanisms to protect the procurement process from civilian observers who might take advantage of their position, or who might betray the system for personal gain. To achieve the maximum benefit of oversight, the nature of civilian observers must be identified and the law scrutinized as to whether it has adequate provisions to protect the system from these circumstances.

### Conclusion

The concept of civilian observers appears revolutionary to many. The admiration which the international community has given to such an idea is largely due to emerging advocacies on anti-corruption and procurement ethics globally. While the Philippines may rightfully receive a pat on its shoulders for taking a lead on regulating private sector involvement in government acquisitions, such laurels should not lead its leaders to shun consideration of other important aspects of the procurement process. There are still issues like integrity, competition, best value and customer satisfaction that must be dealt with more seriously if its economy must develop. In fact, the most recent procurement and corruption scandals in the Philippines do not seem consistent with the laurels that have been given our procurement reforms law. Already,



lawmakers are working towards amending the procurement code to deter further scandals. While the world order is a more transparent and ethical system, the world also moves towards free trade and less stringent domestic barriers to commerce. For its procurement system to come in full circle, the Philippine government must look into accession to new world orders like the WTO Government Procurement Agreement, maximize the financial and technical assistance from projects funded by the World Bank and the Organization of Economic Cooperation for Development and endeavour to free itself from foreign debt dependency.

#### Endnotes

<sup>1</sup>Graduate, Master of Laws, Government Procurement, George Washington University Law School and Thelma Weaver Memorial Awardee (Most Outstanding ILLM), May 2007. The author wishes to thank Prof. Christopher Yukins and Prof. Dan Gordon of the George Washington University Law School.

<sup>2</sup>For a complete text of President Gloria Macapagal Arroyo's address regarding the Medium-Term Development Goals of the Philippines, please see <http://www.gov.ph/listings/mtpdp.asp>.

<sup>3</sup>The Philippines has been infamous as among the most corrupt nations in Asia. Transparency International's 2002-2004 Corruption Perception Index ("CPI") identified the Philippines as among the most corrupt nations in Asia, after Bangladesh and Indonesia. In 2007, the country's CPI remained at 2.5, the same rating given it in 2006. (For information on the ratings, please see [http://www.transparency.org/policy\\_research/surveys\\_indices/cpi](http://www.transparency.org/policy_research/surveys_indices/cpi)). An estimated fifty billion US dollars have been lost to corruption over the past twenty years because of procurement problems. Of the total goods purchased by the government every year (ranging between 18 and 20 billion US dollars) and infrastructure (approximately 70 billion US dollars), approximately 20% have been lost to corruption. (See Transcript of Records, Committee on Constitutional Amendments, Revision of Code & Laws, Phil. Senate, May 28, 2002 at 3 and 4). Most of the corruption scandals in the Philippines date back to the era of the Marcos dictatorship. The most recent incidences include the election fiasco brought about by the tapping of President Gloria Macapagal Arroyo's telephone conversation with Commission on Elections Commissioner Garcillano, popularly dubbed as the "Hello Garci tape" and the most recent alleged overpriced contract entered into by the Philippine Government with the ZTE Corporation of China for the implementation of a \$330B US national broadband network (nbn) project. (For an overview of the Hello Garci tape fiasco, please see the Philippine Center for Investigative Journalism blog; for the ZTE-NBN deal, please see the Philippine Center for Investigative Journalism blog at <http://www.pcij.org/blog/?p=1958>).

<sup>4</sup>Recent procurement scandals in the United States include alleged bribery of foreign government officials to win contracts by Enron, please see *The Wall Street Journal*, page A1 (August 5, 2002) and that of U.S. Navy Officer Darlene Druyun, please see Stuart B. Nibley, *Jamming the Revolving Door, Making it More Efficient or Simply Making it Spin Faster: How is the Federal Acquisition Community Reacting To The Darlene Druyun and Other Recent Ethics Scandals*, 41 *SUM Procurement Law-1* (2006), Jeffrey Branstetter, *Darlene Druyun: An Evolving Case Study in Corruption, Power, and Procurement*, 34 *Pub. Cont. L.J.* 43 at 445 (citing Supplemental Statement of Facts at 1, *United States v. Druyun* (E.D. Va. 2004)(No. 04-150-S), Cf. *Wickwire Roundup, The Darlene Druyun Fallout*, <http://www.wickwire.com.com/files/wickwireroundupfebrayrt2005.pdf>., Cf. *U.S. v. Pirio*, *U.S. v. Olivero*, *U.S. v. Greenwood* at [http://www.usoge.gov/pages/daeograms/dgr\\_files/2005/do05014.txt](http://www.usoge.gov/pages/daeograms/dgr_files/2005/do05014.txt).

<sup>5</sup> See generally the Medium Term Development Plan at [www.gov.ph](http://www.gov.ph).

<sup>6</sup>J. Edgardo Campos & Jose Luis Syquia, *World Bank Working Paper No. 70, Managing The Politics Of Reform, Overhauling The Legal Infrastructure Of Public Procurement In The Philippines* (2006) 26.

<sup>7</sup> *Id.*

<sup>8</sup> A non-governmental organization (NGO) is any non-profit, voluntary citizens' group which is organized on a local, national or international level. Task-oriented and driven by people with a common interest, NGOs perform a variety of service and humanitarian functions, bring citizen concerns to Governments, advocate and monitor policies and encourage political participation through provision of information. Some are organized around specific issues, such as human rights, environment or health. (Definition taken from <http://www.ngo.org/ngoinfo/define.html>.)

<sup>9</sup> PWI is a non-profit, non-partisan, civil society organization launched in 2001 by a group of concerned and seasoned individuals from the government, academe, legal profession, and the private sector, brought together by the challenge of reducing, if not eliminating, graft and corruption in government through procurement reform. PWI's primary objective is to promote transparency and accountability, as well as to assist in the streamlining of procedures in government procurement of goods, supplies, materials, services and infrastructure projects. See also <http://www.pwi.org.ph>.

<sup>10</sup> The Coalition Against Corruption is an alliance of the private sector, non-government organizations, and the Church that fights corruption. Launched in September 21, 2004, its mission is to implement and support counter-corruption projects, initially in the area of procurement and delivery of essential

public services, and inspire ordinary citizens to join in efforts to combat corruption. The members of the coalition are the Makati Business Club (MBC), Catholic Bishops' Conference of the Philippines (CBCP) and its National Secretariat for Social Action (NASSA), Bishops-Businessmen's Conference for Human Development (BBC), Caucus of Development NGO Networks (Code NGO), National Citizens' Movement for Free Elections (Namfrel), and the Transparency and Accountability Network (TAN), see [www.tan.org.ph](http://www.tan.org.ph).

<sup>11</sup>Ibid..

<sup>12</sup>Other jurisdictions like Peru have civilian observers in public procurement whose participation remains unregulated. See generally, <http://www.peru.gob.pe>.

<sup>13</sup> See R.A. 9184, § 13.

Section 13. Observers.-To enhance the transparency of the process, the BAC shall, in all stages of the procurement process, invite... at least two observers to sit in the proceedings...

<sup>14</sup>Ensuring integrity needs an adequate framework for transparency and accountability. Transparency can effectively deter corruption in public procurement if it is properly defined as to (a) what type of information is disclosed, (b) to whom is information disclosed and (c) at what stage should information be disclosed. See Janos Bertok, *Promoting Transparency and Integrity in Public Procurement: The Work of the OECD*, Pub. Proc. L. Rev. 188 (2006).

<sup>15</sup>R.A. 9184, op. cit., note 12, § 3 ((d) which specifically states as among the governing principles of Philippines Government Procurement to be: "(d) System of accountability where both the public officials directly or indirectly involved in the procurement process as well as in the implementation of procurement contracts and the private parties that deal with government are, when warranted by circumstances, investigated and held liable for their actions relative thereto.)"

<sup>16</sup>See Organization for Economic Cooperation and Development, *The Size of Procurement Markets*, available at <http://www.oecd.org/dataoecd/34/14/1845927.pdf>.

Total government procurement worldwide is estimated to be roughly equivalent to 82.3% of world merchandise and commercial services exports in 1998. Country-specific procurement estimates are detailed for 28 OECD countries and for 106 non-OECD countries. The ratios of government procurement markets that are potentially contestable are estimated at 7.57% or USD 1 795 billion for OECD countries and at 5.10% or USD 287 billion for non-OECD countries. The value of potentially

contestable government procurement markets worldwide is estimated at USD 2 083 billion, which is equivalent to 7.1% of world GDP or 30.1% of world merchandise and commercial services exports in 1998.

<sup>17</sup> R.B. Watermeyer, *Facilitating Sustainable Development Through Public and Donor Procurement Regimes: Tools and Techniques*, *Pub. Proc. Law Rev.* 1, 30-55 (2004).

<sup>18</sup> The OECD is an organization of twenty countries established on December 14, 1960, to bring mostly first-world countries to cooperation towards economic and social development and assist the world in policy formulation and execution. The membership has increased by 10 in recent years, bringing member-countries to 30. (For additional information on the organization, please see [www.oecd.org](http://www.oecd.org).)

<sup>19</sup> The WTO is the only international organization dealing with trade, trade issues and international trade policy. To date, it has 158 countries as members, including the Philippines and the United States. (For additional information on the organization, please see [ww.wto.org](http://ww.wto.org))

<sup>20</sup> Portions of this part are taken from a paper in the fall by the author entitled "Civilian Participation in Public Procurement: Case Studies from the Philippines," submitted in partial compliance of the course in Procurement Reforms Seminar (Fall 2006) under Prof. Christopher Yukins of the George Washington University Law School, Washington, D.C..

<sup>21</sup> Development Initiatives, Inc., *What Determines the Policy Impact of Local Negotiations? A Comparative Study in the Philippines*, Final Report (February 15, 2005) at 5.

<sup>22</sup> *Ibid.*

<sup>24</sup> *Ibid.*

<sup>25</sup> *Ibid.*, at 6.

<sup>26</sup> *Ibid.*

<sup>27</sup> PHIL. CONST., Art. II, § 20.

For a complete text of the 1987 Phil. Constitution, please see <http://www.chanrobles.com/philsupremelaw1.htm>.

<sup>28</sup> *Ibid.*, Art. VI, § 32.

<sup>29</sup> *Ibid.* See also *op. cit.* note 20, Chap. II, Title IX, §§ 120-127.

<sup>30</sup>PHIL. CONST., *op. cit.* note 24, Art VI, § 5 (2) (Twenty percent of members of the House of Representatives must be sectoral representatives).

<sup>31</sup>*Ibid.* Art XIII, § 15 (Bonafide associations of citizens with demonstrated capacity to promote the public interest with identifiable leadership, membership and structure).

<sup>32</sup>*Ibid.*, Art II, § 23.

<sup>33</sup>J. EDGARDO CAMPOS & JOSE LUIS SYQUIA, *op. cit.* note 5, at 5.

<sup>34</sup>Imp. Rules and Reg., R.A. 9184, §13, Observers.- To enhance the transparency of the process, the BAC shall, in all stages of the procurement process, invite, in addition to the representative of the Commission on Audit, at least two (2) observers to sit in its proceedings, one (1) from a duly recognized group in a sector or discipline relevant to the procurement at hand, and the other from a non-government organization: Provided, however, That they do not have any direct or indirect interest in the contract to be bided out. The observers should be duly registered with the Securities and Exchange Commission and should meet the Criteria for observers set forth in the IRR. For a complete text of the IRR, please see [http://www.neda.gov.ph/references/RAs/Approved%20IRRA%20of%20R.A.%209184 \(July%2011,%202003\).pdf](http://www.neda.gov.ph/references/RAs/Approved%20IRRA%20of%20R.A.%209184%20(July%2011,%202003).pdf).

<sup>35</sup>Construction groups who can act as civilian observers are listed to include but not limited to, Philippine Constructors Association, Inc. ("PCA") and the National Constructors Association of the Philippines ("NACAP").

<sup>36</sup>Civilian observers groups of engineers are listed as but not limited to, the Philippine Institute of Civil Engineers ("PICE") and the Philippine Institute of Certified Public Accountants ("PICPA").

<sup>37</sup>COA Cir. No. 2003-0204, GPPB Cir. 03-2003 (Dec. 1, 2003), a complete text of which is available at [www.gppb.gov.ph/cgi-bin/issuances/files/03-2003\\_2.pdf](http://www.gppb.gov.ph/cgi-bin/issuances/files/03-2003_2.pdf).

<sup>38</sup>R.A. 9184, I.R.R., *op. cit.* note 31, 13.2.

Observers should meet the following criteria: (1) knowledge, experience or expertise in procurement or in the subject matter of the contract to be bid, (2) absence of direct or indirect interest in the contract to be bid out, and (3) any other criteria that may be determined by the BAC.

<sup>39</sup>*Id.*, § 32

Pre-bid conference, opening of bids, post-qualification, contract award and special meeting of the BAC.

<sup>40</sup>GPPB Manual for Procuring Good and Services, a complete of text of which is available at <http://www.gppb.gov.ph/downloadables/forms/GPM%20-%20Vol.2.pdf>.

<sup>41</sup>This portion will be part of a thesis entitled *Civilian Observers in Government Procurement: Initiatives for a Sound Public Procurement System* submitted in partial fulfillment of an LLM in Government Procurement Law, the George Washington University Law School, Spring 2007.

<sup>42</sup>R.A. 9184, I.R.R., *op. cit.* note 31, § 13.4

Responsibilities of the Observers include:

1. Preparation of the report either jointly or separately indicating their observations made on the bidding activity conducted by the BAC for submission to the Head of the Procuring entity, copy furnished the BAC chairman. The report shall assess the extent of the BAC's compliance with the provisions of the IRR-A and areas of improvement in the BAC's proceedings. For this purpose, the BAC shall furnish them with a copy of the following documents upon this request:

- a. Minutes of related proceedings of BAC meetings;
- b. Abstract of bids;
- c. Post-qualification summary report;
- d. APP and related PPMP; and
- e. Copies of "opened" proposals.

Observers may also give a copy of their report to the Office of the Ombudsman/Resident Ombudsman if the BAC is found to have failed in following the prescribed bidding procedures or for any justifiable and reasonable ground where the award of the contract will not redound to the benefit of the Government as defined in this IRR-A.

2. To sign the abstract of bids, if, in their independent observation, the bidding activity conducted by the BAC followed the correct procedure as indicated in this IRR-A; and

3. To sign the post-qualification summary report if, in their independent observation, the BAC followed the procedure as indicated in this IRR-A and that the observer is amenable to the results of the post-qualification.

<sup>43</sup>*Ibid.* § 8.7

Observers- The G-EPS shall allow observers, duly authorized by the BAC, to monitor the procurement proceedings on-line; Provided, however, That such observers do not have any direct or indirect interest in the contract to be bid. See also RA 9184, § 8.

<sup>44</sup>R.A. 9184, *op. cit.* note 12, § 13 (Observers- To enhance the transparency of the process, the BAC shall, in all stages of the procurement process, invite, in addition to the representative of the Commission on Audit..."); see also *ibid.* § 3(a); see R.A. 9184 I.R.R., *op. cit.*, note 55 §§ 13.1-13.4.

<sup>45</sup>Steven L. Schooner, *Desiderata: Objectives of a Sound Procurement System*,

11 *Pub. Proc. Law Rev.* 103 (2002) (citing Sue Arrowsmith, *Towards a Multilateral Agreement on Transparency in Government Procurement*, 47 *Int'l & Comp. Law Q.* 793, 796 (1998)).

<sup>46</sup> Wayne A. Wittig, *A Framework for Balancing Business and Accountability Within a Public Procurement System: Approaches and Practices of the UN*, *Pub. Proc. Law Rev.* 139, 139-164 (2001).

<sup>47</sup> *Inspector General Act of 1978*, 5 U.S.C. App. § 2, (Inspectors General have been established in different executive departments to investigate these agency's procurements. They are required to be free of agency influence, have access to all records relating to any agency's programs and operations and may issue subpoenas for all necessary information and documentation).

<sup>48</sup> CAMPOS & SYQUIA, *op. cit.*, note 5, at 153.

<sup>49</sup>In Peru, the CONSUCODE, through the "Government Procurement Transparency Project", and with the collaboration of the USAID, has been implementing civilian observers on public procurement in Peru. Civilian observers are defined as a mechanism of social participation through which representatives of society institutions get together with the purpose to supervise the fulfillment of the executive agencies' duties. In government acquisitions, civilian observers are a mechanism of active participation of surveillance of the procurement processes conducted by the agencies. The surveillance can take place at the 3 levels of government: Central, Regional and Local.

Civilian observers are integrated voluntarily by institutions that exist in the civil society (preferably that belongs to the region of where the purchasing agency is located), such as professional of the Chambers of Commerce, Lawyers Bar, Engineers Bar, and NGOs. Any citizen (e.g. students) can integrate them, unless there is a conflict of interests. There is, however, no statute that expressly defines the scope of the civilian observers in Peru. See generally, [www.consucode.gob.pe](http://www.consucode.gob.pe). (English translation by Melissa Cossio, a Peruvian lawyer)

<sup>50</sup> See Christian Pitchas, Hans Joachim-Priess, *WTO: The Proposed WTO Agreement on Transparency in Government Procurement-DOHA and Beyond*, *Pub. Proc. Law Rev.* 13 (2002).

<sup>51</sup> *Ibid.*

<sup>52</sup> BARTOLOME C. FERNANDEZ, JR., *A TREATISE ON GOVERNMENT CONTRACTS UNDER PHILIPPINE LAW* 141 (COA Research & Development Foundation, Inc.) (1985).

<sup>53</sup> Kara Haberbusch, *A Critical Look at Sealed Bidding System*, 99, 30 *Pub. Cont. L.J.* 97.

<sup>54</sup> Daniela Decker, Hans Joachim Pries, *The WTO: General Council Decision of August 1, 2004: A Note On the Decision Not to Launch Negotiations on Transparency in Government Procurement During the DOHA Round*, *Pub. Proc. Law Rev* 1 (2005).

<sup>55</sup> Compare with the Comment of US procurement experts Ralph Nash, Jr and John Cibinic, Jr when they opined that evaluations of procurement personnel should not necessarily focus on whether they followed the detailed procedures but on whether they did a good job. This, they state, will spur more efficiency into the system. See John Cibinic, Jr & Ralph Nash, *Can Procurement be Both Fair and Efficient*, 9 No. 1 *NASHCIBINIC Rep.* P2.

<sup>56</sup> Under pending legislation on whistleblowers in the Philippines, whistleblower is defined as "someone who does not share the strong and common interest of the two immediate participants of a corrupt transaction to hide the wrongdoing. Thus, a whistleblower offers hope of breaking through the "concealing cover" that protects the bribe giver and taker. A whistleblower is somebody who initiates the process of corruption control by disclosing information about a wrongdoing to authorities, who are expected to use the information for the anti-corruption efforts." See Keynote Address of Supreme Court Justice Feliciano C. Feliciano, chair of the Board of Advisors of the Hills Governance Center of AIM. Justice Feliciano served on the World Trade Organization (WTO) Appellate Body from 1995 to 2000, and is a member of the ICC International Court of Arbitration in Paris. See [http://www.aim-hills.ph/projectpage/prs/research3\\_13\\_1.htm](http://www.aim-hills.ph/projectpage/prs/research3_13_1.htm).

<sup>57</sup> Qui tam means "he who sues for the king as well as for himself in the matter." JOHN CIBINIC, JR. & RALPH C. NASH, JR., *FORMATION OF GOVERNMENT CONTRACTS* 157 (CCH 3d. ed. 1998). Qui tam rules under the US system are found under the False Claims Act (31 U.S.C. § 3730). Violators who are proven guilty will be made to pay three times the dollar amount of total amount defrauded the government plus civil penalties of \$5000-10,000 for each false claim. The qui tam plaintiff will receive fifteen to thirty percent of what the government actually recovers from the defendant as a result of the suit.

<sup>58</sup> R.A. 6981, a complete text of which is available at <http://www.chanrobles.com/republicactno6981.htm>.

<sup>59</sup> For an overview of pending whistleblower bills in the Philippine Congress, please see [http://www.aim-hills.ph/projectpage/prs/research3\\_8.htm](http://www.aim-hills.ph/projectpage/prs/research3_8.htm).



<sup>60</sup> See False Claims Act, *op. cit.* note 54.

<sup>61</sup>*Ibid.* Under the False Claims Act of the U.S. system, a relator is the one who reports a procurement anomaly to the appropriate government agency.

<sup>63</sup>PHIL. CONST., *op. cit.*, note 24, Art. IX (D)(2)(1).

<sup>64</sup>*Ibid.*

<sup>65</sup>R.A. 9184, *op. cit.*, note 31, § 13.1.

<sup>66</sup> Nash and Cibinic, *Postscript III: Exemption 4 of the Freedom of Information Act*, NASH&CIBINIC REP 19. No. 1, page 4.

<sup>67</sup> *Ibid.*

<sup>68</sup> Janes Bertok, *Promoting Transparency and Integrity in Public Procurement: The Work of the OECD*, *Pub. Proc. Law Rev. NA* 188-194, 4 (2006).

<sup>69</sup> This portion will be part of the author's thesis entitled "The Concept of Civilian Observers in Public Procurement: Initiatives for a Sound Public Procurement System," submitted in partial fulfillment of an LLM in Government Procurement Law, the George Washington University Law School, Spring 2007.

<sup>70</sup> Robert T. Anderson, *Policy and Legal Frameworks for Open Procurement Markets-Part I, The Role of the WTO* (citing Annet Blank and Gabrielle Marceau, "The History of the Government Procurement Negotiations Since 1945," *Public Procurement Law Review*, No. 4, 77 (1996)).

<sup>71</sup>WTO GPA, Art. VII, § 2. For a complete text, please see [http://www.wto.org/english/tratop\\_e/gproc\\_e/gp\\_gpa\\_e.htm](http://www.wto.org/english/tratop_e/gproc_e/gp_gpa_e.htm).

<sup>72</sup> *Ibid.* Art. XVII.

<sup>73</sup>*Ibid.*, § 2.

<sup>74</sup> For data on the member-countries of the WTO, including the Philippines, and their respective dates of accession, please see the World Trade Organization website at [http://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/org6\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm).

<sup>75</sup>For data on World Trade Organization member-countries' Country Profile where this data about the Philippines may be obtained, please see <http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language>

=E&Country=PH.

<sup>76</sup> Ibid.

<sup>77</sup> WTO GPA, *supra* note 68, Art. XIV, § 3.

<sup>78</sup> United Nations Information Service United Nations Convention Against Corruption Enters Into Force on 14 December, December 13, 2005, available at <http://www.unis.unvienna.org/unis/pressrels/2005/uniscp528.html>.

<sup>79</sup> The preamble in part states, "Bearing in mind that the prevention and eradication of corruption is a responsibility of all states and that they must cooperate with one another, with the support and involvement of individuals and groups outside the private sector, such as civil society, non-governmental organizations and community-based organizations if their efforts in this area are to be effective."

<sup>80</sup> UN Convention Against Corruption, Art. 12, § 2 (b). For a complete text, please see [http://www.unodc.org/unodc/crime\\_convention\\_corruption.html](http://www.unodc.org/unodc/crime_convention_corruption.html).

<sup>82</sup> Ibid. § 1 (a), (b), (c).

<sup>83</sup> Ibid., § 2.

<sup>84</sup> Nicolas Conti, Implications of the UN Convention Against Corruption On Anti-Corruption Initiatives in the Philippines, presentation before the Global Organization of Parliamentarians Against Corruption in Manila, Philippines (March 31, 2005).

<sup>85</sup> Ibid.

<sup>86</sup> For the complete provisions of the Guidelines, please see [www.worldbank.org](http://www.worldbank.org).

<sup>87</sup> Ibid. at 6, General Considerations.

<sup>88</sup> Ibid. § 3.17.

<sup>89</sup> IBRD (World Bank), Analysis Suprational 3 (November 2006), available at [http://treasury.worldbank.org/web/Moodys\\_IBRD\\_Report\\_2006.pdf](http://treasury.worldbank.org/web/Moodys_IBRD_Report_2006.pdf).

<sup>90</sup> Doris Dumlao, World Bank Prods Government on Curbing Corruption, Philippine Daily Inquirer July 5, 2006, available at [http://www.dbm.gov.ph/current\\_issues/pressrelease/2006/7-July/press\\_070506-wb.htm](http://www.dbm.gov.ph/current_issues/pressrelease/2006/7-July/press_070506-wb.htm).

<sup>91</sup> OECD Methodology for Assessment of National Procurement Systems (Based on Indicators from OECD-DAC/World Bank Round Table) 2 (July 17, 2006). For a complete text, please see <http://www.oecd.org/dataoecd/1/36/37130136.pdf>.

The understanding among the participants in this process is that the assessment will provide a basis upon which a country can formulate a capacity development plan to improve its procurement system. Similarly, donors can use the common assessment to develop strategies for assisting the capacity develop plan and to mitigate risks in the individual operations that they decide to fund. The long term goal is that countries will improve their national procurement systems to meet internationally recognized standards enabling greater effectiveness in the use of funds to meet country obligations.

<sup>92</sup> *Id.*, Indicator 5, "Existence of an Institutional Development Capacity," which includes subindicator 5 (c).

A sustainable strategy and training capacity exists to provide training, advice and assistance to develop the capacity of government and private sector participants to understand the rules and regulations and how they should be implemented.

<sup>93</sup> "The private sector is the best monitor of the procurement process." See Presentation of Patricia Josefchak, Exceptions to Full & Open Competition, How to Ensure Integrity, OECD Symposium (Paris, France, December 1, 2006), available at [www.oecd.org/dataoecd/45/45/37864365.pdf](http://www.oecd.org/dataoecd/45/45/37864365.pdf).

<sup>94</sup> See [www.oecd.org/dataoecd/4512/37864305.pdf](http://www.oecd.org/dataoecd/4512/37864305.pdf), at 16.

<sup>95</sup> Refocusing Finland's Cooperation with Namibia, available at [www.oecd.org/dataoecd/7/33/35180530.pdf](http://www.oecd.org/dataoecd/7/33/35180530.pdf).

<sup>96</sup> See OECD news at [www.oecd.org/department/0,2688,en\\_2649\\_34495\\_1\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/department/0,2688,en_2649_34495_1_1_1_1_1,00.html).

<sup>97</sup> *Op. cit* note 88, Pillar 1.

<sup>98</sup> *Ibid.* Pillar 3.

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Commission on Audit (COA) Cir. No. 2003-0204  
 Government Procurement Policy Board (GPPB) Cir. 03-2003 (Dec. 1, 2003)  
 Republic Act 9184  
 1987 Philippine Constitution  
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 False Claims Act (31 U.S.C. § 3730)  
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## The Pre-Algebra Course: A Bridge Program For Mathematically Under-Prepared College Entrants

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One reality in our educational system is that a sizable number of our high school graduates are not prepared for college and a good portion of this are under-prepared to take regular college mathematics courses. A survey conducted in one of the state universities in Central Visayas, Philippines in school year 2004-2005 showed that about 90% of its college entrants have a hard time doing elementary operations on fractions, decimal, and percent. One resulting recommendation was that a bridge program be set up for these students. A subsequent study by Kilat (2006) noted five variables that most likely relate to students' grade in College Algebra: High School General Average (HSG), High School Mathematics Grade (HSM), Silliman University Admission and Placement Examination (SUAPE) Score, SUAPE Math component score (SM), and College Algebra Grade (CAG). Subjecting these variables to regression analysis reveals that CAG is strongly correlated with HSG and SM. The linear regression model with Durbin-Watson  $d$  statistic of 2.16 showed that  $CAG = 0.076HSG + 0.073SM - 6.23$ .

With this equation, a desired CAG can be set to a certain value and the values of the other two variables may also be computed. A flowchart was drawn to aid the university admission office in identifying students who need to take the pre-algebra course. Three semesters after its implementation, the percentage of those who obtained below average and failure significantly decreased from 39.77% to 29.67%. It is recommended that schools who wish to set up a bridge program for their incoming first year students adopt this method or a variation of this method according to the nature of their admission policy. If a school does not intend to put up a bridge program for their regular mathematics courses, it is suggested that students still be grouped according to their mathematical abilities in order to lighten the teacher's task of managing the classroom and diversifying one's approach to maximize effectiveness in transmitting mathematical knowledge to students.

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## Introduction

The need for a program for mathematically under-prepared college entrants in Silliman University has long been felt by the faculty of the Mathematics Department of Silliman University. The suspicion that a good number of students enter college without adequate mathematical preparation was confirmed when the department made an actual count and percentage on the number of failures in College Algebra from school year (SY) 2001-2002 to SY 2005-2006. The data revealed that 721 students out of 6,568 obtained a grade of F. This excludes students who got Incomplete (INC), Withdraw (W), Dropped, and those who obtained a grade of less than 2.0 (a grade below which is considered a failure in many university units, e.g., the natural sciences, nursing, and business administration). When those who failed and those who got less than 2.0 were combined the percentage of students who fail College Algebra rose to about 37%.

In a study conducted at a local state university entitled "College Entrants' Knowledge on Division-Based Mathematics" (Mamhot, Lazalita, Manahon, Cepe, & Aurea, 2005), it was found that of the 1,660 entering first year students who took a 30-item exam on elementary operations such as fractions, decimals, and percent, only 10% or about 166 obtained a rating of 90% or higher. Ninety percent (90%) or 1,494 students got a score of 21 and below. Fifty percent (n=830) of the students obtained a score of less than 13. The mean score was 13.89.

It is suspected that this phenomenon is happening nationwide due to some crucial reasons. First, many students who enter college are unprepared, but the fault may not only be in the students. Barcenas (2000) has pointed to the shortening of elementary education in 1940 resulted in a tremendous deterioration of teaching standards. A second reason has to do with the possibility of incompetent teachers, corrupt administrators, lack of motivation by students, and negative influences of the society where patience and hard-work are seldom valued (Lee-Chua, 2001).

One recommendation of the study earlier mentioned was to screen students who enter college and conduct a bridge program for those who are found mathematically deficient in order to equip them with adequate mathematical skills before they enroll in regular college mathematics courses. The challenge had to do with how to segregate students who are mathematically ill-prepared for college from those who are well-prepared. In a subsequent study by Kilat (2006), the following factors were considered as the most likely variables that could relate to College Algebra grade: a) High School General Average (HSG), b) High School Mathematics Grade (HSM), c) Silliman University Admission and Placement Examination (SUAPE) Score, and d) SUAPE Math component score (SM). A regression analysis conducted with these as independent variables and College Algebra grade (CAG) as dependent variable, resulted in  $CAG = 0.076HSG + 0.073SM - 6.23$ , with a Durbin-Watson index of 2.16.

### Methodology

For five consecutive school years from 2001-2002 up to 2005-2006, 100 entering first year students were chosen at random from each school year and from these students the following data were obtained: a) High School General Average (HSG), b) High School Mathematics Grade (HSM), c) Silliman University Admission and Placement Examination (SUAPE) Score, d) SUAPE Math component score, and e) College Algebra Grade. Some of the 500 students did not have complete figures on these variables, and only 218 were included in the analysis.

Data on these variables were subjected to regression analysis after their validity for use was confirmed by the Durbin-Watson test. The regression analysis was utilized to determine which variables have significant effect on College Algebra grade and from the regression equation that was obtained, cut-offs were then set and recommendations to the University Admissions Office on how to sort students for a bridge program were considered. The bridge program in mathematics was intended to augment the mathematical preparation of the incoming students identified as under-prepared.

In order to test for the effectiveness of the program recommended, data of failures from SY 2001-2002 to SY 2005-2006 were gathered, tabulated, and compared with data of failures for the three semesters from SY 2006-2007 and first semester of SY 2007-2008. The z-test on proportions was then used to test the significance of the difference between the proportions of these two groups of students vis a vis those before the implementation of the program and those who were subjected to the program.

### Scope and Limitations of the Study

In sorting the students for the program, the authors relied mainly on the following factors: High School General Average (HSG), High School Mathematics Grade (HSM), Silliman University Admission and Placement Examination (SUAPE) Score, and SUAPE Math component score. Other factors like math anxiety (Arem, 1993; Scarpello, 2007), parental support (Lee-Chua, n.d.), knowledge of English language (Esmeralda, 1989), study habits (Nochefranca, 1980), and aptitude for math (Smith, 1991) are beyond the scope of this study.

The students included in the study are those enrolled from SY 2001-2002 to the first semester of SY 2007-2008 in all colleges of Silliman University except those enrolled in the College of Engineering and Design. Furthermore, college grades considered in the study are the grades of those who took College Algebra for the first time. Students who dropped or withdrew as well as those who obtained INC (incomplete) and NG (No Grade) were also excluded from the study.



### The Pre-Algebra Course

The Pre-Algebra course is required for students identified as under-prepared based on the criteria set by the University Office of Admissions. It is a 3-unit non-degree course with topics in elementary mathematics. The course is designed for students who find mathematics difficult to understand and even for those who find it "fearsome." The topics included mathematics orientation, proficiency on the four fundamental operations of integers, fractions, decimals, and percent, introduction to College Algebra, simple word problems, and the Cartesian coordinate system.

The main objective of the course is to give students more opportunities and time for engaging in mathematical activities thereby facilitating the transition to more abstract ways of thinking that is required in College Algebra and providing scaffolding for these students to be successful in college.

Through lectures, discussions, laboratory sessions, small group discussions, and reading and writing papers, students are assisted in exploring algebraic concepts in an informal way to build a foundation for subsequent formal study of algebra. Some of the features of the course are:

- A five-minute check that makes a bridge from previous lessons
- Bell-ringer questions to provide activities for the first few or last few minutes of class
- Error analysis that provides ways to monitor and adjust student learning
- Cooperative problem-solving activities that present a problem or mini-project for group work
- Models and manipulatives that use home-made or purchased materials to extend student mastery
- Applications and interdisciplinary activities to show the connection of math and the real world
- Portfolio of students' homework/assignment as an enrichment and practice

Although the topics in this course appear very similar to a regular College Algebra course, the exercises and examples discussed here are those among the simplest of forms. At the end of the semester, the students are given only grades of U (unsatisfactory) and P (passed). The grading criteria are as follows:

Attendance: 50%

Portfolio: 10%

Exams: 40%

The cut-off percentage set for a grade of P is 70% or higher. If a student obtains lower than 70% he or she is advised to repeat the course and is considered ineligible to take College Algebra. The recommended text for the course is the one by Price, Rath and Leschensky (1995) entitled *Merrill Pre-Algebra: A Transition to Algebra* published by McGraw-Hill. Teaching materials to guide the students are also prepared by the Mathematics Department.

## The Independent Variables

*High School General Average.* Out of the 218 students included in the study about 80% of them have a high school grade average of 85 and above (Figure 1). About 2.29% are boundary students while about 38.07% have grades above 90. The rest of the students (59.64%) fall in between.

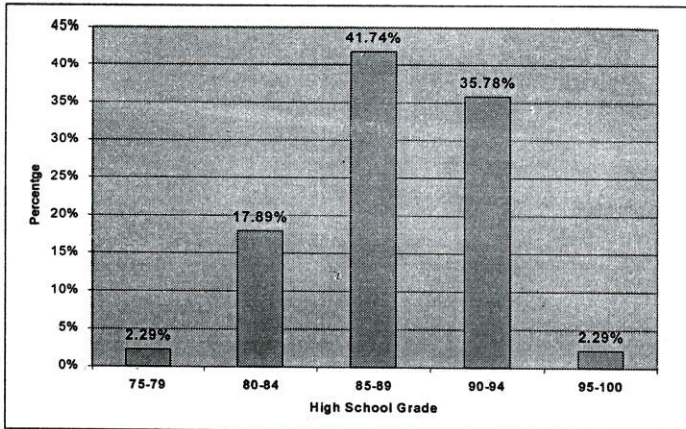


Figure 1. Percentage Distribution by High School General Average of First Year Students from SY2001-2002 to SY2005-2006.

*High School Math Grade.* About 40% of the students have grades that are less than 85, while 16.51% have grades less than 80, and only about 22.02% have grades of 90 or higher (Figure 2).

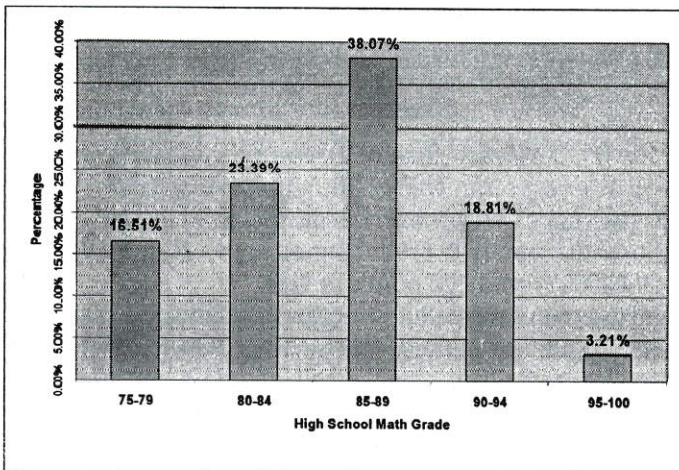


Figure 2. Percentage Distribution by High School Math Grade of Entering First Year Students from SY2001-2002 to SY 2005-2006.

*SUAPE Math Component.* The SUAPE Math Component was assessed by point system with a highest score of 50 and with 0 as lowest. Most students (56.88%) obtained scores between 21 to 30 points and only about 0.46% got scores above 40. About the same percentage scored 10 or below (Figure 3). Thus, 99.09% of them have scores between 11 and 40.

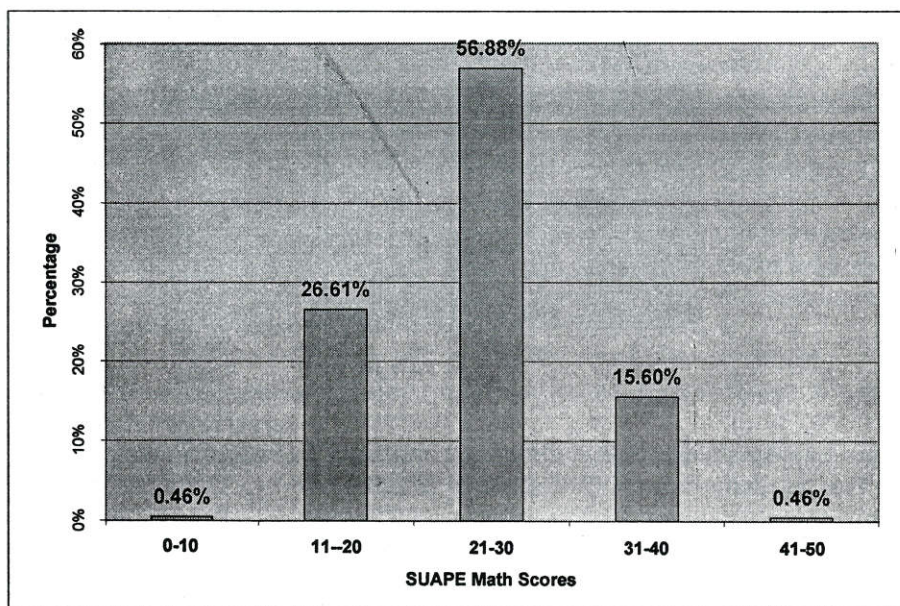


Figure 3. SUAPE Math Component Scores of First Year Students from SY2001-2002 to SY2005-2006.

*SUAPE Scores.* SUAPE scores were assessed using raw scores where each question is worth one point. The examination consists of 150 questions, therefore, the highest possible score from SUAPE is 150. A percentage distribution shows that about 95.87% obtained scores of more than 100 points and only about 4.13% scored 100 points or less.

After all of the scores are gathered at the Silliman Admission Office, they were converted into percentile ranks that are then used to determine whether or not a student is admitted into the University, and to which academic unit because different colleges usually specifies a cut-off SUAPE percentile rank.

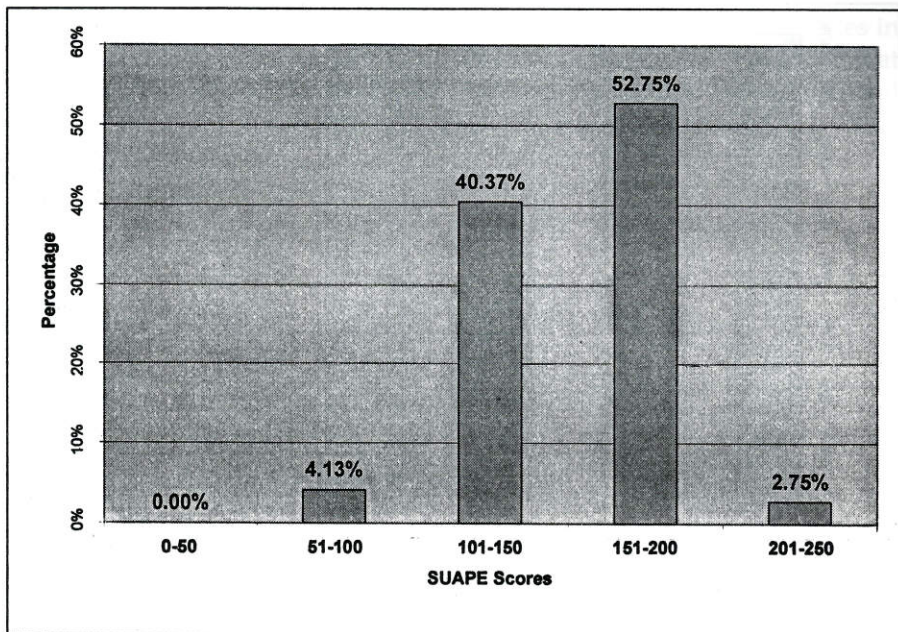


Figure 4. SUAPE Scores of First Year Students from SY2001-2002 to SY2005-2006.

*College Algebra as Dependent Variable.* Each of the preceding independent variables were tabulated vis-a-vis students' corresponding grades in College Algebra (Figure 5) for analysis as to their relationships. The 6.42% obtaining the grade F (failure) in College Algebra combined with those with grades below 2.0 comprised close to 37%. Some colleges and departments like the College of Nursing, It must, however, be noted that particular colleges at Silliman University such as College of Business Administration, the Mathematics department, and natural sciences departments consider a grade below 2.0 as a failure.

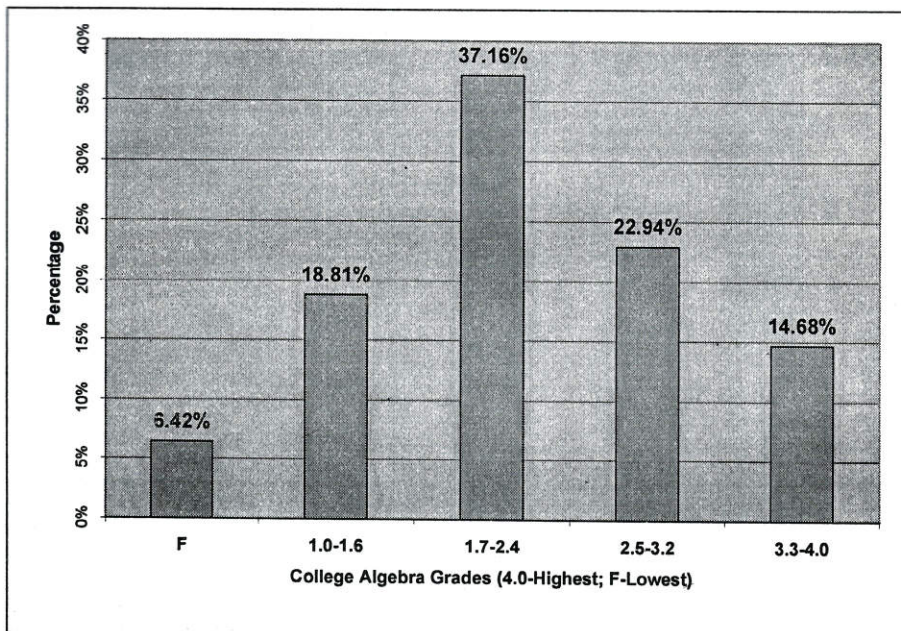


Figure 5. College Algebra Grades of First Year Students of Silliman University from SY 2001-2002 to SY 2005-2006.

### Regression Analysis

When the gathered data were subjected to analysis of variance modelled on regression analysis with the null hypothesis that College Algebra Grade is not related to any of the variables—High School General Average, High School Mathematics Grade, Silliman University Admission and Placement Examination (SUAPE) Score, and SUAPE Math component score, it was found that at least one of the independent variables is associated with College Algebra Grade, with a p-value of 0.00 (Table 1).

Table 1.

Analysis of Variance Model with all Variables Entered

	Degrees of Freedom	Sum of Squares	Mean Square	F-value	P-value
Regression	4	91.60	22.90	48.83	0.00*
Residual	213	99.89	0.47		
Total	217	191.49			

\* p-value of 0.00 means at least one of the independent variables is correlated with the dependent variable.

To find out which of the variables significantly related to the grades in College Algebra, the linear regression model was employed. It was found that College Algebra grade is significantly related to the High School General Average ( $p$ -value = 0.00) and the Math SUAPE Component also with a  $p$ -value = 0.00 (Table 2).

Table 2.  
Parameter Estimates of College Algebra Grade Using Linear Regression Analysis.

	Coefficients	Standard Error	t-stat	P-value
Intercept	-6.230	1.032	-6.035	0.00
SUAPE Math Score(SM)	0.073	0.009	8.387	0.00
High School General Average(HSG)	0.076	0.013	5.976	0.00

It appears that one's College Algebra Grade (CAG) can be estimated using SUAPE Math Score and High School General Average using this linear regression equation:  $CAG = 0.076HSG + 0.073SM$  6.23. This Regression Analysis has a Durbin-Watson  $d$  statistic of 2.16, meaning that the use of this analysis for the given data is statistically valid.

As a matter of policy, those who obtain SUAPE Percentile of 40 and above are automatically admitted to the university and thus, need not take the pre-algebra course. The regression equation formulated above, hence, applies only to those who obtain a SUAPE Percentile of below 40.

From this equation, if the SUAPE Math Score is set at 25, the student with High School General Average of 75 to 84 has a good chance of getting a College Algebra grade of 1.4 to 2.0. Thus, based on this regression equation, it was recommended that those who obtain a SUAPE Math score below 25 take the pre-algebra course, while those who obtained SUAPE Math scores of 25 and above may take the regular College Algebra course even if his or her SUAPE percentile is only between 20 and 40. With this policy in place, even those who obtain SUAPE percentiles of less than 20 can still be admitted into the university if they enroll and pass the pre-algebra class as a condition for their admission. SUAPE percentile of 20 is the minimum cut-off percentile for admission into the university.

### The SUAPE and the Process of Student Selection for the Bridge Program

The Silliman University Admission and Placement Examination (SUAPE) is the official admission and placement examination administered to incoming college first year students of the university. Certain academic units in the university require specific cut-off percentile scores for admission into their

unit but the lowest passing percentile score is 40. Incoming college students who obtain a percentile score of less than 40 are given provisional status, but those who get less than 20 %ile are refused admission.

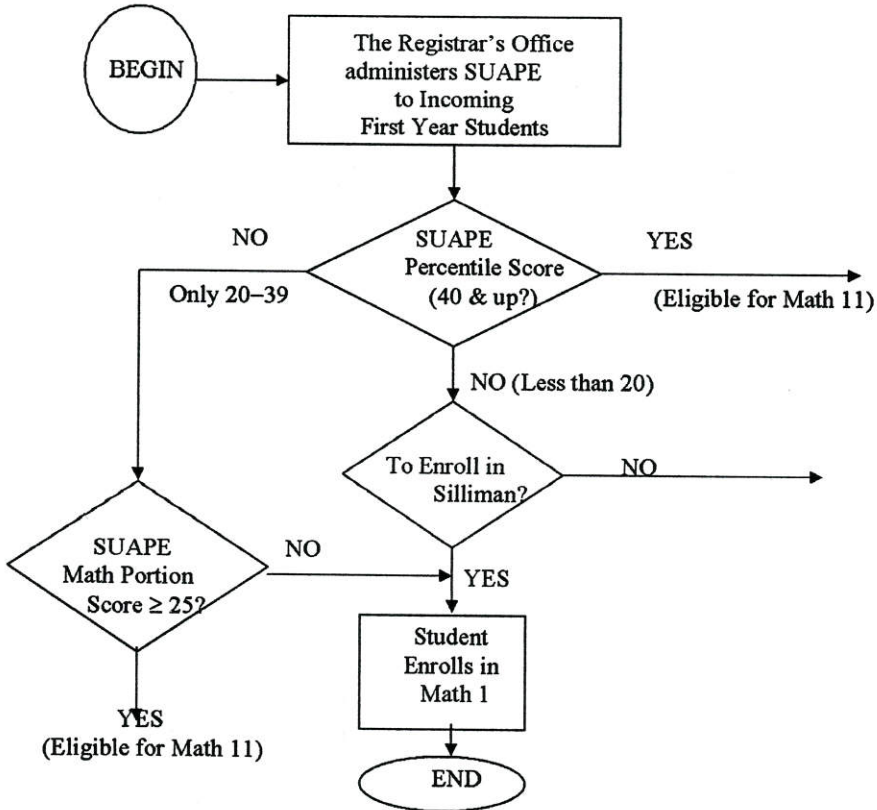


Figure 6. Flowchart for Math 1 Students.

It must be noted that Silliman University adopts the following grading system for its students:

- 3.8 - 4.0 Excellent
- 3.3 - 3.7 Superior
- 2.8 - 3.2 Good
- 2.3 - 2.7 Above Average
- 1.8 - 2.2 Average
- 1.3 - 1.7 Below Average
- 1.0 - 1.2 Passing
- F - Failure

### The Effects Of Administering A Pre-Algebra Course to Mathematically Under-Prepared First Year Students

Three semesters after the implementation of the pre-algebra course to first year students, an analysis based on the percentages of failure in a regular College Algebra course was made. All grading sheets in College Algebra course from SY 2001-2002 to SY 2005-2006 were collected and the following figures were recorded: a) number of those who obtained failing grades, b) all those who obtained grades from 1.0 to 1.9, and c) the total number of students enrolled in College Algebra. Likewise, data of similar nature were also obtained from grading sheets for SY 2006-2007 to first semester of SY 2007-2008.

From these figures the z-values and their corresponding p-values of the significant difference between two proportions were computed on the following percentages: i) percentages of failures between the two sets of data, ii) percentages of those who obtained grades from 1.0 to 1.9, and iii) combined percentages of these two. The formula for the z-score is

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}\hat{q}[(1/n_1) + (1/n_2)]}}$$

$$\text{where } \hat{p} = \frac{x_1 + x_2}{n_1 + n_2}, \quad \hat{q} = 1 - \hat{p}, \quad \hat{p}_1 = \frac{x_1}{n_1}, \quad \hat{p}_2 = \frac{x_2}{n_2},$$

$x_1$  = Number of F grades; Number of grades below average; Both numbers combined; From SY 2001-2002 to SY 2005-2006;

$x_2$  = Number of F grades; Number of grades below average; Both numbers combined; From SY 2006-2007 to First semester of SY 2007-2008;

$n_1$  = Number of students who took College Algebra from SY 2001-2002 to SY 2005-2006;

$n_2$  = Number of students who took College Algebra from SY 2006-2007 to First Semester of SY 2007-2008;

In computing for z-values and p-values (Table 3), note that a p-value is the smallest level of significance for which the null hypothesis of equality of proportions can be rejected. The alternative hypothesis is that the proportion computed for SY 2001-2002 to SY 2005-2006 is greater than the corresponding proportion for SY 2006-2007 to First Semester of SY 2007-2008. At 0.05 level of significance, this sets a minimum z-value of 1.645 for the null hypothesis to be rejected.



Table 3.

Computation of the z-values and p-values for Grades F, Below Average, and Combination of Both.

Grade Category	$n_1$	$n_2$	$\hat{p}_1$	$\hat{p}_2$	$\hat{p}$	$\hat{q}$	z -value	P -value
F Grades	656 8	2292	0.1098	0.0720	0.100	0.900	5.20	0.0000
Below Average	656 8	2292	0.2580	0.2247	0.249	0.751	3.17	0.0009
Combined F and Below Average	656 8	2292	0.3677	0.2967	0.349	0.651	6.23	0.0000

Table 4.

Comparison of Percentages Between Two Groups in Terms of Failures, Below Average Grades, and Combination of Both.

School Years	F Grade (Failure)	Percentage	Below Average	Percentage	F Grade and Below Average	Percentage
SY 2001–2002 to SY 2005–2006 (N = 6, 568)	721	10.98%	1, 694	25.80%	2, 415	36.77%
SY 2006–2007 to First Sem of SY2007–2008 (N = 2, 292)	165	7.20%	515	22.47%	680	29.67%
z-value		5.20		3.17		6.23
p-value		0.0000		0.0009		0.0000

A p-value of 0.0000 means that there is a significant decrease in the proportion of those who obtained grades of 1.9 and below until F. Since 0.0000 is below the 0.01 level of significance, this result is highly significant. This is also true for the decrease in the number of F grades as well as Below Average grades. The results indicate that the program significantly and dramatically reduced the number of failures and below average grades. Hence, based on the objectives of the program, one could conclude that the pre-algebra course was indeed a success.

The final bar graph (Figure 7) is the graphical representation of the decreases in percentages in the grades categories.

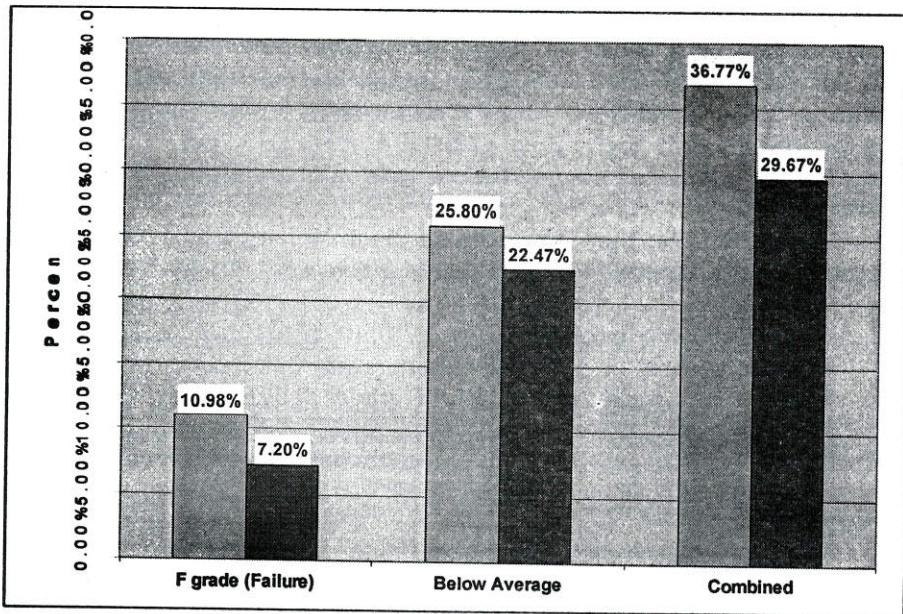


Figure 7. Comparison of Percentages of Failures and Below Average Grades Before and After Implementation of the Bridge program

### Conclusions and Recommendations

One reality in our educational system is that a sizable number of our high school graduates are not prepared for college and a good portion of this are under-prepared to take regular courses in college mathematics. In Silliman University, a program was set up to cater the mathematical needs of these students, dubbed as Math 1, a non-credit 3-unit course with description *Pre-Algebra Course*.

To identify the group of students who need to take this course, data were retrieved from students who took the regular College Algebra course for the last five years. The study includes the following variables: 1) High School General Average (HSG), 2) High School Mathematics Grade (HSM), 3) Silliman University Admission and Placement Examination (SUAPE) Score, 4) SUAPE Math component score (SM), and 5) College Algebra Grade. A regression analysis revealed that a grade in College Algebra (CAG) is strongly correlated with 1) High School General Average (HSG), and 2) SUAPE Math Score (SM).

The linear regression model with Durbin-Watson  $d$  statistic of 2.16 showed that

$$\text{CAG} = 0.076\text{HSG} + 0.073\text{SM} - 6.23.$$

With this equation, a desired College Algebra grade can be set to a certain value, and one can compute for the possible values of the other two variables that will come up with the pre-set grade. Hence, if one sets the College Algebra to a grade between 1.0 and 2.0, one can set the SUAPE Math Score (SM) to 25 and the student with High School General Average (HSG) of 75 to 84 has a good chance of getting a College Algebra grade of 1.4 to 2.0, using the equation above.

A flowchart was then drawn to aid the university admission office to identify students who need to take the pre-algebra course. After three semesters of implementation, the percentage of those who obtained below average and failure has significantly decreased from 36.77% to 29.67%. Using the  $z$ -test on the difference of two proportions, this decrease has a  $p$ -value of 0.0000. Likewise, the difference in percentages of F-grades (failures) has lowered from 10.98% to 7.20%. This decrease has a  $p$ -value of 0.0000 as well. Finally, the difference in percentages with those who obtained below average (grades between 1.0 and 1.9) has lowered from 25.08% to 24.47%. This decrease has a  $p$ -value of 0.0009.

Hence, the objective of decreasing the number of failures in College Algebra and insuring success in college is, in a way, achieved by offering the pre-algebra course.

It is recommended that schools who wish to set up a bridge program for their incoming first year students adopt this method or a variation of this method according to the nature of their admission policy. One drawback in offering a non-credit course is that it entails extra expense for the parents and extra time for the students in college. Thus, if a school does not intend to put up a bridge program for their regular mathematics courses, it is suggested that they group students according to their mathematical abilities. This will lighten the teacher's task of managing the classroom and diversifying one's approach to maximize effectiveness in transmitting mathematical knowledge to students.

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## Identifying Factors Related to the Sense of Coherence of Adult Asthmatics In Dumaguete City

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This study examines the relationship between the Sense of Coherence (SOC) and selected variables in 159 asthmatics, aged 20-40 years old. A two-part self-administered questionnaire was used to collect both the demographic data and the SOC levels of respondents using the "Orientation of Life Questionnaire" (OLQ). The data revealed that a majority of adult asthmatics have a high sense of coherence. No significant relationship was seen between SOC and age, gender, marital status, and educational attainment. Moreover, no significant relationship was observed between SOC and the nature and perceived helpfulness of societal support, level of major stressful events, and the self-reported health status levels of respondents. However, a significant relationship was observed between SOC levels of adult asthmatics and their perceived societal cohesion and structure as well as their levels of health maintaining behaviors. These findings strengthen the validity of the concepts of salutogenesis and the knowledge that SOC influences the maintenance of a person's health. Thereby, SOC may be tapped as a health management resource for people with asthma or other health related conditions.

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### Introduction

**I**nnovations in health care approaches through research and evidence-based practice aim to develop strategies to ensure the highest quality of health with the least cost. Among the innovations is the understanding of health as a cultural phenomenon, which has significantly advanced client-centered care. Because client participation and independence are highly valued in health care, questions and answers about their individual caring potentials have been sought. Antonovsky (1979) proposed the use of the Salutogenic Theoretical Model that focuses on health promoting factors to direct a person toward the healthy end of the health continuum. Salutogenesis explains how health is created and maintained by an individual. It highlights the individual's

coping mechanisms as important factors that buffer stressors that are ubiquitous in human existence.

The core construct of salutogenesis—the Sense of Coherence (SOC)—is understood as a global orientation that determines the extent to which one has a pervasive, enduring, and dynamic feeling of confidence in which the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; the resources available to meet the demands posed by these stimuli; and whether such demands are challenges, worthy of investment and engagement. These three components are called comprehensibility, manageability, and meaningfulness (Antonovsky, 1993). SOC is a universal concept that is applicable to all genders, social classes, regions, and cultures. It does not refer to a specific type of coping strategy, but to factors that, in all cultures, always are the bases for successful coping with stressors.

The individual is an open system, interacting in totality and recursively with an environmental field in social, cultural, and historical contexts. This lifelong, dynamic interchange of energy or essences allows the creation and reevaluation of meanings for the thinking individual, environmental adjustment and health maintenance as well as the management of threats to well-being through internal resistance resources that form the SOC. Considered as internal resistance resources against stressors are physical factors, intelligence, coping strategies, social support, financial power, and perceptions of cultural and societal stability. Successful adaptability patterns are dependent on the strength of an individual's SOC, so it follows that when SOC is weak, stressors are poorly managed.

Given this background, the present study aimed to understand the characteristics of adult asthmatics and their interactions with the environment in the Philippine context. Specifically, it describes the demographic profile of adult asthmatics in Dumaguete City; the nature and perceived helpfulness of their social support, societal cohesion and structure; the occurrence and nature of major stressful events in the past six months; their self reported health status; and health maintaining behaviors. It also explores the validity and usefulness of the Salutogenic Model for effective health management in adult asthmatics. Finally, it measures the SOC levels of the adult asthmatics and sought to discover whether or not there are significant relationships between the SOC levels and related variables.

### Review of Related Literature

Asthma, as a world-wide phenomenon, has posed threats to over-all health and productivity of individuals, with immense costs to society. According to World Health Organization (WHO), 125 million people suffer from asthma and the number is increasing rapidly (Tacio, 2003). Worldwide deaths from asthma have reached over 180,000 annually. In the Philippines, asthma affects eight million children with a prevalence rate of 12–15%. Out of

56 countries, the Philippines ranks 32<sup>nd</sup> in self-reported asthma. It is observed that in coastal communities, 20% of the population has asthma. These highly populated and progressive areas expose residents to health risks where stress and physical ailments are related to the congestion, pollution, and fast-paced life.

The 2003 U.S. statistics show that asthma accounted for 12.7 million physicians' office visits and 1.9 million emergency department visits in 2002, and approximately 5000 deaths annually. The cost of direct and indirect health care for asthma reached \$16.1 billion annually, with prescription drugs representing the largest single direct medical expenditure. Only 10 million of these cases are attributed to allergic reactions so the other causes of asthma like respiratory infections and stress may be implicated in its occurrence (Scketchikova, 2003). Previous asthma prevalence studies have established contrasting patterns of gender and age characteristics. Asthma was seen most commonly among boys than among girls but seemed to affect females more than males in adult population. In another study, however, no pattern was established with age increases or gender differences (Besagaña et al., n.d.; Asthma, 1999; Prevalence of Asthma, 2003). The prevalence also did not seem to be affected by marital status, but was influenced by educational levels and socioeconomic status (Atun, 2000 and Tuazon, 2000).

The potential of recovery and lengthening quality life for persons with lifestyle diseases like diabetes mellitus, hypertension, coronary artery diseases, and obesity are positively influenced by advancement in medicine, science and technology. However, even to individuals who cannot avail themselves of these advancements for one reason or another, health is still a right and is not a far fetched possibility. Studies show that quality of life and health are dependent on the important factor of individual coping and positive outlook on life (Cederblad, Ruksachatkunakorn, Boripunkal, Intraprasert, & Hook, 2003). Since the inception of salutogenesis, numerous studies have been done to test the applicability of the construct. They revealed that the SOC has an influence on illness-prevention and seems to mediate in and reduce the risk of all-cause mortality (Bengel, Strittmatter, & Willmann, 1999; Surtees, Wainwright, Luben, Khaw, & Day, 2003; Sanden-Eriksson, 2000).

Moreover, studies showed that SOC scores coincided with presumably less health-promoting dietary preferences (Lindmark, Stegmeier, Nilsson, Lindahl, & Johansson, 2005) and that SOC buffers the impact of recent stressful life events on self-reported health status (Richardson & Ratner, 2005). For example, Eriksson and Lindstrom (2006) point to a better-perceived health in general if SOC is strong, regardless of age, sex, ethnicity, and naturalness. Another study has shown that a strong SOC is associated with a reduced risk of all-cause mortality independent of sex and social class, cigarette smoking, body mass index, blood pressure, cholesterol levels, and personality traits like hostility and neuroticism (Surtees et al., 2003).

Good oral condition in the Oral Health Impact Profile (OHIP) was also attributed to high SOC (Savolainen, Souminen-Taipale, Hausen, Harju, Uutela,



Martelin, & Knuuttila, 2005). Studies have seen relationships between high SOC scores and positive attitudes toward menopause and sex, and its inverse relation to emotional exhaustion, depersonalization and personal accomplishment. A higher SOC correlated with high natural killer cell activity or NKCA (Nakamura, Ogawa, Nagase, Nakajima, Kodama, Ogino, & Oshita, 2001), considered an advantage in overcoming infections and other related diseases. Incidentally, there have been many studies on the SOC levels of individuals and populations, its correlation with health realities, the predictors of its occurrence, as well as its validity and reliability (Antonovsky, 1993; Flensburg-Madsen, Ventegodt, & Merrick, 2006; Volanen, Lahelma, Silventoinen, & Suominen, 2003; Cederblad et.al, 2003) but there has been no record of a study about SOC and asthmatic patients.

### Methodology

This study used a descriptive correlational approach to determine the relationship between the selected variables and the SOC among adult asthmatic individuals in Dumaguete City, Philippines. One hundred fifty-nine adult asthmatics participated in the study. The specific age group of 20-40 year olds was chosen because SOC levels are considered to be relatively stable in adulthood (Gruszczynska, 1999), and to eliminate the possible interaction of extraneous variables of lifestyle diseases that usually accompany late adulthood. Demographic profiles of the research participants were patterned to fit with the salutogenic model. Asthma and its relationships with SOC were specifically investigated and described for possible health management implications relevant to the nursing profession.

Participants were purposively selected by snowball sampling, and data were gathered with these ethical considerations in mind: informed consent, participant confidentiality, an explanation that the participants could withdraw from the study at any time without fear of coercion, and that withdrawal from the study would never negatively influence the quality of their future health care.

A survey form was used to gather demographic data and Antonovsky's (1979) SOC-29 point Questionnaire or 'Orientation to Life Questionnaire' (OLQ) was used to determine the SOC of the participants. The OLQ as a tool operationalizes salutogenesis and sense of coherence. It consists of 29 items with 11 items for comprehensibility, 10 for manageability, and 8 for meaningfulness. Considering the facet-theoretical design of the measure, the scale can be best understood as having one core factor and thereby is a uni-dimensional instrument to measure SOC. Thirteen of the items are formulated negatively and have to be reversed in scoring so that a high score always expresses a strong SOC. Cronbach's alpha measure of internal consistency ranged from 0.82-0.95 in 26 studies of SOC-29 (Antonovsky, 1993).

Participants selected a response on a seven-point semantic differential scale. Demographic data were described through frequencies and percentages.

As necessary, data were combined to fully describe variables such as level of social support, societal cohesion and structure, and self-health report. Values in these categories were computed and grouped according to low/poor level (1-4) and high/very good level (5-7). Data with multiple responses were clustered into categories to facilitate statistical analysis. To illustrate, scores 0-1, 2-3, and 4 and above, mean low, moderate or high stress levels, respectively; 1, 2-3, and 4-7 mean low, moderate or high health maintaining behaviors. The means of the SOC scores were also classified as low (1-4) and high (5-7). This procedure allowed the determination of the relationships between variables. The Statistical Package for Social Sciences (SPSS-Version 13) software was used to analyze the data.

The Chi-square test was used to determine relationships between categorical variables such as demographics and the SOC mean scores at 0.05 levels of significance. In cases where a 2 by 2 table was used, the Yates' Correction for continuity value (which compensates for the overestimate of the Chi-square value in a 2 by 2 table) was used to determine significance of relationships. In a case where the minimum expected cell frequency, which should be 5 or more, was not met, the Fisher's Exact Probability Test was used to determine significance. Finally, the reliability of the OLQ tool in a Philippine context was tested using the Cronbach's alpha coefficient of internal consistency. This test assumes that a normal range of values of coefficient alpha is between 0.00 and +1.00, and values of 0.7 and above reflect a higher internal consistency (Polit & Beck, 2004 and Pallant, 2001).

### Results and Discussion

Results show that there are more asthmatic adults aged 20-24 years in this sample than the other age groups. A majority of the respondents had attended college and graduate school. The data have some implications to the strength of SOC which is partially attributed to the internal resistance resource of intelligence. It also shows the importance that respondents and their significant others place on education and formal learning, and includes the associated benefit of increased financial capacity. In addition, there were more female adults compared to males in this sample who were asthmatic, the majority of whom were not married. This finding may be because individuals in the young adult age categories have more exposure to stress, allergens or asthma triggering substances or situations. On the other hand, this also suggests that adults aged 25-40 have more effective coping and management against asthma triggers or episodes and accordingly were not included in the sample of this study. The results also suggest that males have better coping and management against asthma triggers and episodes than females. On the other hand, it may also be noted that in this study, as in other studies in

the Philippine context, fewer males were recruited into the sample. This may have also resulted from their avoidance of identification with the illness in order to maintain a strong male image, which is valued in the culture (Panopio & Rolda, 2000).

Likewise, congruent with the Filipino characteristics of valuing close family ties and smooth interpersonal relationships, majority (66.04%) of the respondents claim that informal social support was available to them most of the time (Table 1). Furthermore, respondents claim that formal social support was only available to them sometimes (55.97%). The difference is also evident regarding which type of social support system is important to them. Seventy-two percent said the informal social support system is more important to them while only 13% are in favor of the formal social support system. The rest of the study participants considered both support systems as important.

Table 1.  
Availability of the Two Types of Social Support to Adult Asthmatics  
(N=159).

Rate of Availability of Informal Support	<i>f</i>	%	Rate of Availability of Formal Support	<i>f</i>	%
No	2	1.26	No	23	14.47
Sometimes	51	32.08	Sometimes	89	55.97
Most of the time	105	66.04	Most of the time	47	29.56
No Response	1	0.62			
Total	159	100.00	Total	159	100.00

Meanwhile, societal cohesion and structure are operationally defined as access to finances and safety which establishes predictability and protects individuals against excessive stressors. The results of the study show that majority of adult asthmatics perceive that their finances are adequate and more than adequate (Table 2). This observation appears to corroborate findings that the majority of the respondents have attained college or graduate school educational levels.

In a developing country like the Philippines, low economic levels demand that basic needs are given priority over education or intellectual advancement. However, it is common in the culture that financial difficulties are masked or denied in an effort to project personal capability and to maintain social activities and relationships, as well as to avoid the shame of being in need (Panopio & Rolda, 2000).

Table 2.

Perceived Adequacy of Monthly Income or Finances of Adult Asthmatics (N=159).

Degree of Adequacy	<i>f</i> of responses	%
Less than adequate	23	14.47
Adequate	111	69.81
More than adequate	17	10.69
No response	8	5.03
Total	159	100.00

Income has also been identified as having positive correlations with SOC (Leino-Loison, Gien, Katajisto, & Valimaki, 2004 and Fok, Chair & Lopez, 2005). This finding, however, contradicts the view of Victor Frankl (cited in Rawlins & Beck, 1993) that difficulties from inadequacy of finances may contribute to positive results to SOC and coping.

Majority of the respondents perceive their society as safe and comfortable sometimes (Table 3), while 38% perceive it as safe and comfortable most of the time. This shows that the participants have considerable feelings of discomfort and perceived danger in society. Perhaps, the respondents' SOC levels are not very high because danger and discomfort are contradictory to SOC's three components of comprehensibility, manageability and meaningfulness (Antonovsky, 1979).

Table 3.

Perceived Safety and Comfort in Society of Adult Asthmatics (N=159).

Degree of Comfort	Frequency of Responses	Percent
Not safe or comfortable	6	3.77
Sometimes safe or comfortable	91	57.23
Most of the time safe or comfortable	61	38.37
No response	1	0.63
Total	159	100.00

The data further showed that the majority of the respondents (more females than males) have experienced major stresses in the past six months. It is noteworthy that the highest ratings of stress were caused by illness, followed by the emotional and physical environment (in the second and third places) for both male and female respondents (Table 4).

Table 4.  
Specific Types of Stress of Adult Asthmatics (N=159).

Type of Stress	Male n=62	Female N=97	Total N=159	%	Rank
Illness	28	60	88	55.34	1
Emotional	26	42	68	42.77	2
Physical environment	15	31	46	28.93	3
Economic	13	19	32	20.13	4.5
Others (mental stress, physical stress and loss of significant others)	12	20	32	20.13	4.5
Psychological	8	17	25	15.72	6
Spiritual	6	7	13	8.18	7
Cultural	1	1	2	1.26	8

About 69% of adult asthmatics rate their health as good (Table 5) while 24% rated it as very good. The self-rating of health may have been influenced by asthma episodes that 63% claimed to have only occurred 1-3 times in the past six months. Aside from environmental changes, going on vacation, increased activity stress, intense emotions, crying or laughing, has been thought to cause asthma (Schetchikova, 2003). In the context of this study, the six-month period of the study (September-February) included periods where respondents may have been exposed to a lot of social activities (fiestas, All Saints and All Soul's days, Christmas, New Year, and Valentines), travel (for school breaks and long holidays), and environmental changes (cold weather and environmental air pollution from holiday fireworks and travel).

Table 5.  
Self-ratings of Health by Adult Asthmatics (N=159).

Rating	n	%
Poor	9	5.66
Good	109	68.55
Very Good	39	24.53
Excellent	2	1.26
Total	159	100.00

The Filipino male mentality may also have influenced the lowered responses because in this culture men tend to project a strong image (Panopio & Rolda, 2000). The respondents' individual previous experiences may have influenced their acquired meanings of stress and stressors. Furthermore, their learned behaviors and coping can also be reasons for variations in the responses on types of stress experienced, and self rating of health or frequency of asthma episodes.

With regard to the management of asthma episodes (Table 6), majority of respondents took medications (prescribed or not prescribed) as well as had medical consultation. Prescription drugs was noted as the highest contributor to asthma costs. Respondents may have chosen these modes of management with reference to financial adequacy, the influence of tri-media, and the availability of health managed organizations and health insurance. It is also noteworthy that a few have managed their condition without the help of pharmacology. The 'no action' responses can be attributed to good internal coping of the respondents. A few were admitted to the hospital while others engaged in techniques that included the following: rest, coffee intake, diversion and exercise, water therapy, avoiding allergens, high fowler's position, and reduction of activities. Some of these management techniques are similar to those identified by Schetchikova (2003).

Table 6.  
Types of Management of Asthma Episodes by Adult Asthmatics (N=159).

Types of Management of Asthma Episodes	Male (n=62)	Female (n=97)	Total (N=159)	%	Rank
Took medication (prescribed)	37	68	105	66.04	1
Sought Consultation	10	29	39	24.53	2
Took medication (not prescribed)	16	14	30	18.87	3
No action	9	8	17	10.69	4
Admission to the hospital	5	5	10	6.29	5
Others (rest, coffee, diversion and exercise, water therapy, avoiding allergens, high fowler's position)	1	8	9	5.66	6

Majority of respondents practice health maintaining behaviors such as eating nutritious food daily, engaging in relaxation and leisure, sharing problems with significant others, exercising regularly, taking maintenance drugs as prescribed, and having regular check-ups (Table 7). Other practices included reading the Bible, sleep and rest, body massage, avoiding food and allergens, and avoiding heavy work. Only a few (11.3%) engaged in regular medical checkups.

Table 7.  
Health Maintaining Behaviors of Adult Asthmatics (N=159).

Health Maintaining Behavior	Male (n=62)	Female (n=97)	Total (N=159)	%	Rank
Eat nutritious food daily	39	47	86	54.09	1
Engage in relaxation and leisure	33	52	85	53.46	2
Share problems with significant others	17	48	65	40.88	3
Exercise regularly	31	33	64	40.25	4
Take maintenance drugs as prescribed	19	44	63	39.62	5
Have regular medical check-ups	8	10	18	11.32	6
Others (sleep and rest, vitamins, read the Bible, body massage, avoid food and allergens, avoid heavy work)	6	10	16	10.06	7

Sixty percent of respondents have high SOC levels while about 38% have low SOC levels. The latter group in effect may lack coping resources to adapt to the environment. With reference to the previous data presented, the levels of SOC in the respondents is influenced by the internal resistance resources that include education, social support, adequacy of finances, safety and comfort in society, physical health, stress as well as coping strategies and health maintaining behaviors. These variables have to be correlated with the SOC levels of the respondents to finally determine which are significantly related to the latter.

Chi-square test results (Table 8) show varying significance between SOC levels and other variables of adult asthmatics. No significant relationships were observed between SOC and age, gender, marital status, and educational attainment with p-values of 0.346, 0.480, 0.747, and 0.334, respectively. Furthermore, the statistical test revealed no significant relationship between SOC and social support levels, levels of stress, and self reported health status with p-values of 0.087, 0.087, and 0.209, respectively.

Table 8.  
Chi-square Test Results Between Sense of Coherence Levels and Other Variables

Variables	Computed Values ( $X^2$ )	p-Value	Interpretation
Age	3.309	0.346	Not significant
Gender	0.498	0.480	Not significant
Marital status	0.104	0.747	Not significant
Educational attainment	1.421	0.334	Not significant
Cohesion and structure	11.218	0.001	Significant
Support levels	2.931	0.087	Not significant
Levels of stress	4.875	0.087	Not significant
Health maintaining activities	7.715	0.021	Significant
Self-reported health status	1.581	0.209	Not significant

In this study, the non-significance of the relationship between age and SOC may be plausibly understood since all respondents already belong to the age range of adulthood. There are no respondents in the sample representing a younger and a much older population, therefore, variability of SOC may not be observed. However, some SOC studies have shown its applicability to children 12 years and older, and its stability in middle to late adolescence (Buddeberg-Fischer, Klaghofer, & Schnyder, 2001; Honkinen, Suominen, Rautava, Hakanen, & Kalimo, 2006). This supports the argument for the validity of Antonovsky's (1979) Orientation to Life Questionnaire and is also the basis for non-significance, based on conflicting adult range categories. This data support previous findings that the SOC scale is largely sex neutral (Volanen et al., 2003). It also negates previous studies showing stronger SOC

levels in males than in females (Buddeberg-Fischer et al., 2001; Volanen et al., 2003).

In Philippine culture where the male positive image is supported, higher male SOC levels would have been a logical observation. It is possible that non-significant results arose because of the inequality of sample sizes in both genders where there were more female than male respondents. The same inequality of sample sizes representing marital status may also explain the non-significance in relation to SOC levels. Education has implications in achieving a sense of coherence because understanding and knowledge contributes to comprehensibility, manageability, and meaningfulness. As one study pointed out, SOC strongly predicts psychological health associated with mentality (Flensburg-Madsen et al., 2006). The insignificant relationship between SOC and educational attainment may point out, however, that inasmuch as intelligence is considered as an internal coping resource for a higher SOC, educational attainment is not synonymous with, nor is an assurance of, intelligence.

The Chi-square test revealed that SOC has a significant relationship with perceived societal cohesion and structure with a p-value of 0.001. These results support findings of previous studies that wealth, cultural stability, and person-environment fit has associations with a high SOC (Antonovsky, 1993; Ying, Lee, & Tsai, 2000). According to Davis and Cohen (n.d.), interventions to address individual needs in society (e.g. insufficient finances, poor social supports, poor diets, adverse environmental exposures, community factors and characteristics, and many other health risks) do little to alter the broader social and economic forces that influence these risks. Respondents experienced high stress levels and identified negative stressors from the physical environment, economic, spiritual, and cultural dimensions. All of these stressors contribute much to a decreased perception of comfort and safety in a community, thereby translating into low societal cohesion and structure and low levels of SOC in some respondents.

SOC also revealed a significant relationship with health maintaining behaviors with a p-value of 0.02. Patients with a strong sense of coherence are likely to take an active role in shaping their own health outcomes (Fok et al., 2005). Because the interactions of the individual in the environment are recursive, good health maintaining behaviors also contribute to a stronger SOC.

### Conclusions and Recommendations

No significant relationships were found between SOC and demographic variables, nature and perceived helpfulness of social support, level of major stressful events in the past six months, and self reported health status levels. These results may have been influenced by unequal representation of respondents that were recruited into the sample, inhibiting maximal extrapolation of these findings to the broader population. However, SOC levels



were significantly related to the nature and perceived societal cohesion of the adult asthmatics. This suggests that safety and comfort are significant contributors to good internal coping and a stronger SOC of an asthmatic individual. A helpful perception of societal cohesion and structure can be started and maintained by the basic family unit, a supportive educational system, and a well regulated society.

SOC levels were also significantly related to health maintaining behaviors. In this perspective, an asthmatic individual may be individually empowered to maintain health and quality of life without immense cost by tapping his or her sense of coherence. This study strengthens the validity of the concepts of salutogenesis and the claim that SOC is a factor that influences the maintenance of a person's health, and thereby may be tapped as a health management resource for asthma or other health related conditions.

With reference to the study results and its limitations, it is recommended that a similar study be conducted in a larger population with sample representatives across the lifespan. This will allow exploration of the other demographic variables and its relationship with SOC and may also lead to innovative possibilities of preventing adult asthma episodes from an as yet uninvestigated younger asthmatic population. Having found societal cohesion and structure as significantly related to SOC, innovative and interdisciplinary strategies for the improvement and maintenance of these salutogenic factors in the family, school, and society in general would contribute to the assurance of a high quality of life for asthmatic individuals. Reinforcement of health-maintaining behaviors by the individual, community, and health sectors should be done as they are also significantly related to SOC. More exploration on the applicability of SOC for the prevention of lifestyle diseases and cost cutting interventions, are likewise recommended.

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## **Computer Simulation On Prediction of Possible Locations of Rupture In An Abdominal Aortic Aneurysm (AAA)**

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From a biomechanical point of view the possible locations of rupture in an abdominal aortic aneurysm (AAA) could be those points that are subjected to high wall stresses. Where and when rupture will occur in an AAA cannot be predicted. If these locations of rupture can be identified, proper surgical intervention is possible. The present study makes use of images from Computer Tomography (CT) scans of a patient which when converted to solid models using the 3-D solid modeling software can then be analyzed with the Finite Element Analysis (FEA).

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**I**t is difficult to predict when an aortic aneurysm will rupture. Early detection and diagnosis are important so that surgical grafting can be done before an aneurysm ruptures. Research has been focused on the relationship of aneurysm rupture to diameter and asymmetry (Vorp, Raghavan & Webster, 1998), surface geometry (Sacks, Vorp, Raghavan, Federle & Webster, 1999, Smith, Sacks, Vorp & Thornton, 2000), finite strain material model (Raghavan & Vorp 2000), and mechanical wall stresses (Raghavan, Vorp, Federle, Makaroun & Webster, 2000). From a bio-mechanical standpoint, risk is more related to mechanical wall stresses (Vorp *et al*, 1998). Determination of wall stresses in an abdominal aortic aneurysm (AAA) would be of great help in evaluating the need for surgical intervention to avoid rupture

(Raghavan & Vorp, 2000). This paper presents a computer simulation to locate possible rupture points of an abdominal aortic aneurysm.

The method currently used in looking at the condition of the aorta is through small openings using a video camera. Imaging methods being used are aortography, intravascular ultrasound (US), computed tomography (CT), and magnetic resonance (MR) angiography for investigations of the lumina (Lee, Williams & Abrams, 1997). There is therefore a need to find a way that will provide an early detection and diagnosis of an AAA, before proceeding with the usual surgical intervention. The present study has been made to develop a cheap and practical way to monitor patients with AAA, using available software and medical equipment.

### Methods and Materials

The determination of the locations of maximum wall stresses in an AAA in this study was done using two phases: solid modeling and finite element analysis. Computer modeling—translating a real world object or phenomena into computer graphics or mathematical equation—was used to make an AAA tissue model. The geometry of the actual tissue of a patient can be approximated using slices from CT scans as it is not practical to see the actual aorta during monitoring. Raghavan and Vorp (2000) evaluated the applicability of using a finite strain constitutive model as a biomechanical tool to evaluate rupture potential of AAA and found a very good agreement ( $R^2 > 0.9$ ) between experimental data and the proposed functional form of the constitutive model. Also, using finite element simulations, they were able to show that the computed AAA wall stresses changed only 4% or less when parameters were varied within the 95% confidence intervals for the population studied. AutoCAD and ProEngineer software were used to create the AAA model. There was also no need to determine important tissue properties for stress and displacement analyses because there is already available data on them. Ansys software was used in the finite element analysis to determine stresses and displacement. As this study—conducted in my (Marañon) home in Bago City, Negros Occidental from 2001 to 2004—is a developmental alternative mechanism, the basis of predicting the locations of high wall stresses was done visually and examined on the basis of the engineering concept of combined stresses in a cylindrical shell.

#### Phase I: Solid Modeling

##### Scanning of CT Scan Images

The CT scan film of a patient was given to me (Marañon) by a medical doctor for use in this study. It contained 24 slices or sections of the abdominal aorta at 5 mm spacing each. Each section in the film was scanned by a personal computer (PC) scanner into a computer image file (sample, Figure 1).

### **Tracing Sections and Lines**

Using AutoCAD software, each image file of the section was inserted into a drawing file and traced using the spline command. Other tracing software can be used but this available licensed software at the University of the Philippines in Diliman was used. A total of 36 points was used to create each spline. The 10 cm vertical scale was also traced as a line to serve as a common guide for all sections (sample traced spline and line, Figure 2).

### **Blending Sections**

From this traced spline and line for every section, ProEngineer software was used to form a solid model of the abdominal aorta. Other solid modeling software can be used but this available licensed software at the University of the Philippines in Diliman was used. The blend command was used. The solid was drawn to a scale of 1mm : 1.9mm.

### **Shell Creation**

Using the ProEngineer software (Parametric Technology Corporation, Waltham, MA, USA), the solid model was opened and the shell command was used to create the shell. The shell should have a uniform thickness of 1.5mm or 3.61mm in the drawing but for a more conservative result, 1.1mm as wall thickness was used.

### **Saving AAA Model Into IGES Format**

In order that the ProEngineer file of the AAA model be imported to the Ansys software (Ansys Inc., Houston, PA, USA), it must be converted into a format which Ansys can accept. One format is the International Graphics Exchange System (IGES) format. The next step was to save the file in the IGES format.

## **Phase II: Finite Element Simulation**

### **Importing Solid Model**

The file in the IGES format was then imported into the Ansys software with the aid of the Mechanical Toolbar. Other finite element software can be used but our choice was the available licensed software at the University of the Philippines in Diliman.

### **Assigning Material Properties**

The model has to be assigned its material properties. Structural properties such as the elastic modulus of 5 MPa and Poisson's Ratio of 0.49

were specified based on the results of previous studies that showed that the AAA tissue is nonlinear, hyperelastic and anisotropic (Raghavan & Vorp 2000). For a simplified analysis and verification of this developmental alternative mechanism, the AAA tissue was considered to be linear, hyperelastic, isotropic, thin-walled shell in this study using a finite strain shell element with 4-nodes (shell 181) assigned to the model.

### **Assigning Loads and Constraints**

Next, loads and constraints must be assigned to the meshed model. An internal pressure load of 0.016 MPa (20 mm Hg) to simulate end-systolic conditions was assigned to the model as a basis because this value differs from patient to patient. This internal pressure was applied to the shell considered as thin-walled, as it is at this stage of the cardiac cycle that the AAA is most likely under maximum wall stress (Raghavan & Vorp 2000). The systolic pressure was used in the static stress analysis evaluation of the maximum stress acting on the AAA wall for the assessment of its risk of rupture (Raghavan *et.al.*, 2000). The top and bottom areas were axially constrained and the outer surface of the AAA model was considered as load-free (Vorp *et.al.* 1998).

### **Loads Assignment**

The fourth step was to assign loads to the meshed model. In addition, both ends of the AAA tissue were constrained in the axial direction.

### **Analysis Type**

For this initial study, a structural static analysis was employed. The shear stresses caused by flowing blood were shown to be small in magnitude compared to the stresses caused by the distention of the wall so this was not considered (Vorp *et.al.*, 1998).

### **Determining Wall Stresses**

The wall stresses were solved using static analysis with internal pressure and fixed axial constraints on the shell. Quadrilateral shell elements are usually used for shells as presented in previous studies. In this study, Ansys software 4-node finite strain shell elements (shell 181) was used to mesh the model because 1) it is suitable for analyzing thin to moderately-thick shell structures; 2) it is well-suited for linear, large rotation, and/or large strain nonlinear applications; and 3) it enhances the accuracy in bending-dominated problems (Ansys Documentation version 6.0). Von Mises stress distribution was used in the determination of equivalent wall stresses as a convention because it is the best index in

the absence of a suitable failure theory for AAA tissue (Raghavan *et.al.*, 2000).

Visual color legends of stresses was used as basis for determining locations of high wall stresses in an AAA and investigation was made using the engineering concept of combined stresses in a cylindrical shell in addition to tangential and hoop stresses.

## Results

### Solid Model of the Aorta

The resulting solid model of a patient's AAA using ProEngineer software blend command where the posterior and anterior positions are presented shows that the solid model is slightly bigger than the actual dimensions of the patient's AAA since a scale of 1mm : 1.9mm was used (Figure 3). The resulting shell model of a patient's AAA using ProEngineer software shell command (Figure 4) reveals that the maximum thickness that was accepted by the software was only 1.1mm due to the irregularities of the cross sections so this value was used. The file was saved also to the IGES format in preparation for import to Ansys software.

### Mesh of the Model

A total of 19 areas were meshed using smart sizing mesh. The meshed model of the AAA is shown in Figure 5.

### Wall Stresses

The von-Mises stress was solved. The resulting stress plot of the AAA in pascals (Pa) appears in Figure 6.

### Wall Displacement

The maximum displacement is located in the lower part of the bulging section (displacement plot, Figure 7).

### Effect of Concavity on Wall Stress

A specific geometry was used to determine the effect of concavity factor on wall stress. Concavity factor was defined as the ratio of depth to width of opening. The computed wall stress in pascals (Figure 8) increases to a maximum located on concave surface as the concavity increases to a certain value and the computed wall stress decreases where its location shifts to the inflection points after a certain value where the computed wall stress is maximum.



were specified based on the results of previous studies that showed that the AAA tissue is nonlinear, hyperelastic and anisotropic (Raghavan & Vorp 2000). For a simplified analysis and verification of this developmental alternative mechanism, the AAA tissue was considered to be linear, hyperelastic, isotropic, thin-walled shell in this study using a finite strain shell element with 4-nodes (shell 181) assigned to the model.

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### Discussion

Results indicate that the sections are irregular and asymmetric in the AAA tissue model. This differs from patient to patient. Thickness was made constant to investigate the effects of other factors although it is considered as one of the major factors causing rupture of tissue. To be conservative in the monitoring process, the minimum thickness in the CT scan slices should be used in the model.

This equivalent stress is patient-dependent so it would not be used as a general basis for analysis. The locations of these high stresses can be seen visually on the vertices of saddle surfaces (necks) which convexes internally, especially on those that expand or stretch and/or experience bending and twisting motions; and at inflection points. This is so because if we apply the same pressure to two surfaces, one concave internally and one concave externally (saddle surface), and compare the resulting stresses, higher amount of stress would be experienced by the surface which is concave externally or convex internally. Further, bend and twist effects increase the wall surface stress.

The movement of an AAA tissue when simulated is found to be geometry-specific which causes axial stresses, bending stresses, and torsional stresses to be experienced by the tissue in addition to the hoop and tangential stresses due to internal pressure. In addition to thickness and internal pressure, axial load, bending moment and torque should also be considered in the prediction of locations where rupture in an AAA could occur. The most conservative approach, therefore, is to consider the combined effects of all of these stresses in an AAA.

In actual AAA geometry where there are changes in concavity, inflection points are also critical locations as a combination of hoop and tangential stresses are experienced. It is necessary that geometry and stresses should be evaluated in the monitoring of patients with AAA so that appropriate surgical intervention could be done prior to rupture of tissue.

### Conclusion and Recommendations

Pending more studies to confirm our results, it is possible that time and sites of AAA rupture may be predicted before surgical intervention with the use of CT scans and computer simulation. The value of maximum equivalent stress is a function of the sections, thickness, asymmetry, shape, surface geometry, tortuosity, concavity or curvature, strain or expansion, bending, twist, and so on. The locations of high stresses in an AAA that can be possible locations of rupture aside from thickness are those on the inflection points and vertices of the internal convex surfaces (necks) that expand or stretch due to internal pressure and/or experience twist and/or bend.

Further studies are needed on the use of modern imaging methods and software. The following important points must be taken into consideration: the use of the actual varying thickness of the AAA for a more accurate instantaneous result for a specific patient; the AAA as a nonlinear, anisotropic, finite strain material; the effects of fatigue due to the cyclic behavior of internal pressure from systolic to diastolic and vice versa; the effects of the velocity and weight of the blood flowing through the abdominal aorta; and, the eddy effect.

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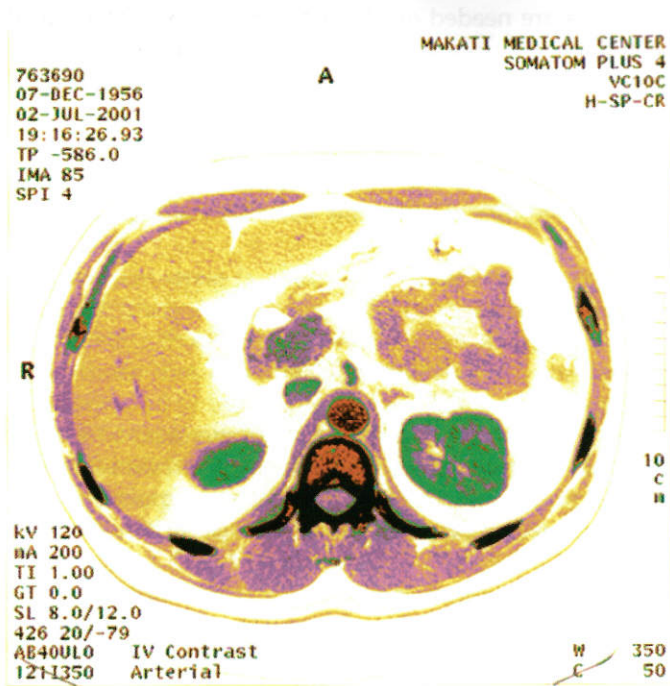


Figure 1. A sample image file scanned from a CT scan film.

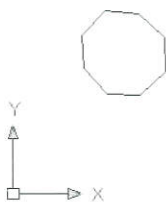


Figure 2. A sample of the traced spline and line from an image

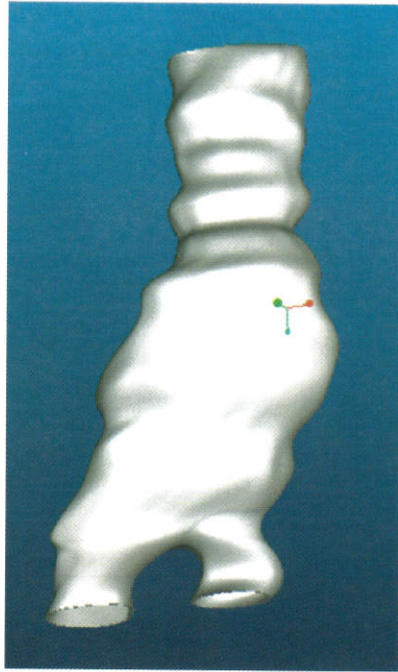


Figure 3. Solid model of a patient's AAA.

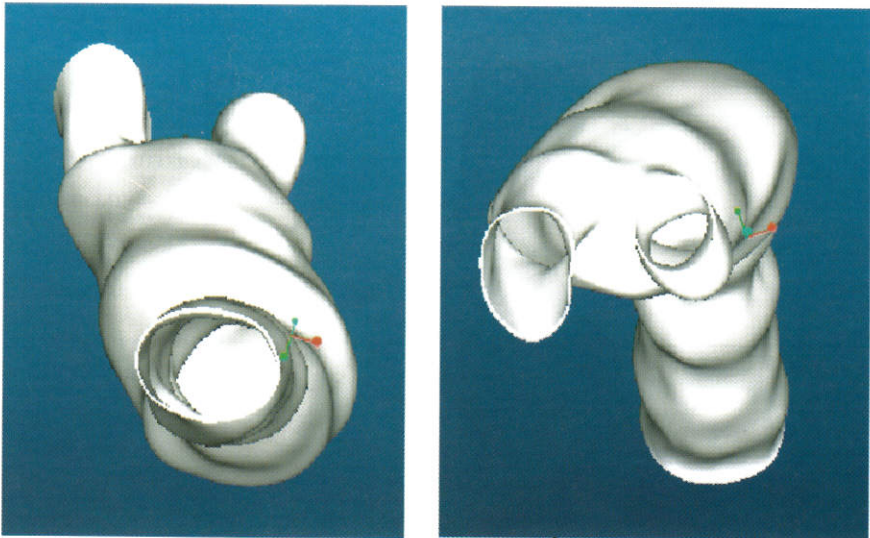


Figure 4. Shell model of a patient's AAA.



Figure 5. Meshed model of an AAA tissue.

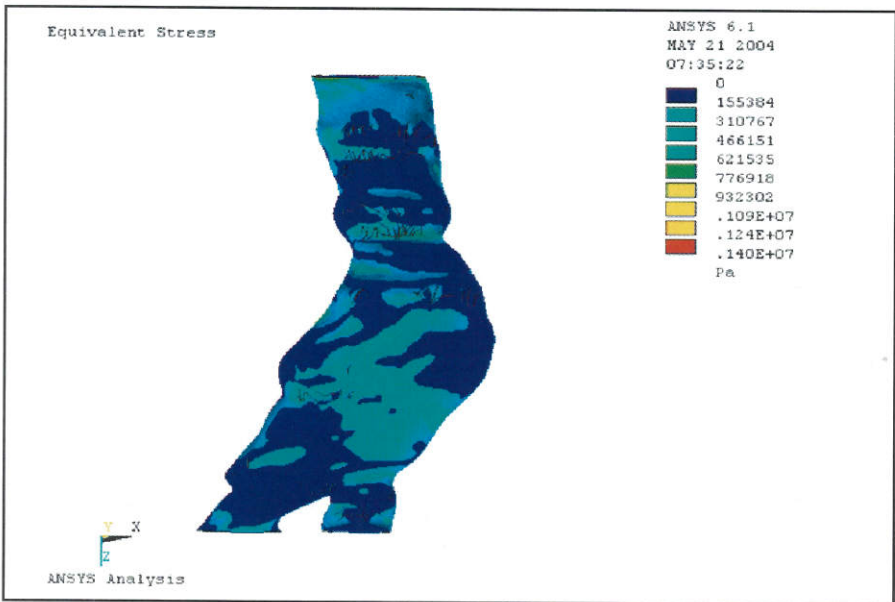


Figure 6. Equivalent stress plot results of a patient's AAA in Pascals.

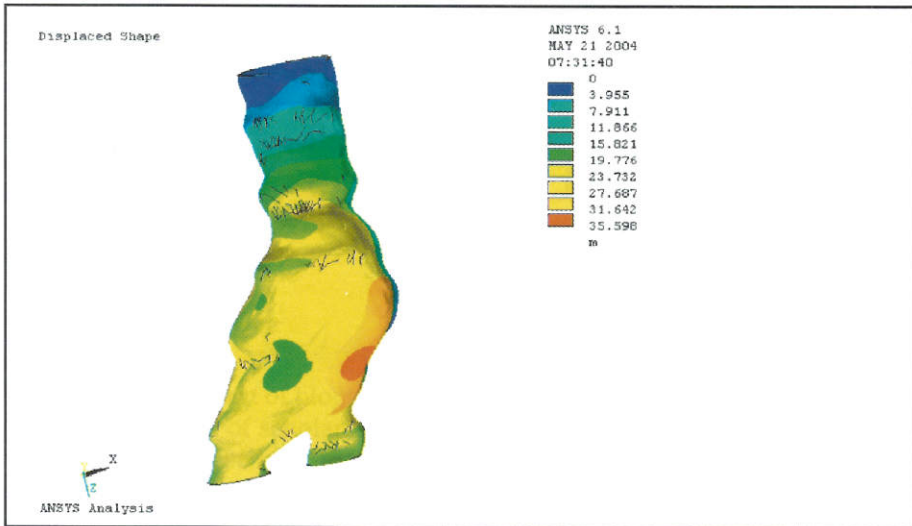


Figure 7. Displacement plot results of a patient's AAA.

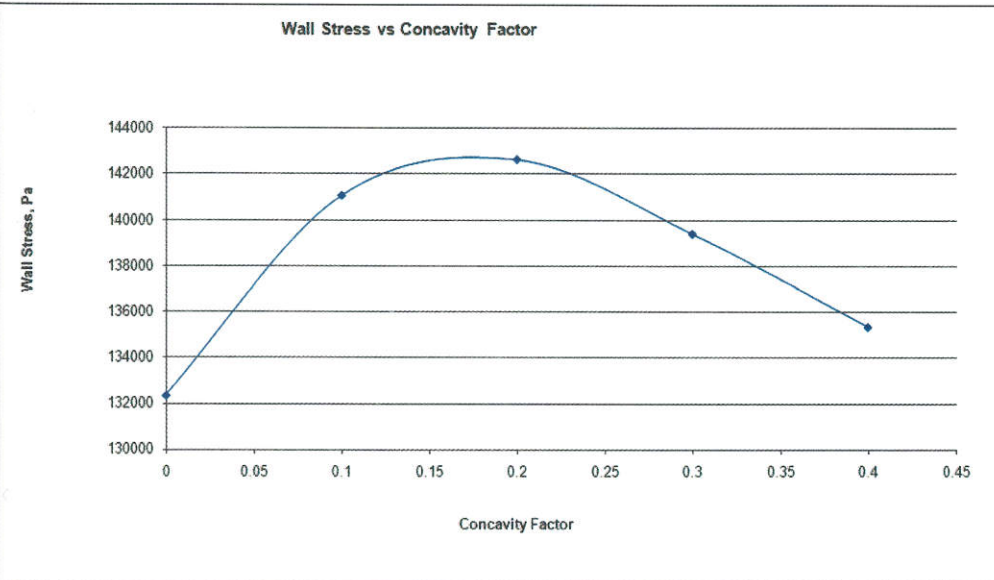


Figure 8. Concavity factor vs wall stress.





NOTES

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## Notes on the Psychology of Blogging: Motivation and Protected Space in an Age of Instant Communication

The phenomenon of blogs, and the act of blogging itself, has galvanized the attention of scholars and scientists interested in studying the yet-wholly undefined mechanisms of current culture, one that is increasingly steeped in personal technology. The impact of such current technological extensions of our every day lives—from cellphones to the Internet to iPods—has inspired a close examination of the way such things have changed our discourses in linguistics, psychology, and other related fields. This talk entertains one basic question. This essay attempts to provide us a significant insight to the psychology of blogging.

*Why do people blog?* That is the question. And the answer seems to be this: It is perhaps the only way for people in the Internet Age to offer a buffered kind of contact in a time when one easily drowns in the constant deluge of immediate communication.

The operative word here is “buffer”: blogging, thus, is a form of communication that blunts the edges of instantaneousness. Blogging, one can say, is a very modern way of hankering back to the simplicity of old days when to communicate did not ask of anyone the sometimes impossible ability to multitask, or to shrink and panic under the demands of answering too many messages brought in by our too-reliable Information Age machines.

Let me explain further by asking you to imagine how we go through a typical day in our technologically-charged reality. It is a life increasingly governed by the ease and immediacy of fax machines, photocopiers, the Internet, iPods, laptops, cellphones, and Blueberrys. It is a life where communication is fast and demands fast response, such as in SMS, emailing, chatting, and instant messaging. In the digital age, everything is instant, like our coffee.

It is easy enough to trumpet the benefits of such instantaneous culture. I, for one, have benefited greatly from the technology that has made life easier for most of us. Once, due to my unfortunate forgetfulness, I still managed to plan and execute an entire poetry reading event with only four hours to spare before the scheduled time, and this I was able to do because of one device: my cellphone. To prepare for a talk on blogging,

I zapped through Google Scholar the night before to consult information in a way that was impossible in the days before digital, that analog past that now seems so quaint, so slow.

But nobody has ever thought out fully what effect this instantaneousness of our age has impacted our own psychology. One possible result may be the characteristic passivity, maybe even laziness that is said to infect many members of the so-called Generation Text. Older generations complain about how this current generation seems to have no interest in anything, be it politics or popular culture. In an age of instant gratification and the availability of so much choices, the response of young people today seem to be withdrawal or a studied disinterest. Patience and hard work as requisite virtues seem to be on the wane, or so older people say.

And yet, it is interesting to note that there is one kind of communication medium that seems to become exponentially popular in the Internet Age—and more so among young people. This is highly ironic if we are to take as sociological truth the passivity of the current generation. That communication medium, of course, is blogging. From the few hundred blogs that started the phenomenon in the 1990s, as of 2008, Technorati—the most reliable tracker of blogs today—estimates that there are 50 million blogs in existence, and reports that the number is still growing fast.

For the uninitiated, a “blog” is simply a shortening of the combination of two words: web and log, a “weblog.” The web, of course, is the imaginative name given cyberspace or the Internet. A log, on the other hand, simply means what we know of the word: dated entries, like in a diary, or a journal.

I must take note now that while it is generally said that blogging is a grassroots form of journalism, the vast majority of blogs are actually written by ordinary people for much smaller audiences, and for more personal agendas. Overall, the allure of blogs combines the immediacy of up-to-the-minute posts with a strong sense of the author’s personality, passions, and point of view.

It goes without saying that the spirit or the mechanism that drives blogs is, for the most part, nothing new. Ever since man learned language and learned how to write, there has always been someone who has made it a habit to chronicle the intricacies of day-to-day living. We called it keeping a diary then; some would call it journaling. Some cultural pundits even consider personal newsletters that proliferated in the 1960s and the 1970s, the slambooks that became the rage in the 1980s, and the ham radios that for a short while beguiled a significant fraction of young Filipinos (who owned handheld radios) in the early 1990s as precursors to the mania that characterize blogging now. Blogging takes that spirit, and that act of making a public bubble for our private lives, into the Internet Age. Bloggers today can be defined using the following parameters:

1. The blog writer (or blogger) posts or publishes entries on a regular basis, with each entry coming in with a title and a date.

2. These entries are arranged in reverse chronological order on the webpage, with the latest one appearing first. All other entries are also archived in a weekly or monthly basis.
3. Each entry can be equipped with a mechanism for feedback in the form of comments.
4. And lastly, the blog is a public space, with all entries published with the blogger's knowledge that all he has written can be read by the rest of the world.

Those last two parameters provide us with the main difference between blogging and diary-keeping. A diary can be kept under lock and key, and it often is primarily a form of writing meant for personal consumption, a diarist's way of purging personal experience into the hallowed pages of a journal without the danger of the world coming in with scrutinizing curiosity. Blogging is different: while there are types of blogs (such as with LiveJournal) that allow one to "lock" specific entries and permit only a select few to read them, for most bloggers privacy over what one has written often takes a backseat. Most of us blog knowing full well that we are writing for the world.

There are several blogging practices that can be cited as common among most bloggers. The posting of entries are often frequent, although frequency is highly relative: some bloggers post multiple times a day, others once a month. Some people stop blogging after inadvertently hurting other people with their posts, and others stop because of plain burn-out.

The post range from the very personal to the highly impersonal. Entries, too, can be processed and written instantaneously, although sometimes a blogger can struggle with something to say.

There is great diversity in blogging, with bloggers covering assorted topics. While most blogs are personal chronicles of ordinary lives, others blog about politics, entertainment, literature, hobbies, and causes. There are pornographic blogs, and vegetarian blogs. There are conservative blogs, witchcraft blogs, computer blogs, psychology blogs, travel blogs, pet blogs, cooking blogs, poetry blogs, technology blogs, and fashion blogs. There are blogs that link other blogs (which are called filter blogs), and there are blogs that criticize other blogs. There are blogs that tell you how to make money with your blog. Some blogs feature only videos, which are then called "vlogs." Some feature sound entries, which are called "podcasts."

Who reads this blogs? The answer to this question has never been exactly defined, given the anonymous nature of most of its readership. (We can deduce, however, that readership requires Internet access, which in the Philippines can mean an audience roughly made up of the middle to the upper classes, consisting of people who have Internet access either at an "Internet café" or at home.) But there are popular blogs who are ranked by Technorati, a popular search engine that exclusively ranks and searches through blogs, via the number of links they command and the traffic they

generate. Most blogs, of course, remain completely unknown and unheralded. But there is one thing one should know about bloggers: most bloggers are also acutely aware of their readers, and it can be said that authors learn to calibrate what they should and should not reveal. This I will discuss further later on.

I first ventured into blogging more than five years ago with a blog I called "The Secret Tango Dancer," which I soon dropped after a year or so because somebody had broken my heart and I wanted to hide and then to start anew with something I called "How to Live"—a blog title which betrayed my pathetic and too-dramatic attempt to console a broken heart. This blog soon was renamed "Eating the Sun," which also soon became "The Spy in the Sandwich." How do I choose these names? God knows how. They just sounded "interesting" to me. You will take note, however, that I had randomly abandoned one blog and then created another in the course of half a decade until I finally settled into this last one. Blogging then can be taken in as an evolution of an online personality—we evolve with it until the skin feels just right.

My reasons for starting blogging were, for the most part, entirely haphazard. But I think I began my first blog for sure because I hated the whole intricate business of emailing—especially email that contains practically the same information we copy-and-paste for a variety of recipients. Emailing seemed too intrusive, and demanding. Blogging, on the other hand, seemed to me like the perfect recourse to that tedious process of correspondence in the age of instant communication: with just one click of the "publish" button, we communicate with a network of friends and family almost instantly, and get feedback almost as instantly as well. What's more, the feedback mechanism is quite leisurely and holds no demand: readers choose when to comment, and bloggers choose when to reply, *if we want to reply at all*.

There have been some attempts to study blogging in terms of its psychology and it being a phenomenon. In a 1999 study, Kiyomi Yamashita, Yasuyuki Kawaura, and Yoshiro Kawakami first explored the multifacetedness of blogs, citing specifically its "self-oriented" and "reader-oriented" features. They found that blogs shared the "closed space" characteristics of a conventional diary in the sense that they tend to reveal more information than the author would disclose in face-to-face communication; however, they noted that the act of releasing the text as web content signals knowledge by the blog author that these contents can be viewed anonymously by many people, implying that the author wants the contents to be known.

In 2000, Sandeep Krishnamurthy, in his study of the multidimensionality of blog conversations, proposed classifying blogs into four basic types based on whether they are personal vs. topical and individual vs. communal. In 2002, Susan Herring, Lois Ann Scheidt, Sabrina Bonus and Elijah Wright analyzed the contents of 357 random blogs, and suggested three "genres" as to the purpose of blogging: (1) personal journals, (2) filter blogs, and (3)

knowledge blogs. They also found that an overwhelming number of blogs were personal blogs.

Of interest to psychologists is a study in 2005 by David Huffaker and Sandra Calvert who demonstrated that blogs are helpful determinants for teenage bloggers in shaping their individual sense of gender identity, as gleaned from their revelation of personal information in their blogs, in the way they employ language styles, and in the way they readily present their nascent sexuality. In 2007, Asako Miura and Kiyomi Yamashita also explored the psychological and social influences in continuing to blog, noting another phenomenon of "ishikoro" (meaning "pebbles"), a Japanese term for abandoned blogs. In that study, they affirmed that self-satisfaction, relationship to others, and skill in handling information had significant positive effects on the intention to continue blog writing.

But what is of importance to me now is the study in 2004 by Bonnie Nardi, Diane Schiano, Michelle Gumbrecht, and Luke Schwartz who were able to detail the psychological motivations in blogging. Accordingly, blogging is motivated by the following purposes:

1. **To document one's life.** Most bloggers contend that blogging retains a certain superior alternative to that other form of communication available to most of us today: emailing. Emailing entails direct contact to the recipient, an act that also subtly demands the act of replying. Emailing is, in a sense, highly "intrusive" to both sender and recipient. Blogs, on the other hand, have a broadcast nature, where authors put out information instantaneously—and no one need respond unless they really wish to. Reading is also voluntary, when convenient for the reader. Bloggers also contend that a blog is better than plain webpages because webpages are considered "static," more formal and carefully considered, and less authentic. According to one blogger, "with a webpage, you don't hear someone's voice in the same way."
2. **To provide commentary and opinions.** The content of blogs is often accused by more mainstream communicators as "mindless chatter." Bloggers however contend that what they write is not just plain chatter: most bloggers say they comment only on topics they find important.
3. **To express deeply felt emotions.** Blogging is a form of catharsis for many people. Blogs give people a place to "shout out" their obsessions and passions. My friend, the writer and blogger Carljoe Javier, tells me, "I blog as a means of purging. I think the majority of what we write isn't great, *yung mga* bad feelings for the day, outlet *yung* blog. My example is the *poso negro*. When you start pumping, really filthy stuff will come out."
4. **To articulate ideas through writing.** Blogging here becomes a muse. Poet and essayist Mia Tizam says of this: "Blogging is daily practice for writing. It allows me to explore form and content in creative nonfiction, short fiction, and poetry. It helps my style and voice evolve, and keeps both dynamic and at the same time constant in its growth. It gives me encourage-

ment in writing creative nonfiction, and allows me to know what should be written about given the comment/feedback mechanism. It allows me to demonstrate literary theory and criticism. It helps in adding inventory to my writing. And as a bonus, blogging helps share the creative and good writing vibes, and gets people to participate in a symbiosis of creativity."

5. And, finally, **to form and maintain community forums.** Novelist and speculative fictionist Dean Francis Alfar refers to this in telegraphese: "New publishing medium. Feedback mechanism. Point of contact with other writers."

What interests me, however, is Michelle Gumbrecht's offshoot study of blogs as "protected space." Gumbrecht, in that study, basically contends that blogging is a communication refuge in a world of too much instantaneity. She reports that blogs are in some ways unique as a communication form because bloggers actually control the content of their blogs, and receive feedback in a constrained setting. This constraint is essential to blogging and provides one of its basic allures for potential bloggers, because despite the Internet's promise of "freedom" to write about anything, bloggers are aware of their audience, and this inhibition of behavior is elicited seemingly by bloggers' conscience as well as acknowledgment of social consequences.

Because of this, most bloggers use ambiguous language and references, sweeping generalizations and undefined context, as well as forewarning and disclaimers to write their posts, and still remain true to the act of informing the world about their personal lives.

Gumbrecht cites a blogger as saying: "[L]ike a lot of the time as I'm writing it [the blog post], I think about who *might* be reading it and if there's anything in there that might offend certain people or like I might not want someone who's gonna be reading it to see. Then, you know, I'll try to find a clever euphemism somehow or just completely take it out...but then, you know, the opposite also happens, like there are times when like I know someone will be reading it and I'll *want* them to see something and...I'll have to find a way to, you know, find a different sort of euphemism that would...highlight as opposed to disguising whatever it is I was wanting to say."

In a sense, we can say that bloggers tailor their posts with an audience in mind.

A sample post from a blog goes like this: "I'm an idiot sometimes, but I'm coming to terms with it, and I know that everything will work out in the end, because it always does. I may not think that the end is what I want right now, but I will be happy when I get there. The only frustrating thing is that I have a couple of conversations coming up that will probably just suck, and there's no way around them... but I don't know when they will happen yet, so for tonight at least, I am okay with that. Resolution needs to come soon, though—I hate not knowing, and I need some solutions and conclusions as soon as possible."

Here we see sweeping generalizations and undefined context at work, with the blogger believing that the intended audience (probably close friends) actually know what she was referring to, and/or that the blogger does not want to reveal everything to the entire Internet audience.

Most bloggers prefer blogging than face-to-face communication or chatting or emailing because of blogging's promise of "limited interactivity." Blogging, you see, is not interactive in the sense by which we perceive other media communications. Face-to-face communication, for example, has conversational partners receiving instantaneous responses from one another either verbally or non-verbally. Interaction here is co-temporal as well as simultaneous: while one talks, the partner simultaneously receives the message and can respond concurrently. Chatting, as in mIRC or YM, presents another model, where interaction is co-temporal, but not simultaneous, since instant messaging programs require a carriage return (pressing "enter") to send a message to the partner.

Blogging is neither co-temporal nor simultaneous. Responses are not immediate. This is the very allure of the medium for many bloggers. Here, a person reads a blog post, can choose to comment to the blogger, and at some later point, the blogger may choose to reply to the commenter either within the forum of the blog or through another channel. In face-to-face communication and even in chatting, when we do not respond instantaneously to something communicated to us, there is that feeling of being "ill at ease" for not being able to respond in a correct manner and on time. Thus, something intimate like "I feel sad" is often difficult to express or to receive in face-to-face communication. Blogs, however, shields one from immediate social interaction, and thus is the perfect medium to convey more personal matters without the burden of obligation. One blogger in Gumbrecht's study chose to blog about her grandfather's death because she couldn't really talk about it but still wanted to express her strong feelings. Blogging became a form of "therapy" for her emotional state. Blogging thus gives some people a channel to share their feelings when they otherwise would not do so.

I find blogging ultimately fascinating because of the strange beauty of its many paradoxes: it is a psychological shield that affords the blogger a forum for even the most intimate of expressions, done in a language that is both inhibited in style but ultimately freeing in range. In a sense, it is a perfect medium of expression for a highly technological world, allowing us a buffering mechanism against the instantaneity that is increasingly threatening to devour all of us.





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## Soraya the Converted: A Conversation With A Maranao Muslim Woman in the Southern Philippines

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This article is a narrative account of a conversation with a Maranao Muslim woman in Cagayan de Oro's Cogon Market. It is part of a larger project I am currently working on. The purpose of this piece is simply to capture a slice of the human experience and to present the subject's voice relatively uninterrupted. Soraya's life experiences touch on a number of important issues including gender and ethno-religious conflict in Mindanao. Her views and attitudes provide interesting and important insights into the Muslim experience in northern Mindanao.

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2:12 pm, Nov. 1, 2007, Cogon Market, Cagayan de Oro

**A**lthough this is my third time visiting Soraya's shop at Cogon Market, I still have minor difficulty locating her particular establishment amid the plethora of storage-unit-style *puestos*. I decide to walk the perimeter of the main market complex to ensure that I don't miss it. Despite my efforts, however, I nearly do. While negotiating my way through the commotion of swarming buyers my eye catches the familiar sight of backpacks and flip-flops spilling out of Soraya's shop into neatly arranged piles on the sidewalk. I peer inside to confirm my destination. A saleswoman sits comfortably in her plastic chair facing the crowd of potential buyers. She is attired in a thick, flowing purple dress and black veil or *hijab*, which the Maranao Muslims call *kombong*. Only her eyes are visible. This gives me reason to doubt. During my past visits Soraya had not worn a facial veil. Her daughter and/or niece had always accompanied her as well. Nevertheless, despite my hesitancy, I cautiously extend a polite greeting in Tagalog. She acknowledges my salutation, but I still cannot tell for sure if she is indeed Soraya. Her expressions beneath the veil are utterly inscrutable.

Perhaps sensing my insecurity, she offers a hint: "So, do you have questions for me?" she asks. I can now make out the subtle squint of her eyes indicating a smile beneath the veil. Somewhat relieved, I answer affirmatively. She dutifully rises and offers me her chair. I resist the overture, feeling compelled by my own sense of propriety to allow her to remain seated. In the end, however, such attempts at gentlemanly manners are of no use as I am commanded to take my seat. I respectfully comply and within seconds she is again seated in an identical white plastic chair strategically oriented towards the throng of products and buyers amassed in front of her shop. I offer more pleasantries: "How is business?," "How are your niece and daughter?," "How long do you think the rainy season will last?" She responds politely to each query, but is eager to begin our discussion on Islam.

Soraya and her husband have been selling items in Cogon Market for several years now. Though they are both Maranao Muslims from Marawi; they decided long ago to settle in the larger city of Cagayan de Oro on Mindanao's northern coast, about 117 km (73 miles) north of their hometown. With poverty incidents reaching nearly 55% in the Lanao del Sur area of the Autonomous Region of Muslim Mindanao (ARMM), many Maranaos have similarly been forced to find their living among predominantly Christian areas of the region.<sup>1</sup> This didn't always bother Soraya and her husband, however. For the vast majority of their lives the couple paid very little notice to their religious heritage. Even though both were raised in Muslim homes, their fathers' religion seemed to have very little relevance in their lives. That is, until Soraya began to experience a revival of faith in 2000. "I grew up acting just like my Christian friends," she admits. "I didn't care anything about Islam. It just didn't matter to me." This acute detachment from the principles of her faith was manifested in her dress, diet, and general demeanor, she explains. "My parents weren't as strict back then, but times are different now. Islamic observance is improving [nowadays] and things are getting better."

While Soraya's past did not conform to Islamic values, she considers her husband's history well beyond any reasonable religious standards. Though the couple's union was approved by both families and performed according to the rites of Islam, neither spouse felt any obligation to base their new family on religious principles. "My husband made his life as a soldier in the Philippine Army," she reveals in a somewhat somber tone. "In the 60s and 70s he fought for the army here in Mindanao." She pauses to adjust her veil slightly as if carefully considering her next statement; then she faces me squarely. "When he saw action, he was firing against his own cousins—his fellow Muslims." I nod sympathetically, but can't imagine the specters of guilt that must haunt him. "He was a terrible man," she continues, "an alcoholic, a gambler; he was a slave to all the bad vices. I guess that's what the army does to a man." Despite these liabilities, however, Soraya didn't always grasp the gravity of his apparent apostasy. There was no overarching identification with a larger Muslim

community, nor any thought of the retribution of a just God to guide their lives. "We simply lived like everyone else," she explains.

All this changed dramatically, however, in the year 2000 when several Ulama from Marawi conducted an educational and reactivation campaign among Cagayan de Oro's Muslim community. "They offered classes and seminars to educate us about the basics of our faith," she explains. "They had been doing this for a long time, but I had never felt the need to join in." She doesn't state specifically what prompted her to attend at that time, but frequently mentions the emptiness that she used to feel. "Suddenly I began to see," she continues, "to understand what Islam was about. My mind was awakened." Her eyes grow large beneath the folds of black material. "My life now has purpose. I have been given meaning. I have begun reading the Koran in Arabic even though I don't understand it. Islam is the complete way. You won't be led astray. You will be safe, with no problems. Just put your faith in God and all will be well." Her testimony is compelling, but I get the sense that her remarks are increasingly directed at me. Previously, my conversations with Filipino Muslims have often prompted questions as to why I have not yet submitted myself and converted to Islam. Soraya does not attempt such a query, but only observes my reaction to her affirmations. I simply nod in agreement and in admiration of her faith.

Following Soraya's example, her husband experienced a similar renewal of faith four years later in 2004. Also influenced by the teachings of Maranao Ulama, he shed his vices and began to strictly observe religious obligations such as prayer, alms giving (zakat), and fasting during the holy month of Ramadan. I inquire as to whether he might also be interested in discussing his faith with me. Soraya shakes her head, "He's just a new Muslim. He doesn't know anything." I am somewhat shocked by her characterization, but decide not to press the matter further despite a burning desire to find out more about her husband's time in the Philippine military.

I decide instead to ask her about her children and the difficulties associated with raising a Muslim family in Cagayan de Oro. "I make my sons and daughter observe Islam," she simply states. "I'm not like my parents were with us." Though Soraya definitively orients her parenting around Islamic principles, her concerns are perhaps typical of many mothers throughout the world. "TV is a big obstacle," she declares, referring to images of sex and violence that are beamed in from Manila and around the world. "You know that young people are very good at imitating the bad things. Especially girls." I consider my own four-year-old daughter's infatuation with Barbie and nod sympathetically. "Although," she adds, "it's not just TV. Friends also make a big difference. That is really a problem here in Cagayan de Oro. Their [the children's] religious observance waivers here [in Cagayan] when they are around their non-Muslim friends, but in Marawi, when they are surrounded by family and other Muslims, they are very obedient and strict in their religious responsibilities." She shrugs slightly and gazes out at the crowds thronging

the market. "But what can we do?" she asks, directing her question more at herself than at me. "This is where our living is at." After a few brief seconds of silence she refocuses her attention on our conversation. "It's just that family is so important to us Muslims. We all want to be together when we pass on to the next life. I mean, how can I be happy in heaven if my family is not with me?"

She glances briefly at a man standing quietly in front of her shop. He is dressed in a nice button down shirt, beige slacks, and a white skull cap, called a "*totob*," with elaborate embroidery around the edges. He is stroking a long, scraggly patch of hair protruding from his chin while watching the traffic pass by. "That's my husband," reveals Soraya, pointing at the man with the angled end of a hanger she is holding. I rise and introduce myself. He looks surprised by the gesture, but politely shakes my hand and nods emphatically. "Please," he says, while ushering me back to my seat in the shop. I do as directed, but feel awkward for some reason resuming the interview. I feel obligated to repeatedly glance back at her husband while talking, so as not to exclude him from the conversation. Within minutes, however, the man bows his head slightly and politely excuses himself to go pray. I wave and smile in acknowledgment while watching him pass from sight. "Don't worry about him," counsels Soraya.

I resume the interview, but can't keep from thinking about the conflict among Muslims, Christian settlers, and indigenous peoples that has characterized Mindanao's modern history and likely shaped a great deal of her husband's life. I bring up the possibility of a referendum to decide Mindanao's political future. She begins waving the hanger back and forth as if parrying my words. "No compromise. No referendum," she declares. "Mindanao should be a Muslim homeland." Curious, I ask her what her own solution is for the current conflict. Without much hesitation she holds up a stern finger: "Number one, get rid of the [Philippine] army. Many of them are rapists and killers, and the media glorifies them! No one knows how Muslims are suffering!" She expounds on the corruptions and abuses perpetrated by the Philippine army — arms dealing, civilian killings, theft, rape, drug use, etc. With each grievance she slaps the hanger against her legs in anger and disgust. I can't help but wonder how she must view her husband's involvement at the height of the conflict during Martial Law in the 1970s. I begin working out in my mind the most tactful and appropriate way to phrase the question, but I never get the chance.

"Number two," she states, without skipping a beat, "we must make Sharia Law the supreme law of the land." I ask her how that might be possible considering the millions of Christians currently inhabiting Mindanao. "I am not saying that we impose it on the whole country, like up there in Manila, but Mindanao is a Muslim homeland and we should have Sharia Law here." She rests her elbow on a bundle of jeans and lays the hanger neatly across her lap. "You see, it would be a paradise [with Sharia law]. If you steal, you get your hand cut off. If you rape, you are put to death. It is very simple. Look at

Saudi [Arabia], it is completely safe. There is no theft in the Middle East. In fact, a woman could walk down the street completely naked and have no fear of being raped." She picks up the hanger again. "But don't worry," she explains, "Sharia Law will lead non-Muslims to God as well."

As she continues extolling the life-altering aspects of Islamic law and the precepts contained in the holy Koran, I offer an observation in support of her assertions. I remark how impressed I am that virtually all of the Muslims involved in the market's thriving pirated video industry refuse to sell pornographic films, which of course are a lucrative product. "Yes," she says half-heartedly, "but real Muslims shouldn't even sell anything with pictures on it. They will come to regret that you know." She makes a circle around her head with the hanger symbolically pointing at those around her. "Even those who listen to music at the CD shops, they should have their minds on their religion and not on music. Those CDs have images, too." She points the hanger out the front of the shop. "Even images of Christ [are wrong]," she continues. "It is wrong for man to create the image of God. No one knows what he looks like. You can't worship an image of God that was fabricated and then sold for money. That is very arrogant."

Though I have been holding off, I decide to move on to the subject of her gender. I have been somewhat hesitant up to this point simply because I have always sensed that Muslim women are mildly annoyed at having to repeatedly explain the purpose of their unique covering and defend against the implicit and prevalent assumptions of patriarchal and religious oppression. Soraya, however, seems more than happy to put these issues in perspective. "It's like this," she explains, "woman is the most important [person] in Islam. Woman is higher than man. We are put on a pedestal." She nods her head in the direction of her husband's place of prayer. "Husbands have to take care of us. They do the hard work." She taps the hanger on her chest causing a slight ripple up through the facial veil. "Woman is empowered in Islam," she continues. "We run the household. We have the right to divorce. In the case of polygamy, the first wife has to approve all subsequent marriages and she runs all of the houses."

I consider her statements as I watch her rise to haggle with another customer, as she has done many times throughout our conversation. The man is looking for a pair of jeans. She displays her stock, but remains very cool in her demeanor, unwilling to plead for his patronage as many do. The man selects a pair of pants and asks for an extremely low price. Soraya simply shakes her head and quotes him a more acceptable amount. The man then begins critiquing the garment's quality, pointing out perceived flaws and becoming more animated in his actions. Soraya, however, maintains her stand, unfazed by the customer's negotiating strategy. Finally, the man tosses the jeans back on the pile and walks out of the shop in a huff while muttering something about Soraya's difficult personality. Soraya simply shrugs and takes her seat again, smiling ever so slightly underneath the veil. Far from the stereotypically oppressed

female, I have very few doubts concerning the ultimate capability and confidence of this Muslim woman to manage the world around her.

As she sits she pulls the heavy robe away from her abdomen sending a puff of air up through the garment that ruffles her *hijab*. I ask whether it is difficult wearing such an abundance of clothing in this unyielding tropical heat. She dutifully shakes her head back and forth, although I can see the perspiration collected around her eyes. "These clothes are very important to Muslim women," she explains. "Look at those girls walking around town showing off their stomachs and chests—they look so cheap. That is very displeasing to Allah. He wants a woman to remain pure." She considers for a moment the best way to explain this concept. "Women are like fine food," she elucidates. "You have to put a cover over it or it collects all kinds of dirt. Or like a banana—if you take the peel off, then it immediately attracts flies, ants, and all different kinds of dirt and germs. You see? Women must stay covered to protect their purity." I compliment her on her analogy.

Though she rigidly adheres to the gender roles proscribed by her religion, she points out that these differences ultimately do not matter to Allah. "God knows and takes care of each one of us. Allah doesn't care if you are a man or woman or if you are ugly or pretty." To emphasize her point she relates a story in which her check was "jewed"<sup>1</sup> for a significant amount of money. "I didn't know what to do. I went behind the counter there and cried and prayed and prayed that God would help me." Only hours after these fervent petitions to deity, a cousin dropped by the shop with additional stock that made up the difference from her financial losses. "Just put your faith in God and all will be well," she proclaims confidently. "This life is so short and so much awaits us on the other side."

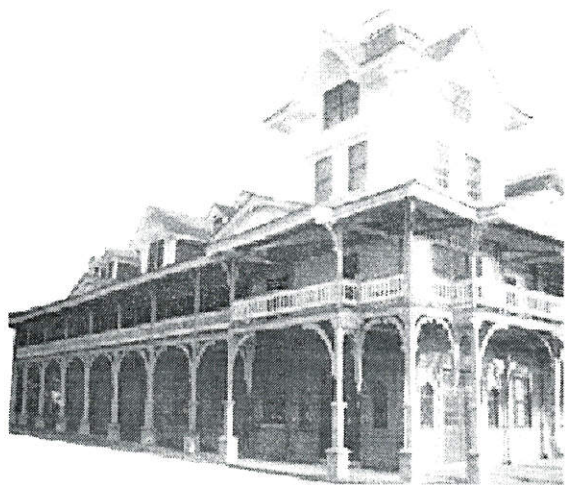
We continue discussing various aspects of a religious life—the importance of being honest, giving to the poor, raising good children, and so on—while the sun moves towards the horizon of building tops on the west side of Cogon Market. Eventually I stand and excuse myself, explaining that I promised to take my children to see the candles in the cemetery for All Souls Day. She nods, her eyes squinting in another smile. I thank her again and, in a lapse of thought, offer a handshake in gratitude for her contributions. She immediately holds up both hands with her palms out. "I'm not allowed," she reminds. I chuckle and apologize for my lack of awareness after all that we have talked about. "It's ok," she consoles, and invites me to come back to talk again another day.

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<sup>1</sup> This number is according to a 2000 report of the National Statistical Coordination Board of the Philippines, [http://www.nscb.gov.ph/poverty/2000/ot\\_gini.asp](http://www.nscb.gov.ph/poverty/2000/ot_gini.asp).

(Footnotes)

<sup>1</sup> This is a pejorative, anti-Semitic term referring to the perceived stinginess of the Jews. I was somewhat taken aback by it, but it is perhaps indicative of the chronic tensions between Jews and Muslims over the Palestinian crisis, even as far away as Southeast Asia.





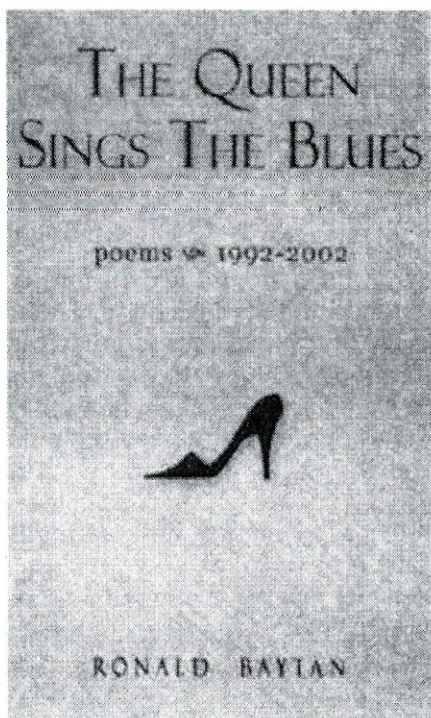


BOOK REVIEW

Ronald Baytan

**The Queen Sings the Blues:  
Poems 1992-2002**

Pasig City: Anvil, 2007.  
102 pages.



**Cartographies of Desire**

By Ralph Semino Galán

**T**he *Queen Sings the Blues*, Ronald Baytan's long-anticipated first volume of poetry charts the beautiful but bleak landscape of homosexual love and lust, queer desire's many blissful fruitions and equally numerous frustrations. The 47 poems comprising the compendium map out, as the sequencing seems to suggest, the metamorphosis of a Chinese-Filipino's gay imaginary from a fairy tale princess to the proverbial queen of the world, a fact that is later confirmed in the illuminating exegetic essay written by the author himself which serves as the tome's postscript.

Divided into six sections, the collection also immortalizes the queer spaces—gay bars and bathhouses, cafés and discotheques, backrooms and motel suites, weekend resorts and performance venues—in Metro Manila and

its environs, which are also subject to mutations and permutations. For these liminal places existing in the outermost limits of spatial legitimacy have a temporal if not seasonal dimension, making them vulnerable (and thus valuable to those who will mourn their eventual closure) to the whims of the very same habitués whose epicurean predilection are perversely protean or even mercurial, to say the least.

Cine Café (the topic of discussion in the poem "Seafood" which is dedicated to this fledgling critic) typifies a Filipino queer space in the Metropolis that has undergone not a few transformations due to its former clientele's lack of loyalty, and the fact that high culture is difficult to market while casual sex (often anonymous) sells like hotcakes. Conceptualized as a venue for the screening of art films, as well as an alternative setting for poetry readings and photo exhibits, Cine Café has then degenerated into a popular blue bar complete with a video room featuring pornographic movies and a shadowy backroom where anything and everything goes in the lascivious dark.

This does not really come (pun intended) as a complete surprise, for as Aaron Betsky articulates in his book *Queer Space: Architecture and Same-Sex Desire*, "The purpose of queer space is again ultimately sex: the making of a space either for that peculiar definition of the self as an engine of sexuality or for the act of sex itself."

But I have sashayed too far on the rarefied catwalk of queer theory. So before I get carried away with my critical ruminations, allow me to accompany the poet-persona in his imaginary high heels (Note: There is a black stiletto beside each page number, not to mention a blue one on the front cover.) as he initially makes tentative forays into the better-lit avenues of gay love until he finally delves deeper into the darker alleys of homosexual desire.

The first part of the book titled "He who sleeps in my lap" contains lyrical verses that shimmer like shantung silk for the sheer strength of the persona's unbridled faith that true love exists, and that failure in passionate connection is but the obverse side of the same romantic coin. The innocent persona in these poems believes in the workings of destiny ("Crossroad" and "Star-crossed") in determining the beginning and the end of the affair. Nevertheless, being a true-blue romantic, hope springs eternal in his homosexual heart "that when he wakes up/ I shall be his dream.//" ["He who sleeps in my lap"].

In "Procrastinations" and "The Queen Sings the Blues", the second and third sections respectively, the persona becomes more daring as he explores the steamier if not seamier side of the homosexual landscape. Aside from Cine Café where one encounters "spent phalluses/ That have shed copious tears/ In rooms filled with longing.//," Baytan also commemorates the other queer spaces that have shaped his Otherness. But most of these remarkable gay landmarks are gone, like "Giraffe" ("Saints in drag abound/ Here, and men/ Await their first taste/ Of brotherly love.//) and "Blue" (It's drag night once more./ Same

old Shirley, Whitney, Tina,/ And Mariah in boas and sequins/ Belting about love, love, love./").

The fourth section, "A Cycle for Rodney," textualizes the persona's gay (but not necessarily happy) relationship with a foreign national, which is emblematic of postmodern love affairs, interracial or otherwise. The five poems trace the trajectory of the homosexual liaison, from its hopeful birthing ("Bless me, Mama,/ Because like you, I know// Love has found me./" ["Beginnings"]) to its inevitable demise ("You thought Love is forever./ And now all you have/ Is the parting/ Kiss, the last handshake,..." ["Endings"]).

As the title suggests, the fifth part features poetic "retellings" of Chinese legends and tales about the homosexual persona as a faithful lover and/or beloved as he appears in the Middle Kingdom's history and lore: "The Cut Sleeve," "Mizi Xia, Jade," "Long Yang," "Pan Zhang," "Ruiji," "Ruiji, Mother of Chengxin," "Quan," "Qinshu," and "Emperor Wu, Confession."

Baytan's affirmative action in showing these heartwarming examples of gay love countervails his initial statement in his exegetic essay that homosexual romance does not last forever. The poems, in his own words, "emphasize love's endurance and the joys of finding the One. I decided to retell the Chinese legends and tales... to show contemporary readers positive models of same-sex love in the old Chinese world. The men in the narratives may not have heard of the word "gay" nor saw themselves as "homosexual" ... yet the power of the bonds between these men should suffice to tell the reader that love is possible."

In "Crossing Borders," the sixth and closing section, the wizened but world-weary persona reexamines his sensual and sexual experiences, making him realize in the process some life lessons with regard to homosexual love and lust. He comprehends for instance in "Distance (ii)" that the body has a language and a memory of its own: "And so I learn/ The body is not transient/ Nor forgetful;" and in "Threshold" that "desire/ Is a habit, a calling of flesh/ And spirit to repeat/ Presences..."

But the most powerful piece of this final cluster, if only because it is the most confessional and thus presumably the most honest as well, must be the last poem which derives its inspiration from the verses of both Louise Glück ("The Sensual World") and Pablo Neruda ("XX: Tonight I Can Write"). Unabashedly titled "La Puta del Mundo," the poem perfectly captures the persona's eternal search for love through lovemaking and the resultant disillusionment that goes with it when the beloved decides to leave: "Why should it matter then if I could not/ Keep them or count them? I have lost// Faith in the possibility of encounters,/ In the meeting of lost halves./"

Baytan's lush lyrics, both in its luxuriant and lustful sense, plot the emotional arc of the Chinese-Filipino's homosexual heart as it swings like a pendulum between desire and despair, love and longing, sex and solitude.



## ABOUT THE REVIEWER

**Ralph Semino Galán** teaches literature, humanities and writing subjects at the Faculty of Arts and Letters, University of Santo Tomas. He graduated *magna cum laude* with an AB English (major in Literature) degree from the Mindanao State University-Iligan Institute of Technology. He was a fellow to all the national writers' workshops (Silliman [1995], UP [1996] and Iligan [1997]), as well as to the 2<sup>nd</sup> ASEAN Writers' Workshop/ Conference on Poetry. His poems in English and Filipino have won prizes from the *Philippine Panorama* (1993) and *Home Life Magazine* (1998) poetry contests.

Ralph has an M.A. in English Studies (major in Creative Writing) from the University of the Philippines-Diliman. From 1997 to 2002 he was a member of the administrative staff of the UP National Writers' Workshop, serving as the Workshop Coordinator from 1999 to 2002. He also writes book reviews for the Lifestyle Section of the *Philippine Daily Inquirer*. His first chapbook of poetry *The Southern Cross and Other Poems* was launched in December 2005 by the National Commission for Culture and the Arts as part of its UBOD New Authors Series.