



Team ICRISAT Champions the Poor



Frank A Hilario



International Crops Research Institute for the Semi-Arid Tropics

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To my wife, **Amparo Medina Reynoso** who, on second thought (and a third and a fourth), didn't stop believing that the best is yet to come. To the 13 (**Tina, Jomar, Dida, Techie, Cynthia, Jay, Dinggoy, Jinny, Ernie, Daphne, Neenah, Edwin, Ela**), who should thank God.

All opinions expressed in this book are those of the author and do not necessarily reflect those of the management and staff of ICRISAT.

Team ICRISAT

Champions The Poor

An anthology of appreciative and interpretive essays on the theory & practice of science by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).
All are original essays published 2007 online in the *American Chronicle* and in diverse other websites; collected, revised and edited into this present volume

Frank A Hilario



International Crops Research Institute for the Semi-Arid Tropics

Patancheru 502 324, Andhra Pradesh, India

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Contents

Preface	v
Author's Foreword	vii
Introduction	1
Talking To Strangers? Bill Gates Dotting His i's, Crossing His Peas	5
The Color Yellow. Run, Al Gore, Run! (Run, ICRISAT, Run!)	11
GMA's Indian Summer. Writing The Philippine Story (Revised Edition)	15
The Knowledge Initiative. 'Let Knowledge Come From Everywhere' – MS Swaminathan	19
UP! Pinoy Chairs UN Scientific Body On Desertification	23
The Yankee Dawdle. On Discovery Sorghum, The Great Climate Crop	27
Learning From Microsoft R4D. The New Paradigm For Research	38
Biofuel Islands. 'We Are Producing The Fuel Of The Future'	41
Seeds For My Sweet. Sorghum For My Honey, Satisfaction Guaranteed!	45
Being A Different Kind Of CV. Globally Yours, William Dar	48
Al Gore Of Science. Being About William Dar & 'Science With A Human Face'	55
The Telugu Paradigm. Understanding VASAT, The Illiterate's Internet	58
The Turning Point. Know That Silent Water Runs Deep	62
To Catch An Insight. Forget Thesis, Antithesis, Synthesis	65
The Academe As Anti-Poor. University Of The Philippines A Hundred Years Hence	72
An Inconvenient Truth: William Dar, The Filipino As Global Manager	78
'Survival Of The Fittest' Revised. To The Breeders, To Make Much Of Time	87
BioPower To The People! The Song Of Sweet Sorghum	91
The Children Of Maidanek. Or, Drawing Gas & Drawing Butterflies	95
Science Parks, Stops. Being A Proposal For Innovation Teams	98

Primate Change? Or Climate Change? You Choose! – The Blogal Village Voice	102
What's In A Name? IGARM. A Phrase Or Some Other Name Would Be Nice	116
Choosing Joy. Being On How To Interpret Science Language	121
About The Author	127

Preface

Team ICRISAT is publishing this book the better to share these informative and innovative essays with readers outside of the World Wide Web. The Web, more popularly called the Internet, altogether makes up an entirely different collection of readers. Even to those who have read these unique essays online in the many diverse websites where they are published, but especially the *American Chronicle* (<http://americanchronicle.com/>), the articles will reveal something new on the second reading, another something new on the third, and still another something new on the fourth reading. All written in the first person with the aim of engaging the reader in a one-on-one, we like to think they can be aptly described in one sentence: *Science writing with a human face*.

This collection of essays is by Frank A Hilario, a Filipino writer and editor known for his high standards, varied experience in information and communication as well as a wide interest in subject matter from Africa to Shakespeare, from Abaca to Zen Buddhism, any of which animates and expands the view in each article written, so that even an old topic always becomes interesting and turns out to be something new the way he tells it. Most of the essays are 1,000 words plus; several are twice as long. None of them is boring.

The author is a graduate of the University of the Philippines Los Baños; his degree is BS Agriculture with major in Ag Education; his first love, he says, is writing, beginning when he was in high school. The reader can glean more of the author in reading the essays where he reveals his original thoughts and more and more of himself.

Certainly, each of the essays, original and interesting as they are, sometimes even intriguing, leads to a telling of a singular story on or about Team ICRISAT on one hand, and the Team Captain on the other – as well as partner institutions around the world. *Team* symbolizes *partnership* in the first place, characterized by active and interactive initiatives that are designed to carry forward ICRISAT's mantra, which is **Science with a human face**, in pursuit of the **Grey to Green Revolution**.

Several of these essays focus on or make special mention of sweet sorghum as the 'sweet crop' for problem soils: waterlogged, rainfed, drought-stricken, infertile soils where irrigation is an expensive proposition. The author's firm belief in ICRISAT as a whole, and the passion of the writer's advocacy of what Team ICRISAT is or has been doing is evident in each essay.

It is amazing how within each of his stories, he leads us to appreciate the relationship between matters that we do not usually associate with each other, or would label as bizarre a relationship that is only pointed out but not explained. For instance, he has been able to associate Al Gore's winning of the Nobel Peace Prize with sweet sorghum, and the color yellow, again, with sweet sorghum. It might be said that his belief in this crop as appropriate for the poor is as firm as ours.

It is equally astonishing how he 'translates' technical language into popular language in such a way that both the layman and the technical man want to read him intently. For there is always some history and some drama to the stories, for stories they are, not simply reportage. The essays provide a respite from the usual journalistic reportage characterized by predictable titles, beginnings, middles, and endings.

No two articles of the author are alike, akin to inventing every week a new sweet sorghum variety, or a new variety of another crop. Indeed, the essays may be likened to multiple crops in a hectare of field that is this book. Just as grain harvests of groundnut or pearl millet are good food for the body, these essays are refreshing food for thought. We may not agree with everything the author writes, but he certainly says it with conviction and in style.

While ICRISAT staff have been consulted and actively assisted in the preparation of this book, the sole responsibility belongs exclusively to the writer regarding accuracy, truthfulness and implications of any of the statements in the book.

William D Dar

Director General

International Crops Research Institute
for the Semi-Arid Tropics (ICRISAT)

Author's Foreword

Los Baños, Laguna in the Philippines is very unique, professor and historian **Fernando Bernardo** was saying during the UP Los Baños Alumni Fellowship Night, 2007 October 9, in that it has the highest concentration of high-level science expertise in the Philippines as well as in Southeast Asia, with 38 national and international centers of excellence in research and studies, including the International Rice Research Institute (IRRI) and Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), as well as 300 MS and 400 PhD degree holders.

In the same sense, I am saying UP Los Baños is very unique in that it had graduated a PhD in the person of **William Dollente Dar**, a Filipino, who has singularly risen to world-class stature as a manager of a large international R&D center of excellence, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), which is under the aegis of the Consultative Group on International Agricultural Research (CGIAR). The CGIAR advocates and the ICRISAT leads in working with science on the success accompanied with sustainability of agriculture in the semi-arid tropics, the SAT covering many countries all over the world: Africa, Asia, Latin America, Australia.

When Dar assumed the headship of ICRISAT in the year 2000, the Institute was destitute in accomplishments and funds; today, ICRISAT is an inspiration to the other 14 centers of the CGIAR for beating the odds and continuing to be triumphant, continually reinventing itself. It is Dar's unique brand of science management that ignited the flame of dynamism and smothered the embers of stagnation within the Institute.

In September this year, Dar was elected Chair of the Committee on Science & Technology (CST) of the UN Convention to Combat Desertification (UNCCD), an indication of his stature in the world of science. As I see it, Dar's success as a global manager stems from his commitment to the Big Picture, something that he sees in everything he does, even before he does it. He is also imbued with integrity and an elevated sense of purpose that rubs on his staff and makes them want to do what he expects them to do. From him has come 'Science with a human face' designed to be achieved through the 'Grey to Green Revolution.' And so he leads Team ICRISAT that is helping make dreams come true for poor families in the drylands of the world.

Why the title **Team ICRISAT Champions The Poor** for the book? The poor we have always had with us: poor farmers, poor soils (infertile, drought-stricken, eroded), poor farming methods (even if modern), poor access to credit, poor technology dissemination, poor seeds, poor harvests, poor water supply, poor markets, poor distribution of the benefits of production, poor private sector participation in small agriculture for big business, poor Stewardship of the Earth. Team ICRISAT advocates that we improve the status of all those poor creatures and conditions. We give thanks we have champions in the drylands of Africa, Asia, Australia, Latin America. Realizing that, this book is my way of saying, 'Thank you, Team ICRISAT!'

LOOKING AT THIS BOOK, THIS FRANCISCAN MISSIONARY OF SCIENCE

How do you write a book? I wrote each essay in this book enjoying myself, enjoying my study of the subject matter I wasn't familiar with – in other words, enjoying the challenge of writing about something I knew little about and, on top of that, that which overall is a boring subject: science. How can I enjoy working with boring materials? Creativity. I get information and ideas from here or there, from him or her, often from books, not the least from the Internet, and relate them to the science, and the results you can see here. In creativity, relating is everything; in fact, everything is related – but you have to look for that relationship yourself. And there the joy of creativity lies, in looking for relationships where there don't seem to be any. Writing is inventing. The writing that I love is daring to invent.

Before this, I had learned to publish in the Internet, that is, to blog, my first blog being uploaded in 2002 in a website I called *innovision*. I learned to like blogging so much I now have 50 websites / blogsites – you can visit <http://frankahilario.com/> and be sure to count the list under 'Blogroll' and click if you like on any entry in the long list. Exuberance can do that to you.

I have learned to do HTML coding myself and found a shortcut to (almost) HTML everything: *Google Docs*. So my blogs are formatted as if you were reading them in Microsoft Word 2003 (my favorite): italics, bold, underline, indented, tabbed, tabled, heading-leveled, the works. Thank God for Google Docs.

So, hundreds of blogs later – many of them being long essays, not simply journal entries like 'I woke up with a headache today, but I smiled at myself in the mirror anyway' – I have learned to think of 1,000-word essays and control my number of words, writing fast and furious and with feeling. Many of the essays in this book are 1,000-word having been born and grown up within their own 24 wonderful hours. The pressure becomes pleasure and it's all mine, entirely mine. That's called *attitude*. (I'm sorry I can't teach you attitude – you have to do it yourself.)

You will understand that I've had years of practice of popularizing science, 32 years to be exact, from 1975 when I joined the Information staff of the Forest Research Institute (FORI) and later became her Chief Information Officer, in the meanwhile founding her monthly newsletter *Canopy*, founding her quarterly color magazine *Habitat*, founding her quarterly technical journal *Sylvatrop*, *The Philippine Journal Of Forestry*. I patterned *Habitat* from the *National Geographic*: layout, style of writing, photography. I had no previous training, but I translated technical language (forestry) into popular language and found that I liked it. Those were exciting years, 1975-1981, and I was never late in any issue of those 3 FORI publications, even if we were only tooled with typewriters (later, with an IBM Selectric with its replaceable type balls) and manual SLR cameras.

Compared to old-style publishing with a single person at any one time typesetting all the manuscripts in the world, that is, formatting lines and fonts, today we have the personal computer, publishing software, scanner, color printer, laser printer; and they are all affordable – and almost anyone can learn to use them professionally, even masterfully. With the appropriate software, writing, editing, reviewing – along with the appropriate perspective (or paradigm if you will) – publishing can become labors of joy, not simply labors of duty.

Now that this book is here, I think that the best way to write a book is not to plan on writing a book. Planning puts too much pressure on you. I did it once, in 1997, and ended up *not* writing several books – in other words, while I was at it, I got too serious I was in fact collecting materials for not just one but many books, so I couldn't finish any. I couldn't help but be serious when I thought of the P1M at stake – it was the centennial book contest, 1998, celebrating the 100 years after the declaration of Philippine Independence, when **Fidel V Ramos** was President of my country. That was my mistake: In writing, when you go after the prize, right from the start you are going to make yourself the loser.

Anyway, also in 1997, I translated from Spanish the ultimate poem of the Philippines' national hero Jose Rizal, known as 'Mi Ultimo Adios' (My Last Farewell). That took me months, and then I forgot all about it. In 2005, I chanced upon that translation and decided to revise it as well as write an accompanying article on it to be submitted for publication that December. I wrote that article, and it became 2 articles, and then it became 3 ... 4 ... 5 ... 13 chapters. I had a book! The book: **indios bravos! Jose Rizal As Messiah Of The Redemption** (Los Baños: Lumos Publishing, 187 pages). The book conceived and gave birth to itself. Creativity is like that; I like that!

So now I can tell you how I write. But since 'creativity' is something that is easy to misunderstand, I'll use the word 'serendipity' instead. Serendipity, says Horace Walpole, is the happy accident of finding something when you are not looking for it. (I can't put quotation marks because I can't recall his exact words.) I gather some materials first from different places, including the Internet; then I set my mind on the road to Serendipity, meaning I let it loose, I let it wander on its own and look for connections not seen or noticed before, without trying hard. That needs practice, lots of practice. If you are a logical person, you can't travel the road to Serendipity. For me usually, the first connection that comes out is a working title to the essay I want to write. That helps me focus my writing. In that sense, these essays are all discovered connections.

I came to know **William Dar**, Director General of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), through a common friend, **Santiago Obien**, the Director of the Philippine Rice Research Institute

(PhilRice) who made PhilRice world-renown, who asked me if I could write about Dar just as I had written about him ('Management: Relating Is Everything. Or, The Wizard Of Rice Who Cultivated Minds,' 2006 July 31, americanchronicle.com). I said I couldn't possibly write about him until we met and I could ask pertinent questions, meaning size him up. And so we did, and so I did. And so I wrote, a little tentatively, about sweet sorghum and ICRISAT ('The Yankee Dawdle. On Discovery Sorghum, The Great Climate Crop,' 2007 February 4, americanchronicle.com), then mostly about William Dar himself ('An Inconvenient Truth: William Dar, The Filipino As Global Manager,' 2007 February 26, americanchronicle.com). The rest is his story.

I wrote the first essay mentioning ICRISAT, 'The Yankee Dawdle' without thinking of writing a book. Nonetheless, once I started reading on ICRISAT, I became more and more interested and had more and more ideas what to write and how to write. The rest of the story is this book.

As it happened, in Serendipity I had invented a new genre of writing science for the masses. Yes, a happy accident is that this book introduces formally to the universe of popular science a new genre of science writing; I call it *infocracy*, and I am my first *infocrat*.

On October 21, Sunday Manila time, I discovered that I'm not the first to call himself an infocrat. There was K Shakti Prakash who called himself an infocrat on 2006 January 11 (infocrats.blogspot.com); the Medical Libraries Association of the US in an annual meeting had it as a spoof of a title, 'MLA Infocrat of the Year' in March 1995 yet (listserv.acsu.buffalo.edu); W Hugh Chatfield in 2002 called the information worker an infocrat (urbanmarket.com). Most interestingly, Jaffer Ali in 1999 derided the infocrat who, he says, 'believes in information *uber alles*' (over everything); what Ali was doing was 'rescuing the Internet from infocrats,' those who are 'notoriously devoid of a transactional sales imagination,' that which he explains this way:

It is what comes to the heart of most sales. To complete a sale, one needs to discover what makes a potential consumer tick. One needs to find compelling, emotionally charged methods of communicating.

Now that I've found you, Jaffer, I now would like to paraphrase and expand you and the infocrat:

Infocracy is something that comes to the heart of science writing. To complete an information transaction, one needs to discover what makes a potential reader read the message and react positively to it. One needs to find compelling, emotionally & intellectually charged methods of communicating.

Science writing belongs to the people, like democracy, unlike technocracy. *Democracy* is government of the people, for the people, by the people; *technocracy* is government by the technicians or knowledge managers. In an entirely different perspective, *infocracy* is non-government science writing that speaks the language of the knowledge users (consumers), not the language of the knowledge gatekeepers, which you find spoken everywhere in the Internet. By theory, an infocrat is a science writer who engages as well as enthuses, enthralls, encourages, eventually enables. A welcome writer is one who amuses besides. If you don't care about language, or if you do the exact opposite of an infocrat, you are a newscrat, he who is interested only in speaking in the language of the tribe. I'm more interested in the language of the mind.

There are 3 kinds of written information as far as I know. The 1st kind is *technical*, that of the *technocrat*; the language is that of experts selectively writing to experts in the same field. You find this kind of writing all over the Internet, including all over the websites of ICRISAT and IRRI. The technical language is characterized by long, if not difficult words. Not my cup of tea.

The 2nd kind of written information is *news-views*, that of the *newscrat*; the language is that of print and online information givers and sharers announcing to anyone selective whos, whats, wheres, whens, whys in certain locations. If not actually journalists, newscrats write as unquestioned sources of scientific knowledge, or any knowledge whatsoever. I'm not competing with any of them.

The 3rd kind is *in-views*; the language is that of the selective information appreciator or interpreter, and it can vary according to the art as practiced by the individual writer. Infocracy is writing (or close encounters) of the 3rd kind. I like this one. I like to interpret and not parade myself as a walking encyclopedia or an information bank. When you interpret, you have the right to be wrong – and the right to correct yourself.

'I am a Franciscan!' I say *that* today, October 23, in the spirit that us President John F Kennedy said in 1963, 'I am a Berliner!' Yes, Franciscan. In the first place, my first name is *Francisco*. In the second place, I like what St Francis said that begins, 'Lord, make me an instrument of your peace ...' So my prayer is, 'Lord, make me an instrument of your science...', so every Franciscan essay in this book is one on science.

Every essay in this book is infocracy in theory as well as in practice. Each is a concoction of information, insight, interpretation, intuition, or imagination, or all of the above. Each is offered not as wisdom but an insinuation into the intellect, meant to inspire, influence, inspirit, incite, inform, impart, indicate, intimate. Each is dedicated to the proposition that *science writing may be characterized as a delicate interpreting & influencing act devoutly to be wished*. Scientist or science writer, your devotion to your work should be as good as the infocrat, or better.

Welcome to the world of the Franciscan essay on science.

1.

TALKING TO STRANGERS? BILL GATES DOTTING HIS I'S, CROSSING HIS PEAS

Bill Gates is a Boy Wonder to me; I wonder what he was doing in 1973 outside school in Harvard – studying law? (He dropped out.) I don't know him from Adam Smith, but I know he's a Word Wizard, known that for years (I'm a wide reader, see?), beginning with his Word 1 (the one with the Alpha) circa 1987. His Word 4 was a pain in the ass – you sit long hours to come up with a manuscript worth perusing; his Word 5 was the beginning of a paradigm shift that the world sat up and took notice of; his Word 2003 is genius I now recognize and love to the max; it's his Word 2007 I have a problem with, a complete stranger to me and, you know, I don't talk to strangers.



William Henry Gates, I presume? Photo by Domain Barnyard.

Oh, but Bill Gates is talking to strangers now. He has of course been traveling the information superhighway and, as of last report, he was last seen in Africa this September, and in two different places at the same time! South Africa and Tanzania. That's the wonder of the Internet, right?

Bill Gates in Africa

2007. Actually, what people saw in September in Africa was Bill Gates in spirit, in truth but not in fact. He was with Melinda. You see, the Bill & Melinda Gates Foundation is funding the project **Tropical Legumes** in a dual-

prong arrangement, Prong 1 launched in Rustenburg Kloof in South Africa and Prong 2 launched in Arusha in Tanzania.

Focused on Sub-Saharan Africa, Prong 1 is being implemented by the Generation Challenge Program (GCP) of

What I remember most above all about Harvard was being in the midst of so much energy and intelligence. It could be exhilarating, intimidating, sometimes even discouraging, but always challenging.

– Bill Gates

the Consultative Group on International Agricultural Research (CGIAR), with national research programs, universities and CGIAR centres collaborating, in Burkina Faso, Cameroon, Senegal and Zimbabwe. Prong 2 is being implemented by ICRISAT based in Andhra Pradesh in India, the Centro Internacional de Agricultura Tropical (CIAT) based in Cali in Colombia, and the International Institute of Tropical Agriculture (IITA) based in Ibadan in Nigeria; conducted in 8 countries of Sub-Saharan Africa (Ethiopia, Kenya, Malawi, Mozambique, Tanzania, Mali, Niger and Nigeria), and two countries of South Asia (India and Myanmar). The challenge is the generation of advantaged seeds for the disadvantaged farmers with their disadvantaged soils.

The whole project partners with the Program for African Seed Systems, a major initiative within the Alliance for a Green Revolution in Africa, to ensure African farmers have access to improved seeds. Seeds do

not a farmer make, but with good quality and a little more help, he stands a good chance.

1975. Tropical Legumes is a revolution. This is what I know: *Revolutions are not brought about by single individuals but by teams, including the Information Revolution.* In the case of the software, the revolution was largely brought about by the Disk Operating System (DOS), the team was Bill Gates, Paul Allen & Microsoft (1975). In the case of the PC, the revolution was largely brought about by Apple I; the team was Steve Jobs, Steve Wozniak & Apple Computer (1976). The Information Revolution was started by Microsoft (software) and Apple (hardware). Strange bedfellows those, but we owe them awe.

1995. Bill Gates writes 'A Revolution Begins,' Chapter 1 of the book **The Road Ahead** (New York: Viking Penguin). He is not new to revolutions, being one of the rebels who helped give birth to personal computing, which a little later gave birth to the personal computer (PC). He wants a PC in every home, as in 'a chicken in every pot and a car in every garage' (a promise by US candidate President Herbert Hoover in 1928). He is not new to competition, neither to collaboration. Bill Gates wrote *The Road Ahead* with Nathan Myhrvold & Peter Rinearson.

2000. In 2000, he and wife set up the Bill & Melinda Gates Foundation, with a 'real awareness of the awful inequalities in the world – the appalling disparities of health and wealth and opportunity that condemn millions of people to lives of poverty, disease and despair' (gatesfoundation.org). *Microsoft Windows* changes version every few years; the poor we have always with us?

William is German for *will, determined, resolute*. *Melinda* is a blend of two names, *Melissa* and *Linda*; *Melissa* is Greek for *honey*; *Linda* is Spanish for *pretty* (thinkbabynames.com). Their foundation reflects their best: a common will and beauty of soul.

Their foundation operates on 2 values. One, *All lives – no matter where they are being led – have equal value*. (That's logical.) Two, *To whom much is given, much is expected*. (That's Biblical – Luke 12: 48.)

2007. Bill Gates is traveling the information highway and easing himself into what **William Dar** refers to as 'the next Green Revolution' (inaugural address, Prong 2 launch), another revolution, a Grey to Green (G2G) revolution, this time not high tech but biotech, turning the grey areas (drought-prone, poor soils) into green areas (soils rich in nutrients, fields covered by legumes and diverse other crops).

2007. Bill Gates recites those 2 values in his 2007 June 07 Harvard commencement speech accepting a degree (Doctor of Laws, *honoris causa*) from his alma mater (June 8, Robert A Guth, online.wsj.com). 32 years earlier, he had dropped out of college. Harvard's *Crimson* calls him 'Harvard's most successful dropout' – it shows the world you don't need a college degree to become the world's richest man, or second richest.

He's so smart he's so rich! How did that happen? It's complicated. But he volunteers: For any complicated problem, Bill Gates told the graduates they had to use a 4-point plan to attack it:

- (1) determine a goal;
- (2) find the 'highest-leverage approach;'
- (3) discover the ideal technology for that approach;
- (4) in the meantime, make the smartest application of the technology you already have.

His advice to the graduates was for 'each to take on an issue' and 'become a specialist on it' even if he devotes to it just a few hours every week. It just happens I know that. While a specialist is not always a hit website, a hit website is always a specialist. That's good advice for writers too.

Me, I specialize on the subject at hand, studying often with the Internet, sometimes a book, sometimes a magazine – always, a wild imagination.

Bill Gates says:

What I remember most above all about Harvard was being in the midst of so much energy and intelligence. It could be exhilarating, intimidating, sometimes even discouraging, but always challenging.



Studying in the University of the Philippines is like that. Exhilarating because your mind tells your body to pump more adrenalin. Intimidating when you think you don't have all the answers and you think the other side has all the questions. I got myself much discouraged – in one semester, I flunked my subjects and later almost flunked life's course called *Mens Sana*. It's difficult to live with yourself if you're difficult. My advice: The never-ending challenge is to continuously cultivate a creative mind.

But humanity's greatest advances are not in its discoveries – but in how those discoveries are applied to reduce inequity. Whether through democracy, strong public education, quality health care, or broad economic opportunity – reducing inequity is the highest human achievement.

What Bill Gates is saying is wisdom that not every rich man reaches anytime in his life. He is 53; he was born 1955 October 28. What he's declaring to be true is simple enough: Reducing inequity is the highest human achievement. *The poor should not always be with us.*

Peas in Bill Gates' Menu

I note that, with the Bill & Melinda Gates Foundation's approval, the press release on the launching of the project Tropical Legumes titled 'Legumes step into the limelight in the tropics' is unusual not only because of the mixed metaphor (limelight and sunlight, suggested by 'tropics'), but more so because of the power of the double metaphor in the last sentence ... 'legumes deserve a second look and a leap *in faith*.'

**This is what I know:
Revolutions are not brought
about by single individuals but
by teams, including the
Information Revolution.**

The double metaphor, referring to the promises of the project of balanced diets, higher incomes, high returns on investment, is saying: It must start with the first step, which is to decide to take the risk, followed by a leap of faith.

On my part, I see that this is the beginning of a great project in research for development (R4D) in Africa, the beginning of a reality-based model to emulate in the semi-arid tropics of Asia, Australia, Latin America.

This is how Tropical Legumes is designed to work: Prong 1 conducts the trial plantings of 4 legumes: beans, cowpea, groundnut, chickpea. The research results are then passed on to Prong 2 as basis for large-scale breeding, seed multiplication and distribution to small farmers of new, improved varieties. In addition, Prong 2 works on soybeans and pigeonpea. In breeding, you cross beans to beans, peas to peas. Now, that's Bill Gates crossing his peas.

The Tropical Legumes project is for *increasing incomes, improving soil fertility*; it calls for *investments in the value chain*; and it has *ICRISAT*. Now, that's Bill Gates dotting his i's. *ICRISAT* adds a big value in there, being one of (if not) the most prestigious, most innovative, most organized of the 15 centers of R4D excellence of the *CGIAR*. This is all the more remarkable in that within the span of 7 years, starting in 2000 when **William Dar** became its Director

General, ICRISAT rose from last to first among equals. This year, 2007, ICRISAT was rated O (Outstanding) by the World Bank. William Dar is Filipino; when the Filipino is good, he is the best.

According to CLL Gowda, Prong 2 Project Leader, Prong 2 is designed so that farmers take part in selecting off-the-shelf legume varieties, test-plant them, and produce the quality seeds for the next planting. The project being R4D, research for development, the beans, cowpea, groundnut, chickpea, soybeans, pigeonpea, are the entry points, not the exit points. There is only one exit point: poverty reduction. Or, as Bill Gates puts it, reduction of inequity. Right, Bill; I am recommending this as the world-wise ROI.

From the press release:

The (Bill & Melinda Gates) Foundation is dedicated to a sustainable model of agricultural development that empowers small farmers, engages rural communities and improves agricultural productivity while reducing inequity and protecting natural resources.

Farmers must be enabled to help themselves rise from deprivation; natural resources must be used, not abused; for themselves, villagers must work out together a society where there are no poor.

Denis Mwashita, a small farmer in Bingagaru, Zimbabwe says, 'Beans have always carried disease, but from the little we harvest and eat, we and our children have developed the stomach.' He will soon realize that the Tropical Legumes project will give him disease-resistant, not disease-prone beans, and that is only the beginning.

Farmers must be enabled to help themselves rise from deprivation; natural resources must be used, not abused; for themselves, villagers must work out together a society where there are no poor.

The project is designed to harness knowledge and harvest opportunities. Advanced knowledge includes higher confidence in genomics, including DNA sequences, to create new crops that can defend themselves by themselves against pests, or diseases, or both. With the legumes come livelihoods and the likelihood of higher income and lower poverty figures. With capacity-building of national programs comes the ability to initiate and sustain further research for development in the project countries. All is well that runs well.

For the finale, Bill Gates' Tropical Legumes project I rate 9, where 10 is max.

I'm withholding the perfect score because I'm disappointed Tropical Legumes does not include my favorite crop, **sweet sorghum**. It could not, even if they wanted to: Sweet sorghum is *not* a legume; like rice, it is a grass (Family Gramineae). And that's precisely why I want sweet sorghum in the project – I believe any combination of those legumes should be part of a **multiple cropping system** where there is a biofuel crop such as sweet sorghum, among other crops. Multiple cropping systems simulate the natural world where the forces of nature work out a balance in favor of the populations of the enemies of pests and diseases, and in favor of a richer soil, so that farming requires the least pesticides and fertilizers and often leads to higher yields. If you want organic foods, this is the way to do it.

If I have one, sweet sorghum is my hidden agenda. So, I would advise those thinking of the Gates Foundation, those who want to request for funds in the quest for knowledge: Do so for this one and only crop that can be transformed into 2 more than the 4 Fs, these 6: food, feed, forage, fertilizer, fuel for homes, fuel for cars. Somebody's favorite, sugarcane comes up short: no feed (no grains). Sweet sorghum is a Perfect 10, the one I call 'Discovery Sorghum, The Great Climate Crop' (americanchronicle.com). Because, Bill, while you and Melinda were busy and heart-fully finding and funding ways to reduce the world's inequity, something urgent came up that needs everyone's attention ASAP, this:

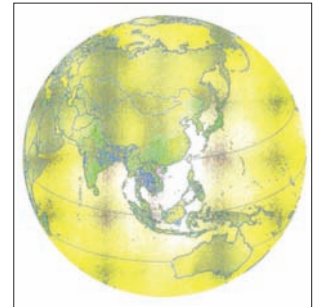
GLOBAL WARMING:

GLOBAL WARMING.

2.

THE COLOR YELLOW.
RUN, AL GORE, RUN!
 (RUN, ICRISAT, RUN!)

A Gore ran for US President and lost, The Man Who Would Be King; he has been running for Global President for 30 years now and just won the Nobel Peace Prize, October 13. The lesson? *When running, act locally, think globally.* Now at peace, Al Gore is *not* running for President and losing again. He has been running a greater race. *Run, Al Gore, run!*



Look at the image on this page. You are looking at the traffic lights from outer space. Man-made. To create it, I ran the original centerfold photo – from *Rice Today*, 2007 July-September, International Rice Research Institute, or IRRI, from an article on climate change – through *Photoshop*. The traffic flows on. The *green* has yielded to *yellow* (next to yellow is *red*).

We're on yellow now; the next color, red, means danger, mortal danger. We're stuck to yellow, that color of global warning, because of error, negligence, stupidity.

Having ran Asia's Green Revolution, and now running her biotechnology, IRRI is running global warning too. *Run, IRRI, run!*

Meanwhile, Al Gore says he and his wife Tipper will donate all whatever his share of the award to his own advocacy group, the Alliance for Climate Protection. He says (Alan Zarembo & Maggie Farley, latimes.com):

We face a true planetary emergency. The climate crisis is not a political issue; it is a moral and spiritual challenge to all of humanity.

If you don't believe Al Gore, who do you believe? Al Gore shares the us\$1.5M Peace Prize with the United Nations' Intergovernmental Panel on Climate Change (IPCC) composed of 2,500 scientists from 130 countries. All glories can be shared only if all share in the work.

IPCC Chair Rajendra Pachauri says Al Gore is a worthy co-winner. UN Secretary General Ban Ki-Moon says he is happy about the UN award. 'Thanks to the IPCC's lucid and well-documented findings,' he says, 'it is now established beyond doubt that climate change is happening, and that much of it is caused by human activity' (latimes.com). The Economist (economist.com) puts it well on how the co-winners fit together in a common endeavor: 'The IPCC has put together scientific knowledge on the subject in a form comprehensible to policymakers; Gore has pushed the policymakers to take action.'

Al Gore won the award for being 'probably the single individual who has done most to create greater worldwide understanding of the measures that need to be adopted' to mitigate global warming (Eric Pooley, time.com).

ABC Australia summarizes beautifully the basis for the decision of the Nobel Committee to award the prize jointly to Al Gore and the IPCC in these words, 'for their efforts (in laying) the foundations for fighting global warming' (abc.net.au). A media release by the Nobel Committee says:

By awarding the Nobel Peace Prize for 2007 to the IPCC and Al Gore, the Norwegian Nobel Committee is seeking to contribute to a sharper focus on the processes and decisions that appear to be necessary to protect the world's future climate, and thereby to reduce the threat to the security of mankind. Action is necessary now, before climate change moves beyond man's control.

Al Gore won the award for being 'probably the single individual who has done most to create greater worldwide understanding of the measures that need to be adopted' to mitigate global warming (Eric Pooley, time.com).

Note that the Nobel Committee mentions about 'laying the foundations for fighting global warming.' It is not enough that Al Gore and the IPCC follow such a role in their own capacities; it is necessary that the rest of us build on such foundations – whether a Nobel Prize is waiting for us or not.

'India celebrates Pachauri's Nobel win,' says Nandini Lakshman (businessweek.com). 'The Peace Prize, shared with Al Gore, gives the UN'S IPCC Chair more leverage in his quest for Indian environmental policy change.' He is running after members of the Indian Establishment running against policy changes to protect their interests. Pachauri is the Director General of New Delhi's The Energy & Resources Institute (TERI), known for its outstanding

business model that provides technical and policy assistances to government and consulting services to corporations and is self-sustaining, 'the only one of its kind in India.' TERI is running after energy wasters and waste producers.

India! You have just pointed me to another award-winning runner, perhaps not in the stature of the us' Al Gore or your IPCC, but nevertheless is world-class in many ways. India, you are home to Team ICRISAT, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the only one of its kind in the world, winner of several international awards too as I have written, including being rated 'Outstanding' by the World Bank among 15 centers of the Consultative Group on International Agricultural Research (CGIAR) (americanchronicle.com). India is its home base; like Al Gore's the world is its running ground. To paraphrase Al Gore's quote of an African proverb: 'If you want to run quickly, run alone. If you want to run far, run together.'

We run. Team Spirit, Team ICRISAT. The Captain and his Team have been running against the poverty of agricultural policies, sectors and systems in Africa, Asia, Australia, Latin America in relation to disadvantaged cultivators growing pigeonpea, chickpea, pearl millet, peanut and sweet sorghum, 5 crops they are mandated to breed better for poor farmers in poor soils: dry, waterlogged, infertile, or too costly to irrigate.

What has the Captain of Team ICRISAT, **William Dar**, been doing in the global run of ideas and information on the issues of poverty of lands and people and the danger of global warming for me to call him the 'Al Gore of Science' in one place (americanchronicle.com) and 'Discovery Manager' in another site (globalnation.inquirer.net)? Dar is the one who has been running Team ICRISAT into projects that directly impact needy peoples in the semi-arid tropics.



For instance, in each of their mandate countries, they have been trying to convince the private sector to partner with scientists and government in running a biofuel industry with small farmers as active partners and direct beneficiaries. Proof of concept is the Rusni Distillery in Andhra Pradesh, India, now producing ethanol from sweet sorghum in commercial scale. Similar proposals have started running in the Philippines. *Run, ICRISAT, run!*

Charles Clover (telegraph.co.uk) says: 'I'm not sure we (can) expect politicians to get the details right. It's the big picture that matters and Al Gore has got that just about right.' I say Team ICRISAT's got it right too.

Nobel Committee Chairman Ole Danbolt Mjos says, 'The important thing is the message that the world is threatened by global warming.' The important thing is even small farmers with sweet sorghum and disadvantaged soils can run into climate change now and can SAVE THEIR POOR FAMILIES, SAVE POOR US, HELPING US RUN THE WORLD'S GREATEST RACE. NOW.

3.

GMA'S INDIAN SUMMER.
 WRITING THE PHILIPPINE STORY
 (REVISED EDITION)

I'm looking at many a would-be writer of *The Philippine Story* (Revised Edition): motivated Senators, aspiring Representatives, venturesome PMA graduates, go-getting ex-Cabinet members, daring militarists, enterprising businessmen, starry-eyed journalists. Men, women they're all the same. I'm different. I'm incorrigible as they all are, but I'm different – I'm an incorruptible optimist. They're all critical as I am – I criticize them for not being creative. 'He has (no) right to criticize who has (no) heart to help' (Abraham Lincoln revised).



Whatever her critics say and don't see, I'm looking at the Indian summer of my President **Gloria Macapagal-Arroyo**. It's a feeling. I walk the street and see flowers framing the window; out comes my daughter Teresa's Sony CyberShot DSC S60 to record the moment forever. I had seen the scene before, but not seized the moment.

GMA has been busy writing the next Philippine Story; her detractors have been busy denigrating the size of her frame, using the wrong framework sizing up her failures, never minding her successes. I admire their tenacity, or shall I say their character? Character, I like to say, is stubbornness bordering on stupidity.

Where were they when GMA was in a State Visit recently and established 'a long-term and mutually beneficial trade relationship for import and export of various products' (gmanews.tv) between India and the Philippines? Thank God

they did not devise a Senate inquiry in aid of legislation. Well, I don't hesitate to say the Indians have more faith in the Philippines than many of the Filipinos who keep loudly professing their love of country.

Let the noisy patriots with their arguments consider the many agreements concluded during that historic visit, including:

(1) *A \$50 million credit line from the export and import bank of India.* A credit line means you're creditworthy, doesn't it?

GMA said in New Delhi last Friday, that this can have 'a direct and positive impact on us in terms of job creation, balance of trade and investment' (pia.gov.ph). India grows, we grow; if India diminishes, the Philippines is the less.

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(2) *Import of pharmaceuticals from India* as part of the Government program to cut in half the price of medicines commonly bought by the poor.

Including the poor senior citizens. October 1-7 is Senior Citizens Week; poor me, I'm 67; I can't afford medicine except when I'm deathly sick; I don't have the budget for vitamins and anti-oxidants except if I scrimp on food like fish, and that's not inexpensive either. No, neither pizzas nor hamburgers on whims, not even on my birthday (that was 3 weeks ago).

(3) *Enhanced cooperation in the field of renewable energy.* GMA said, 'Praj Industries informed us that they are ready to roll out their Philippine bio-ethanol plant soon' (2008) using as feedstock sweet sorghum.

During the Philippine-India Business Forum at New Delhi on October 5, GMA 'acknowledged and recognized the efforts of Director General **William Dar** as a global leader in promoting sweet sorghum for bioethanol production' (ICRISAT Happenings #1279):

President Arroyo congratulated India and ICRISAT for the development of sweet sorghum for ethanol production, and invited investors to the Philippines to use the technology package developed by ICRISAT and Rusni Distilleries. She also encouraged ICRISAT's idea of developing a Philippine Dryland Research Institute.

In the past two years, ICRISAT and the Mariano Marcos State University (MMSU) have been conducting trial plantings with new sweet sorghum varieties in Batac, Ilocos Norte. Three sweet sorghums have shown high yields, 40-45 tons/ha of cane in 4 months. The ratoon crop that follows yields even more, 45-50 tons. That is to say, in the Philippines, sweet sorghum can yield 85-90 tons/ha in 8 months. This is much better than yields in India, where the new sorghums come from. That tells me either we have better soils than India for sorghum, or we have better

weather. This is called, I believe, comparative advantage – I say, mmsu or not, let's start taking advantage of it! Consider also that sugarcane is preferred as feedstock by Brazil and, naturally, the sugarcane farmers in the Philippines. Sweet sorghum does 2 better than sugarcane; one, you can have 2 crops a year while with sugarcane you can only have 1 crop; two, you can grow sweet sorghum in soils where sugarcane will not. This is double comparative advantage, if ever I saw one.

The Dryland Institute is another good start. I hope the management will be ICRISATIC, not bureaucratic. By ICRISATIC I mean run like ICRISAT is run, as a team. I hope the Dryland Institute will find a team captain like **William Dar**.

I also hope that, like ICRISAT, the Dryland Institute will actively seek partnerships with the private sector as well as local governments.

As to our legislators, only (new) Senator Migz Zubiri seems interested in biofuels; other Senators are more interested in fueling the ire of the people against indigence and helplessness, blaming it all on GMA. Only they know how one woman (or man, for that matter) can cause the poverty and misery of a country all by herself (or himself) – and I'm not about to ask them.

(4) *Waiver of visa requirements for holders of diplomatic passports and official passports, liberalized visa policy for Indian nationals.* What are friends for?

Even Harry Potter learned, as his beloved Professor Albus Dumbledore told him in **Harry Potter And The Half-Blood Prince** (2005, Scholastic), 'You need your friends, Harry.' But if you say you love the Philippines and bad-mouth her to the world every time you send an email with attachment or open your big mouth, who needs friends?

During GMA's visit to India, there was also the Ispat Industries Ltd's plan for a \$1.6 billion investment for an integrated steel mill in Southern Philippines, which Ispat Managing Director Vinod Mittal reported to GMA in a courtesy call at the Taj Majal Hotel in Mumbai. Ispat already owns a \$225 million steel mill in Iligan City.

GMA also convinced Bollywood (India's Hollywood) filmmakers to consider the thousands of islands called the Philippines as an alternative site for producing films. Bollywood is the largest film industry in the world, producing



1,000 films a year.

With India on top, the Philippines is among the world's first choices for business process outsourcing (BPO). Thank God for BPO. BPO is contracting out to a third-party service provider such office functions as payroll, accounting, human resources, medical coding and transcription (searchcio.techtarget.com). The Filipinos are good at this, in English too.

'Look East, young man,' India is saying.' The Philippines is to the East of India. GMA said during her visit:

President Arroyo congratulated India and ICRISAT for the development of sweet sorghum for ethanol production, and invited investors to the Philippines to use the technology package developed by ICRISAT and Rusni Distilleries. She also encouraged ICRISAT's idea of developing a Philippine Dryland Research Institute.

World stage carries implications, not just for economic development but for the management of our environment on a sustainable basis and for maintaining the broader peace and stability in the region, in the world. That is why we support India's 'Look East Policy' and your plans to integrate both South Asia and South East Asia. (hindu.com)

A good number of our beloved Senators are busy conducting investigations, in aid of legislation, they who are convinced that these are more important than clean environment, sustainable agriculture, peace within the ASEAN countries, stability in Asia. They are determined to show the world that the solutions to social, economic, political, moral problems lie in more bills discussed in Congress.

So, spoiled boys and girls that they are, let us leave them to

their own devices.

In the meantime, looking toward the general direction of India:

I shall be counting more jobs created (I'll consider offsite contracts);

I shall be assessing the balance of trade and investment (assuming I can master statistics);

I shall be expecting better biofuel crops and ethanol blends with gasoline (assuming I can afford myself a car);

I shall be expecting economic prices of drugs, medicines, pharmaceuticals, rice, sugar – especially wheat, assuming I can buy affordable bread in the morning. **After all, I have to feed my big mouth.**

4.

THE KNOWLEDGE INITIATIVE.
 'LET KNOWLEDGE COME
 FROM EVERYWHERE'
 – MS SWAMINATHAN

There is a new AI emerging in the horizon in Asia. It's called Agricultural Innovation. It's coming from India. It's coming from the United States of America. And, if you're sleeping, it's coming to heads near you. At first it had a long name: 'The India-us Knowledge Initiative on Agriculture Education, Research, Services and Commercial Linkages.' The mouthful of a name is now referred to as 'The us-India Agricultural Knowledge Initiative.' The first name says it all, defining the areas; the second name says it less but better, implying that knowledge can come from anywhere and go anywhere.



There has been a subtle shift in emphasis, from 'The India-us Knowledge Initiative' to 'The us-India Knowledge Initiative.' The first implies that the us is learning from India; the second implies what is the project's goal – India learning from the United States of America. In fact, both countries can learn from each other.

There is much more to learn from this.

Understandably, quite a number of Indian nationals in India and the us have raised concerns that this is another Yankee capitalist scheme. For instance, Atul Kumar Anjaan (2006 June 2, politicalaffairs.net) declares that the

Knowledge Initiative has three main features: agricultural biotechnology, access to biological resources, and intellectual property rights, 'three areas of crucial interest to the us because though technologically rich it does not have the genetic resources, which is essential for biotechnology products.' He says that because 'Wal-Mart, Archer Daniels and Monsanto, three of the world's biggest multinationals are on the Initiative Board; the three are out 'to gain access to and retain ownership of the vast bio-resources of the developing countries,' implying that instead of Intellectual Property Rights (IPRS), it would be Intellectual Property Wrongs. Once a capitalist, always a capitalist?

Like some people I know, even if he doesn't acknowledge it, AKA is afraid of new knowledge. In the first place, he is wrong about the main features of the Knowledge Initiative. In the second place, the Initiative does not prevent Indian nationals from working for their own IPRS. In fact, The Knowledge Initiative may in fact trigger them into action.

In other words, Indians could learn much from Yankees about education, be much more knowledgeable in food processing, branch out to biofuels, be very skilled in biotechnology, be highly productive in water management.

There are some Indian nationals who object to the Knowledge Initiative because it allows the us multinationals to work on the living natural resources of their country. That's not news. How different are they from those who rejected the man from Nazareth, called Jesus, who brought new knowledge to the world? I thought the Indians were more intelligent than that. It is not knowledge (or in another form, technology) that is the problem – it is how you put it to use, or how you don't.

Indian MS Swaminathan approves, he who was once Director General of the International Rice Research Institute (IRRI), one of *Time's* 20 most influential Asians of the 20th century,' Father of India's

Green Revolution (irri.org). In an interview with Shobha Warriar (in.rediff.com), he says: 'Let knowledge come from everywhere.' Let knowledge come from anywhere.

The Knowledge Initiative has four focus areas (dare.gov.in): (1) Education, Learning Resources, Curriculum Development and Training, (2) Food Processing, Use of Byproducts and Biofuels, (3) Biotechnology, and (4) Water Management.

Why would India be interested in the knowledge that the Yankees have in those areas? 'They have all the Nobel Prize winners there,' Swaminathan said. 'They have invested a lot of money in developing ideas, and they have human resources.' We do not have to reinvent the wheel.

In other words, Indians could learn much from Yankees about education, be much more knowledgeable in food processing, branch out to biofuels, be very skilled in biotechnology, be highly productive in water management. We Filipinos could too, if only the Government of the Philippines through the University of the Philippines Los Baños got into an agreement like the us-India Knowledge Initiative.

Would not the Knowledge Initiative result in a second Green Revolution that would fail the Indian farmers and spoil the soil again? Swaminathan said: 'I coined the term *Evergreen Revolution*, which means improvement of productivity without associated ecological or environmental harm.' Swaminathan is Indian Adviser to the Initiative, so he has his job cut out for him. The Knowledge Initiative would increase the yields of crops and not decrease the fertility of the soil and not increase water pollution from farm chemicals. That's for the Knowledge Initiative to say and for you to find out.

I learned and got interested in the Knowledge Initiative when I was trying to research *biotechnology* – a subject I wanted to appreciate but couldn't as long as I didn't understand it – and I saw 'Making biotechnology work for the poor,' the welcome address of William Dar, Director General of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), at the 'International Workshop on Application of Genomics to Chickpea, Pigeonpea and Peanut Improvement' 2006 March 6-9 at ICRISAT headquarters, Patancheru, Andhra Pradesh, India (2007, **Nurturing Life In The Drylands Of Hope**, ICRISAT, pages 29-32). Dar said, 'Dr Mangala Rai had intimated earlier that ICRISAT will be brought into the Knowledge Initiative on Agriculture between India and the USA, which I welcome very much.'

What good would that do? Dar said:

I am sure that the new Knowledge Initiative on Agriculture that will link universities, technical institutions and businesses in the USA and India to support joint agricultural research and education projects will ultimately benefit the poor in developing countries. We stand ready to be a strategic partner in this initiative.

Put that way, for whatever it's worth, I myself would like a similar us-Philippine Knowledge Initiative only because my alma mater UP Los Baños is a giant sleeping, our technical institutions could be better, our local businesses couldn't be bothered about going after new products and enjoying IPRS themselves, and education in my beloved country used to be a sure winner but now is a sore loser.



The Knowledge Initiative focuses on education, food processing, biotechnology, water management. Education in the Philippines leaves much to be desired because Filipino educators from top to bottom have learned much about vigilance but not much about relevance. Food processing in the Philippines is at the teething stage and

needs more milk from a mother. Biotechnology in the country needs more expertise. In many villages in the country, vegetable and flower growers have continued to pump from the underground water without letup and without regard to cost to the environment and the rest of the members of their community. I hope the Knowledge Initiative would address such concerns.

Still, the Knowledge Initiative cannot come from UP Los Baños if all she does is think of academic freedom, which is to serve the University, and not freedom from poverty, which is to serve the People.

Sad to say, the Knowledge Initiative cannot come from anywhere near the University of the Philippines because UP is convinced that Tagalog-based Filipino is the best national language and to use English for education is colonial mentality. Duh!

5.

UP! PINOY CHAIRS UN SCIENTIFIC BODY ON DESERTIFICATION

Global science has caught up with the Filipino who has talent and technique. **William Dollente Dar**, from Santa Maria, Ilocos Sur, has just been elected as Chair of the Committee on Science and Technology (CST) in the current (September 3-14) conference in Madrid, Spain under the auspices of the UN Convention to Combat Desertification (UNCCD). It has taken the UN 30 years to realize that the Filipino has the head and heart for what he himself has labeled 'science with a human face' (icrisat.org).



In 1977, the UN conference on desertification adopted a plan of action to combat desertification; unfortunately, the plant that grew from the seed sown wilted, died. In 1994, the UNCCD was born; the Philippines signed on August 12 of that year. Some 13 years later, we have the Madrid conference, with a Filipino as head of the science committee.

Desertification? Some 200 countries have ratified the Convention, indicating how widespread the unease is. Desertification is 'denuding and degrading a once-fertile land, initiating a desert-producing cycle that feeds on itself and causes long-term changes in soil, climate, and biota of an area' (highered.mcgraw-hill.com). With denuded mountains along with eroded farmlands, the process of desertification has already begun. Desertification results in soils starved of water, crops starved of nutrients, farmers starved of income, citizens starved of nutritious produce, countries starved of healthy economies.

With Dar as Chair of CST, the committee can tap his experience and expertise on sustainable use and management of resources, having proven himself as Director General of the International Crops Research Institute for the

Semi-Arid Tropics (ICRISAT), which is based in India: he turned ICRISAT from moribund to dynamic, creative. ICRISAT is one of the 15 international centers nurtured by the Consultative Group on International Agricultural Research (CGIAR), which is supported by the World Bank and FAO. With Dar as Captain, from January 2000 when he took over, to January 2005 when his term was *renewed*, Team ICRISAT won 46 awards (bar.gov.ph). Among such awards were 2 trophies of the CGIAR's King Baudouin Award, won in 2002 and 2004. In 2005, ICRISAT won the World Bank's Development Marketplace Award. This year, ICRISAT was rated **Outstanding** by the CGIAR, for *total excellence*, considering quality of outputs, impact, financial health, stakeholder perception (americanchronicle.com). The award comes with a World Bank us\$2.4 million grant, *et amore*.

On June 22 this year, the Professional Regulation Commission (PRC) recognized Dar as the *Outstanding Professional of the Year in Agriculture*. This category of award is bestowed as PRC's highest award to someone 'recommended by his/her peers for having amply demonstrated professional competence of the highest degree and conducted himself/herself with integrity in the exercise of his/her profession' (americanchronicle.com).

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That is only one of the many professional awards received by Dar. For instance, he received the most prestigious Philippine award, the honor of being one of the 'Ten Outstanding Young Men' (TOYM) from the Philippine Jaycees in 1988, 'Outstanding Young Scientist of the Year (Agriculture)' by the National Academy of Science & Technology (NAST) in 1995. He has also received the 'Symbol of Excellence in R&D Management' award from the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) in 2002. As an alumnus, he was recognized as a 'Distinguished Alumnus in Research' by the University of the Philippines Los Baños (UPLB) Alumni Association) in 1995, Outstanding Alumnus by the Benguet State University in 1991.

It will be noted that he has been Executive Director of PCARRD, as well as Secretary of Agriculture of his country. PCARRD plans, supports and monitors R&D programs and projects mostly based on the academe; the Secretary of Agriculture plans, supports and monitors agriculture production all over the archipelago. He has been in positions of strength.

With Team ICRISAT's achievements, and with his own, Dar's job as new Chair of the UN scientific committee is cut out for him. In the context of the times, desertification is the product of denudation of the land and degradation of the soil that both contribute to and are aggravated by climate change. That is to say, renewing the denuded and ameliorating the degraded lands are direct ways of combating desertification and mitigating global warming. Done properly, reforestation is a battle won against desertification; practiced with sustainability in mind, farming in the drylands is another battle won. Science comes in as an arsenal supplying arms: improved seeds, improved cultivation methods, improved marketing, improved distribution of benefits of the works of minds and bodies to society.

A model for the tropics, Team ICRISAT under Dar has harnessed the potential of, from among other crops, sweet sorghum as an intelligent choice for a biofuel crop, for ethanol. Sorgho, as sweet sorghum is sometimes referred to, is a legume; among its exceptional characteristics is its ability to grow well in denuded or degraded sites, and is thus the perfect crop to fight desertification, a David fighting a man-made Goliath. It is also able to grow well in waterlogged areas, a David twin fighting a Goliath twin.

With Team ICRISAT'S advocacy, an Indian national has put up Rusni Distilleries to extract ethanol from sorgho grown by small Indian farmers in a commercial arrangement, complete with Indian government support. Being Science Chair of a UN body is added reason I say 'William Dar is the Al Gore of Science' (americanchronicle.com).

Given all that, when it comes to the crunch, the global war against desertification must be fought with local battles that have to be won. On his part, and to begin with, Dar had to steer his UN committee in the right direction.

Having become Chair, Dar invited the delegates to discuss the priority theme of their mission as the new science committee. He noted that the proposed Ten-Year Strategic Plan of the UNCCD, 2008-2018, contained 'relevant recommendations.' For instance, the Plan's vision is compelling:

A world where land degradation/desertification trends are reversed and the effects of drought and climate variability mitigated, thereby contributing to sustainable development through the improvement of people's livelihoods and economic well-being and the protection of the environment at the local and global levels.

Drought reversed, climate change moderated, livelihoods improved, economies ameliorated, environment protected – locally, globally. And how are all that to be accomplished? The accompanying mission is apropos to the vision:



Provide a global framework to support the development and implementation of national and regional policies, programmes and measures ... through scientific and technological excellence, standard setting, advocacy and resource mobilization.

As Science Chair under the UN Convention to Combat Desertification, Dar knows that success depends on all of the above but very much so on the last in the list, *resource mobilization*, meaning moving a legion of institutions and individuals to contribute time, intellect, money and effort to achieve the common goal.

Dar created Team ICRIASAT where no one thought it could be done. He had to do it, for he knew that no one man is great enough to fight desertification alone.

6.

THE YANKEE DAWDLE.
ON DISCOVERY SORGHUM,
THE GREAT CLIMATE CROP

Global warming is heating up the thinking of the world about an inconvenient truth: *Fire & Ice*. All heads in the world, except those of the Yankees, Rip Van Winkles of the Millennium. Remember Washington Irving and his 'Legend Of The Sleepy Hollow' (1917) (bartleby.com)? You will also remember The 'Legend Of The Sleepy Yankees' a hundred years from now. They are not much bothered by anyone's global warning. I certainly hope the world is still around *around 2107*.



One hot little verse written by my favorite Yankee poet Robert Frost, 'Fire And Ice,' published in Harper's Magazine in the winter of 1920, has been inflaming the hearts of many a reviewer of poetry. I like what Katherine Kearns says of it: 'Like ice shrieking across a red-hot griddle, his poetry does, indeed, ride on its own melting.' I like best how Jeffrey Meyers describes it (1996, english.uiuc.edu): 'concise, laconic, perfect and perfectly savage.'

I love Robert Frost's poems because they show what Gary Geddes (1996) describes as 'deceptively simple surfaces' that are in fact symbols (cs.rice.edu). 'Frost writes symbolic poetry,' he says, 'to arrive at certain basic truths about life;' doing so, 'he explores feelings and thoughts obliquely, through the use of simple bucolic incidents.' 'Fire And Ice' is exactly like that; it's just a few lines that rhyme *a/b/a/a/*. It doesn't matter. A poem once written is no longer the author's; it becomes the reader's. This little poem speaks to this reader about global warming and global cooling, and that's how great the poet is, speaking across 4 scores and 7 years ago. A good poem begins with wisdom and ends in understanding – at all times.

Fire And Ice

Robert Frost

Some say the world will end in fire,
Some say in ice.
From what I've tasted of desire
I hold with those who favor fire.
But if it had to perish twice,
I think I know enough of hate
To know that for destruction ice
Is also great
And would suffice.

One hot little piece of paper has been igniting the passion of many a world government in reducing greenhouse gas emissions following international agreements. It is called the Kyoto Protocol, an international treaty in full force since 2005 February 16 (unfccc.int), and which assigns country targets. But the Yankees are unmoved, standing still; the Yankees continue to refuse to ratify the Protocol. It would be pardonable if not for the fact that the us is 'the world's biggest polluter;' the us does not want to be part of the Kyoto Protocol because 'its economic interests would be threatened' (newsbbc.co.uk). Half-asleep, perhaps the us hopes to wake up someday to the fact that Kyoto was the boy who cried wolf. In fact, Kyoto is the boy Peter who would plug the leak in the dike (poetry-archive.com).

How do you like the imperial behavior of the Yankees, who up to now don't even have a Biofuels Act? Shame on them! But to be diplomatic about it, let me just call it The Yankee Dawdle, a sin of omission, of unenlightened interest in climate change.

Meanwhile, one hot little crop has been thawing the icebergs of climate change in the thinking of African and Asian governments about global warming. It is called *Sorghum bicolor*. But the Yankees are unmoved, standing still; the Yankees continue to ignore sweet sorghum and continue to propagate *Zea mays* as their elite energy crop. It would be forgivable if not for the fact that corn is hugely more expensive to produce, several times more than gasoline.

What has the world wrought? How do you like the imperial behavior of the Yankees, who up to now don't even have a Biofuels Act? (Giles Clark, 8 January 2007, biofuelreview.com) Shame on them! But to be diplomatic about it, let me just call it *The Yankee Dawdle*, a sin of omission, of unenlightened interest in climate change.

It is the enlightened interest of every country that the Kyoto Protocol be ratified by the whole world but especially by the us, and the gas emission targets reached as agreed upon. Time and tide waits for no one, not even for the mighty United States of America; neither does climate change.

The Kyoto Protocol was negotiated in December 1997. Fiji had acted the first, the fastest and the most furious; she signed on 17 September 1998 and ratified the Protocol on the exact same date. The European Union (all 16 countries) ratified it in 2002, the Philippines in 2003, Russia in 2004; for the last 20 years, the us, along with ally Australia, has adamantly refused to ratify it. The Yankees say 'No Deal.' Big Deal!

If the us refuses to be a winner against climate change, can the rest of the world be left behind? If the Yankees doubt global warming, all they have to do is ask the old folks; there is much to learn from folk wisdom. If you're listening.

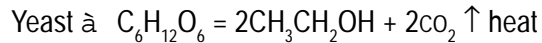
Now apparently there is expert wisdom; there is much to learn from expert wisdom. If you're reading. Today, 3 February 2007, the news from a United Nations study confirms global warming. I first read it in the *American Chronicle* by email; go to Google and there are more than 2,000 pieces of news of it; the one I like most has it and says it best right in the headline (Oliver Burkeman, 2 February, guardian.co.uk/, cited by buzzle.com): 'The scientists spoke cautiously but the graphs said it all.' Walk softly, but carry a big stick.

Still, the us will dismiss that UN report, unless perhaps Poet Laureate Robert Frost recites that poem to the President of the United States in front of a multitude. I have a dream.

*To counter this one intercontinental snub of the Yankees, let us consider this one intercontinental crop of the Indians. I am tempted to call the whole thing **The Indian Protocol**, because it was in India where a science group had made the first moves, a private group took up the challenge, and farmers joined hands to develop the world's first climate crop for rainfall-challenged farms in the semi-arid tropics of Africa and Asia, not to mention America. That crop was sweet sorghum. That science group was the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), a non-profit, non-political international center of excellence in agriculture and 1 of 15 centers of the Consultative Group on International Agricultural Research (CGIAR). That private group was Rusni Distilleries Pvt. Ltd. The result: **The world's first commercial sweet sorghum-based ethanol distillery**, and it began operating last October in Andhra Pradesh, a state with 76 million people, among the most economically challenged Indians. Potential, beginning to be realized. The Indians alone grow sorghum in 9.3 million hectares, about 1/4 of the world's total of 40 million ha. Potential, yet to be realized.*



From the scientific (chemistry) side, the Sorghum Equation can be written as:



That is sugar converted by yeast to ethanol and carbon dioxide, giving off heat. Given that Albert Einstein's famous $E = mc^2$ is elegant where this is not, nonetheless, where one is earth-shaking, the other is earth-shattering; where one presages the end of the world, the other presages the beginning of a new one – climate on hold. Inspired, I hereby propose the Climate Equation and it is this:

YEAST OF US PEOPLE → SWEET SORGHUM = SWEET US\$ + CLIMATE ON HOLD

That is a simple lesson waiting to be learned by the poor like the Filipinos in Asia and Nigerians in Africa, *now* running scared, and the rich like the Yankees and Australians, *not* running scared. The Yankees can learn from their own Indy Racing League, which will be running its race cars on 100% ethanol starting 2007 (AEF, 2006, 25x25.org).

Still and all, sorghum seems to be a crazy choice of climate crop. Indeed. Over 6,000 years old, this one has had a very bad reputation among Yankee scientists. Cornell University lists it as a *poisonous plant* (2003, ansci.cornell.edu); the Weed Science Society of America lists it as a *weed* (2005, weedscience.org); and the

American Phytopathological Society lists it as *susceptible to disease*, and gives a list of 45 diseases attacking this crop: 3 bacterial, 26 fungal, 12 nematodal, 4 viral (apsnet.org). Adding to that, it is certain that from the sweet syrup, the us Department of Agriculture has found it difficult to extract dry sugar (2000, ca.uky.edu/nssppa). Born loser.

Time to listen once more to one of the world's most respected global thinkers, Lester R Brown, another Yankee, who in his latest book writes that we must now and we can be eco-friendly and save ourselves from the clear and present danger of global warming.

But not in Andhra Pradesh, India, at ICRISAT, whose scientists and experts have developed hybrids that make sweet sorghum a great energy crop and air freshener. To plant with and make richly productive the poor soils in the rainfall-challenged parts of much of the world, the millions of hectares of wastelands. To grow crops and clean the air of carbon dioxide. To produce ethanol for cars to greatly reduce their carbon dioxide emissions to the atmosphere.

To raise in millions of hectares, to help forestall climate change. To help the people, poor and rich. Born winner.

The awkward truth is that black power (petroleum-based fuels) has contributed the most to climate change, and that now we must turn to green power (plant-based fuels) if we are to save Planet Earth from the deadly ozone hole of our own making. And we will do it by pushing fossil fuels over the edge and pushing on photosynthetic power, biofuels. And pushing bodies, minds & spirits. And pushing the Big Bad Wolf *Yankee*. There are 6 major greenhouse gas emissions that contribute to global warming: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs and PFCs (Larry West, 2007, environment.about.com). In carbon dioxide emissions alone, the Yankees contributed 5 trillion (5,000,000,000,000) tonnes in 2002 – compare that which the 16 countries

comprising the European Union contributed, a combined 6 trillion tonnes (BBC 2005, news.bbc.co.uk); thus, the us is contributing 13 times more CO_2 than the average EU country! While the Europeans have ratified the Kyoto Protocol, the Yankees have their own protocol. Building their own Noah's Ark, I presume? Truth is stranger than fiction. Ostrich-like, the Yankees have been burying their heads in the sands of time, if not in the deserts of science, refusing to face the awesome truth dramatized in the documentary by a Yankee himself, eco-pusher Al Gore as the modern Atlas, his film *An Inconvenient Truth: A Global Warning*, directed by David Guggenheim (2006). The Yankees are a United States of Denial. If the Yankees will not be a winner against climate change, we can only be a whiner against the Yankees. Atlas cannot carry the whole world on his shoulders alone. I'm now thinking of a book I will be very sorry to write alone: **While Atlas Shrugged, The Yankees Demurred.**

*Time to listen once more to one of the world's most respected global thinkers, Lester R Brown, another Yankee, who in his latest book writes that we must now and we can be eco-friendly and save ourselves from the clear and present danger of global warming. His book is entitled **Plan B 2.0: Rescuing A Planet Under Stress And A Civilization In Trouble** (2006, New York: ww Norton & Co; the whole book is free to download if you go to earth-policy.org). Translated, that would be transforming Plan B into what I call Planet B, if we could get beyond our global ignorance or indifference to the global meltdown that has startlingly started, as shown dramatically in Gore's documentary. The Yankee attitude: The proof of the flooding is in the swimming.*

Gore's inconvenient film in fact comes after Brown's inconvenient book, the first edition having come out in 2001. The Yankees are not listening; Gore and Brown are prophets not without honor except in their own country. In the Preface to the 2006 version (page ix), Brown says, 'The purpose of this book is to make a convincing case for building the new economy, to offer a more detailed vision of what it would look like, and to provide a roadmap of how to get from here to there.' And how do we do that? We focus on cars. Brown says:

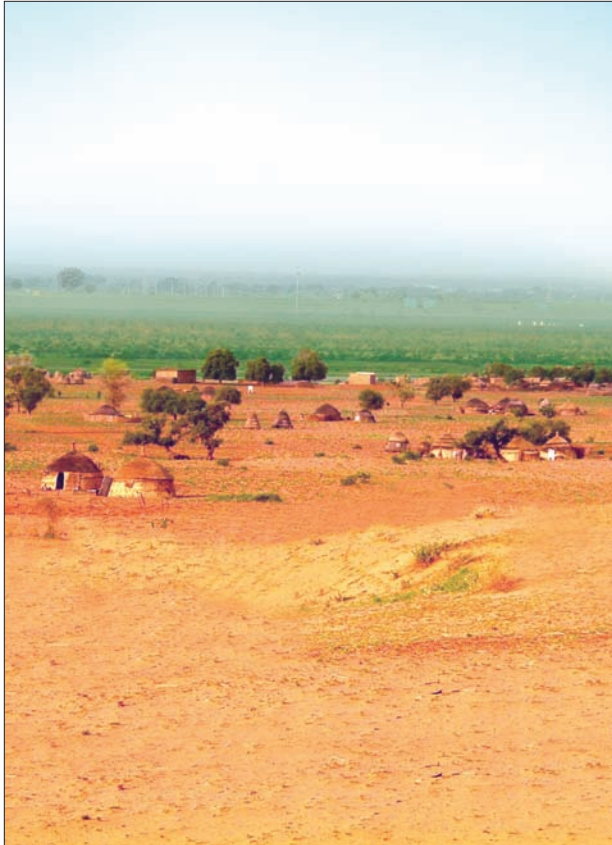
If economic progress is to be sustained, we need to replace the fossil-fuel-based, automobile-centered, throwaway economy with a new economic model. Instead of being based on fossil fuels, the new economy will be powered by abundant sources of renewable energy: wind, solar, geothermal, hydropower, and biofuels. Instead of being centered around automobiles, future transportation systems will be far more diverse, widely employing light rail, buses, and bicycles as well as cars. The goal will be to maximize mobility, not automobile ownership.

If economic progress is to be sustained, we need to replace the fossil-fuel-based, automobile-centered, throwaway economy with a new economic model. Instead of being based on fossil fuels, the new economy will be powered by abundant sources of renewable energy: wind, solar, geothermal, hydropower, and biofuels.

The throwaway economy will be replaced by a comprehensive reuse/recycle economy. Consumer products from cars to computers will be designed so that they can be disassembled into their component parts and completely recycled.

Great! The only problem with Brown's grand proposal is that it is all economics. The great economists like Adam Smith, David Ricardo, Alfred Marshall, John Maynard Keynes, Milton Friedman, some of them Yankees, have always been that: Great Economists, no more, no less. **Great economics has been the cause of all this global warming in the first place!**

Brown does not even mention the very first of the 3 Rs of conservation. The mantra of conservationists has always been *Reduce, Reuse, Recycle*. I memorized that 30 years ago and it's not rocket science. Brown's scenario is populated by procedure, not people. In fact, he says on page 7 that we are confronted with 'two urgent major challenges: restructuring the global economy and stabilizing world population.' He considers the number of people



as part of the *problem*; I beg to differ – I consider the number of people as part of the *solution*. His subscription to the Malthusian theory *that population tends to outstrip food supply* has been debunked many a time – it is 'a fairy tale,' says Larry Azar (quoted by Eric Bermingham, 11 November 2006, kolbecenter.org). The Malthusian theory is unexplained by science, unsupported by experience. And even if Thomas Robert Malthus were right, **right now, overpopulation is one of the least of our problems.**

I submit that what we have to do is **for a critical mass of us to work out first a user-friendly world**, and then and only then can we dream of a sustainable universe, where everyone reduces, reuses, recycles. By *user-friendly world*, I mean the other way around: We people become friendly to Earth. The Earth is Hallowed Ground – *Show some respect!* We are not Owners of it; we are Stewards only.

For an exemplary model, a big one in its totality, we turn not to Government but to Science as our Virtual Savior. Now then, if science is to save us from self-destruction, what we need is, in my view, a paradigm and a shift:

Paradigm: *Science with a human face.*

Shift: *From grey to green.*

Perspective. 'Science with a human face' signifies *theory and practice being dedicated to serve the people's real needs*, not simply those imagined by scientists or imaged by thinkers.

View. 'From grey to green' signifies *fields impoverished turning into soils productive of crops, or super crops turning poor soils into productive ground.*

And from there? *From green to white*, which signifies *harvest turning into white as source of heat – ethyl alcohol*. This is ethanol ignited to run engines that run transport vehicles, with the result that the air is cleaner than when we started, with the end result that cars and trucks do not contribute to global warming. For it is true that the green crops harvest the bad breath of Earth (carbon dioxide in the air) and turn it into organic matter; and the best of such crops yield the 5 Fs of the organic world: food, feed, forage, fuel, fertilizer.

And that crop is? I discovered it to be sweet sorghum. And I discovered it to be one of the mandate crops of ICRISAT. Does ICRISAT realize the treasure that it has in this crop? She does. That explains the ICRISAT-Rusni Distillery humdinger of an agreed enterprise supported by the Government of Andhra Pradesh, where small sweet sorghum farmers supply the feedstock to the plant in a commercial-scale arrangement.

One of the best 5 Fs crops I've come to know is sweet sorghum, known in scientific circles as *Sorghum bicolor* (L.) Moench. This complete name originates from Germany; the original taxonomic nomenclature was assigned by the '(L.)' – the Father of Taxonomy himself, Swedish scientist Carl Linnaeus (also abbreviated Linn.); the nomenclature has been revised by and so is attributed to 'Moench' – the German botanist Conrad Moench. While the US is giving the world the impression that it is unchanged by climate change, or there is no climate change at all, science stands corrected. For all its rotten reputation, sweet sorghum, to distinguish it from grain sorghum, is sweet and juicy. It is a wonderful crop in fact. Let me compare it to corn, the energy crop of choice of *the poor Yankees*.

When in drought, sweet sorghum remains dormant; with the coming of rain, it resumes growth and recovers, unlike corn. The FAO refers to it as 'a camel among crops' because it can survive where the soil is too dry as well as when the soil is too wet.

From Yankee LC Anderson of Iowa State University (August 2000, energy.iastate.edu), I learn that:

- (1) The stalks of sweet sorghum can yield 1,235 gallons of ethanol to a hectare, 2 times that of corn. Great provider.

From what I gather from Yankee Syngenta (2003, syngentafoundation.org), I think this is a thinking plant if ever I heard of one:

- (2) When in drought, sweet sorghum remains dormant; with the coming of rain, it resumes growth and recovers, unlike corn. The FAO refers to it as 'a camel among crops' because it can survive where the soil is too dry as well as when the soil is too wet (Agronomy21, 2002, fao.org). Intelligent being.
- (3) Again, unlike corn, sorghum's aboveground parts wait for the root system to be well established before they grow any further. Intelligent system.

To compare further, from AERC Inc (2003, aerc.ca), and DJ Undersander et al. (November 1990, hort.purdue.edu), all Yankees, I gather that:

(4) Sorghum produces 2 times more roots than corn. More roots underground produce more aboveground: stalk, leaves and grains. Designer cereal.

Ethanol is the fuel of choice in the Yankee Ford Company's alternative fuel strategy program (TMT, 18 April 2006, manilatimes.net). Ford leads with more than 1 million ethanol-powered vehicles on the road worldwide. Has Ford considered source? As source of ethanol, sorghum is most certainly promising, corn is most certainly not. Yankees Jerry Taylor & Peter Van Doren of Chicago Sun-Times vehemently declare that corn ethanol is 'enormously expensive and wasteful' (27 January 2007, suntimes.com). They quote the production cost of \$2.53 per gallon of ethanol, and affirm that such amount is 'several times what it costs to produce a gallon of gasoline.' These Yankees are saying:
Wrong crop!

(5) Sorghum has half the transpiring leaf area of corn and, therefore, needs 30-50% less water than corn to produce a unit of matter. Designer plant.

(6) The leaves have a waxy coating (called *bloom*) and have the ability to fold rather than roll in during drought, reducing transpiration under hot, dry conditions. Designer vegetation.

(7) The plant competes favorably with most weeds. Designer crop.

Sorghum wins! Corn is an also-ran. Sweet sorghum is sweeter than sweet corn.

Sorghum was cultivated in the dry lands of Sudan over 6,000 years ago (G Grassi, 2001, wip-munich.de). Since then, it has become a life-saving crop, the staple food of more than 500 million people in more than 30 countries (ET Rampho, January 2005, plantzafrica.com). Introduced to the United States in the early 17th century, sweet sorghum has been grown mainly for its syrup, which is used as a substitute for sugar (Undersander et al., cited).

In the Philippines, President Gloria Macapagal-Arroyo (GMA) signed the Biofuels Act of 2006 (Republic Act 9367) one year late, on 17 January 2007. *Better late than never.* With her signature, GMA has set forth the process by which the country will reach a target blend for vehicles of 5% ethanol (E5) with 95% gasoline within 2 years and 10% (E10) with 90% within 4 years. Thailand as well as China wants E10 right away, in 2007 (Moustapha Kamal Gueye, 2006, regserver.unfccc.int). Brazil is in center stage and now aiming for E100 in 2007 for all new cars (David Morris, 17 April 2005, commondreams.org). Brazil is dancing the Salsa of the Universe.

Again, in the Philippines, sugarcane is currently the official choice of biofuel crop (Elaine Ruzul Ramos, 2006, manilastandardtoday.com). Sweetheart, sugarcane may be a good

choice, but sorghum is better, much better. I learn that from ICRISAT, whose paradigm / shift I quoted earlier, the institutional focus / strategy being 'Science with a human face' / 'From grey to green' (William Dar, January 2007, **Nurturing Life In The Drylands Of Hope**, Andhra Pradesh, India: ICRISAT, 160 pages). ICRISAT is led by a visionary. The Yankees are led by a blurred visionary.

Comparing crops as sources of ethanol, the biofuel of choice of Brazil, India, the Philippines, the us, France and many other countries, ICRISAT's brochure 'Sweet Sorghum' (Belum VS Reddy et al., 2006, 24 pages) and the Food and Agriculture Organization (Agriculture21, 2002, fao.org) tell us that:

- (1) Sweet sorghum can grow like no crop has grown before: in drylands, acidic or basic soils, waterlogged fields.
- (2) Sweet sorghum grows faster than sugarcane, 200 days (2 crops) vs 365 days.
- (3) Sweet sorghum needs 4.5 times less water than sugarcane, 8,000 (2 crops) vs 36,000 cubic meters. No irrigation necessary.
- (4) Cost of cultivation of sweet sorghum is 3 times less than that of sugarcane.
- (5) Sweet sorghum is easily planted, 5 kg of seeds to a hectare; sugarcane requires the handling of 5,000 cuttings. Many hands don't make light work.
- (6) Ethanol production process from sweet sorghum is eco-friendly while that from sugarcane is not.
- (7) Ethanol from sweet sorghum is better than from sugarcane for two reasons: it has lower sulphur content (is less polluting) and higher octane (yields more power).



In India, in Andhra Pradesh, with ICRISAT's as *Agri-Business Incubator (ABI) incubator of technology* (their term), **William Dar**, PhD, Director General of ICRISAT, inaugurated on 2 October 2006 the production of commercial ethanol by Rusni Distilleries Ltd. In an interview, Dar tells me that Rusni is owned by Mr Palani Swamy, an Indian national. Rusni is a multi-feedstock system, meaning it can squeeze the juice from sweet sorghum as well as from sugarcane & other materials. Rusni has already made history: *It is the first of its kind in the world* (Reddy et al., cited), that is, a commercial sweet sorghum ethanol plant born out of the *coalition of the willing: science, citizen and government*. Doesn't the world owe that lesson from the Yankees?

The sweet sorghum story has happened in India, which before that has been advertising itself as (tourisminindia.com) *The Destination Of The New Millennium*. It is now.

In the Philippines, intrigued and interested, GMA sent last year Mr Benedicto Yujuico, Special Envoy for Trade Relations to study the ICRISAT-supported Rusni Distillery; upon his return, he recommended replication of the Rusni model in the country. In an email, Dar tells me that GMA has given her full support to the Philippine sweet sorghum project and has accepted the invitation for a project visit to Batac, Ilocos Norte this February. Batac is where Mariano Marcos State University (MMSU) is located; the MMSU campus is the base whereby the discovery sorghums (hybrids actually) of ICRISAT have been successfully test-planted for the last 2 years by the Department of Agriculture (DA) through the Bureau of Agricultural Research (BAR). In the interview, Dar tells me there are 8 hybrids that have passed through multi-site field trials and are ready for commercial planting, the recommended variety depending on the farm's location in the country.

In fact, after India, in the Philippines, the wheel of prosperity run by sorghum energy has started rolling. On the 19th of January this year, a technology investment forum was initiated by Agriculture Secretary Arthur Yap. As a result, Dar tells me that 5 Memorandums of Understanding (MOUs) have been signed between ICRISAT and Rusni Distilleries on one side and 5 interested local and foreign companies on the other side to use the Rusni multi-feedstock distillery system and ICRISAT sorghum hybrids. Target distillery-farm sites are the Ilocos Region, Cagayan Valley, Central Luzon, Southern Tagalog Region, and Central Philippines. To each its own sweet sorghum variety, I presume.

Over lunch with Dar, **Luis Rey Velasco** (Chancellor of UP Los Baños), and **Santiago R Obien** (consultant) among others, I am talking to Belum Reddy, Principal Breeder (sorghum) of ICRISAT, about the Institute's 8 sweet sorghums tested in Northern Luzon for the last 2 years through MMSU. Having been Editor in Chief of the *Philippine Journal of Crop Science* for the past 6 years, I have been thinking about national (multi-location) testing of many varieties, where the protocol is to select for outstanding performances in a production trial, composite; that is, in the case of sweet sorghum: sugar yield + stillage (bagasse) + grains, average of several locations. So they select *in 2* out of the 8 varieties as top of the line. What happens to the others? They select *out 6*. I suggest

another approach: Don't get the average; get the best performance of each variety. If you're after sugar, go after sugar. In other words, why not select and recommend all 8? Surely, a different variety is an outstanding performer in a different location, but maybe not in all locations. Dr Reddy is kind enough to agree.

Ethanol is the fuel of choice in the Yankee Ford Company's alternative fuel strategy program (TMT, 18 April 2006, manilatimes.net). Ford leads with more than 1 million ethanol-powered vehicles on the road worldwide. Has Ford considered sorghum as source of ethanol, sorghum is most certainly promising, corn is most certainly not. Yankees Jerry Taylor & Peter Van Doren of *Chicago Sun-Times* vehemently declare that corn ethanol is 'enormously expensive and wasteful' (27 January 2007, suntimes.com). They quote the production cost of \$2.53 per gallon of ethanol, and affirm that such amount is 'several times what it costs to produce a gallon of gasoline.' These Yankees are saying: **Wrong crop!**

In the Philippines, Dar tells me the initial investment per enterprise is us\$8.5 million for the distillery, which can produce 40,000 liters of ethanol a day. For full operation, it needs 150 people to run the plant, 4,000 hectares to raise sorghum and 20,000 hands to grow and harvest the crop.

Compared to that of corn ethanol, the economics of sweet sorghum ethanol is sweeter. For instance, in India with Rusni Distillery, the production cost per gallon of ethanol is \$1.47 (my computation, data from Reddy et al., 2006).

In the Philippines, Dar tells me the initial investment per enterprise is us\$8.5 million for the distillery, which can produce 40,000 liters of ethanol a day. For full operation, it needs 150 people to run the plant, 4,000 hectares to raise sorghum and 20,000 hands to grow and harvest the crop. Considering 5 distilleries, here are the figures: initial investments in dollars us\$42.5 million, total area planted 20,000 hectares, farm hands employed 100,000 people, and total ethanol produced in a year 73 million liters. In developed countries, they welcome mechanized farming; in developing countries, they welcome manualized farming, creating jobs. Considering all that, with the 5 different distillery sites, sorghum as one crop alone will have immeasurable multiplier effects on the local and national economies of the islands.

Compare that with sugarcane as feedstock for ethanol. The initial investment is \$45.6 million (P2.28 billion) for 1 distillery (Ramos, cited), which is 5 times more than that with sweet sorghum. Too much for an initial investment.

According to AK Rajvanshi & N Nimbkar (2001, nariphaltan.virtualave.net), sweet sorghum is 'the only crop' that provides grain and stem that can be used for sugar, alcohol, syrup, jaggery, fodder, fuel, bedding, roofing, fencing, paper and chewing (animals). Actually no; sugarcane provides all those too, but rather more expensively.

What about the buying price? Dar says that ethanol is now competitive with petrol (gasoline) in India due to high prices of fossil fuels, even adjusting for energy equivalency (1 liter of petrol = 1.5 liters of ethanol) (September 2006, 'What ICRISAT Thinks,' icrisat.org). 'The constraint is not the cost of ethanol production,' Dar says; 'it is the supply of raw materials.' Sorghum will supply more stalks for more ethanol for less.

According to Dr Heraldo Layaoen, who is a pioneer scientist grower of sweet sorghum in the Philippines, who is also Vice President of MMSU, within a year, 2 crops of sweet sorghum will yield a combined average of 200 tonnes of sugar to a hectare in 200 days, while 1 crop of sugarcane will yield a maximum of 90 tonnes in 365 days (INF, 10 September 2006, nordis.net). No comparison. Sugarcane was introduced by the Arab traders to the Philippines before the Spanish era (Jose Maria T Zabaleta, 1997, fao.org); to me that means the Filipinos have been cultivating the wrong crop for sugar for more than 500 years! Thanks but no thanks. Dr Layaoen says that sugarcane has as high as 14% sugar content while sweet sorghum has 23%. Thank you very much! Translation:

Sweetheart, sugarcane is sweet, but sweet sorghum is sweeter.

7.

LEARNING FROM MICROSOFT R&D. THE NEW PARADIGM FOR RESEARCH

Bill Gates is acting strange. Microsoft is no stranger to computer science research and development (R&D) – but agriculture R&D? Today, Bill Gates is into crop research, specifically the Tropical Legumes II Project, in faraway Sub-Saharan Africa, no relation to Microsoft Windows or Office 2007. He might have been talking to officials of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) based in Patancheru, India, perhaps even officials of the Centro Internacional de Agricultura Tropical (CIAT) based in Cali, Colombia; International Institute for Tropical Agriculture (IITA) based in Ibadan, Nigeria. The three are implementing Legumes II.



That's a big jump for Bill Gates from software to soybean, from programming to pigeonpea, from computer code to chickpea, from Visual Basic to beans, from client security to cowpea, from computer games to groundnuts. From design to DNA, the one largely dictated by the mind, the other largely dictated by nature.

Actually, Microsoft is no stranger to the unknown. Microsoft *is* Bill Gates, right? Along with **Paul Allen**, in 1968 – years before Apple Computer's **Steve Jobs** & **Steve Wozniak** came out with the world's first truly personal computer, the Apple I on April Fool's Day in 1975 – already Gates was exploring the undiscovered world of personal computing using the big computers of Computer Center Corporation in Seattle. Gates, pioneer in cyberspace.

How did Gates jump from conceptual products to natural produce? He is married and they have the **Bill & Melinda Gates Foundation** aimed at 'bringing innovations to health and learning to the global community.' With active support from **Rob Horsch** and **David Bergvinson**, the Gates Foundation is funding the us \$20 million Legumes II project of ICRISAT, CIAT and IITA. This was launched on September 24 at Arusha, Tanzania. The Gates Foundation had earlier supported Legumes I.

Certainly, crop researchers can learn from Microsoft's corporate experience:

Microsoft Research is dedicated to conducting both basic and applied research in computer science and software engineering. Its goals are to enhance the user experience (with) computing devices, reduce the cost of writing and maintaining software, and invent novel computing technologies. Microsoft Research also collaborates openly with colleges and universities worldwide to broadly advance the field of computer science.

How did Gates jump from conceptual products to natural produce? He is married and they have the **Bill & Melinda Gates Foundation** aimed at 'bringing innovations to health and learning to the global community.'

Borrowing from that, the tropical legumes project is basic and applied research on food legumes, its goals being to enhance the farmer's experience with growing beans, soybean, chickpea, pigeonpea, cowpea, groundnut; to reduce the cost of cultivating and sustaining legume production; to invent novel production technologies. Legumes II is also about institutional collaboration to broadly advance the field of semi-arid tropical agriculture.

In launching Legumes II at the New Arusha Hotel, Director General **William Dar** of ICRISAT (photo, the man in the middle) reminded those delegates from Sub-Saharan Africa (Ethiopia, Kenya, Malawi, Mozambique, Tanzania, Mali, Niger, Nigeria) and from South Asia (India and Myanmar) about the urgent need to improve the livelihoods of people living below the poverty line. Where technologies are already available, research institutes and development agencies have to make resolute efforts to raise the awareness of farmers of such technologies, to spark their interest in such matters, to make them

desirous to adopt such innovations, to remove any obstacles to their acceptance and use. 'In short,' he said, 'we have an institution to grow, a mission to fulfill, and impacts to achieve.' In each of the Sub-Saharan African and South Asian countries that are part of Legumes II, it is necessary that local institutions be strengthened to support the new tools and techniques; that, together, research centers and development agencies be aware that they have influences to exert and a mission to accomplish.

In that same occasion, the Director General of ICRISAT made clear to the Legumes II launching delegates, that it was 'necessary to close the gap between intention and action' – that research proceed to extension. This is the *research-for-development paradigm*. R4D. Microsoft is at home with the process, if not the acronym. There are no one-size-fits-all solutions. In computer science, software must lend itself to customization, to tinkering by a tutor to fit his teaching style, by a student to fit his learning style. In crop science, Dar said decisions ought to be made 'taking into account natural resource fragility, community vulnerability, risk profiles, asset resilience, market options' and other things. I interpret that to mean farmers must consider the:

- (a) long-range effects of crop choices along with the changing fertilities of fields,
- (b) cropping patterns and systems in the village and beyond,
- (c) possibilities of infestation (by insects) or infection (by disease microorganisms),
- (d) access to capital, and
- (e) target buyers.

Everything must be considered. Over the years, a farmer's practice may have in fact diminished the fertility of his field. Farmers may have denied their soils their natural source of nutrients by not incorporating the crop refuse and weeds into the soil by one means or another. The villagers may have planted the same crops for generations that the bugs and the bacteria have learned to feast on them. Some farmers may have borrowed capital they could not afford to repay. Some crop growers may have ignored or failed to explore the markets and have gone on to over-saturate one or two, resulting in soft returns for their hard labors.



Farming is sweet sorrow, and it is up to the experts to help the farmer make his cultivation of the soil not a punishment but a reward, not simply a minor advantage but a great benefit.

It has long been known that some pests and disease-causing organisms have become tolerant to insecticides, fungicides and such other pesticides. In other words, from generation to generation, which could be just a few weeks or months, the enemies of crops have learned to defend themselves even as they attack. While the bugs and bacteria innovate on how to attack the farmer's crop, the farmer's advocates – us – must innovate on how to counter-attack. **So, research for development must go on. R4D.**

8.

BIOFUEL ISLANDS. 'WE ARE PRODUCING THE FUEL OF THE FUTURE'

The Philippines, with 7,000+ islands, is perfect for growing biofuel crops such as sweet sorghum, sugarcane and cassava, the planting sites including the drylands, wetlands, infertile soils. We Filipinos just have to invest on her. To begin with, **Chris de Lavigne**, Global Vice President of us-based Frost & Sullivan, says the Philippines is now 'one of the most attractive investment sites for biofuels projects' (asianjournal.com). He cites 'strong government support' as well as the Biofuels Act as reasons for his conclusion. Philippine policies on biofuels are 'better than in other countries.' He adds the 'strong foresight and management' of the Philippine National Oil Company (PNOC)-Alternative Fuels Corp (AFC) and its advocacy of biofuels in the Philippines as a plus factor. On his part, AFC Chairman **Renato Velasco** says, 'We are producing the fuel of the future.'



Fuel for *cars*, mostly. Although, if they do it right, it could very well be fuel for the *economy* of these islands, and they would indeed be the Pearls of the Orient Seas. Right now, the fuel of today, gasoline, is guzzling the country's liquidity like a hungry giant C monster – C for capacious. We are captives of the petroleum cartel; it is true that fossil fuels do a prison make.

Another news source reports that AFC has signed a us\$1.3b deal with UK-based NRG Chemical Engineering to build biofuel refineries with associated plantations in the Philippines (planetark.org). AFC President **Peter Abaya** says they are planning to plant more than 1M hectares of jatropha alone, for biodiesel.

A few days ago, the Department of Agriculture (DA) signed a biofuels agreement with Praj Industries 'to help develop the country's biofuels industry' during the state visit of President **Gloria Macapagal-Arroyo** (PNA, tradingmarkets.com). On behalf of the DA, Undersecretary **Bernadette Romulo Puyat** signed for the Philippines; **Shashank Inamdar**, Managing Director and CEO of Praj, signed for the company. Praj will 'provide the design, engineering and supply the biofuel production plants to potential investors.' The DA will in turn identify the land for growing the crop and encourage the farmers to grow sweet sorghum, sugarcane, cassava, jatropha, wheat, tapioca, sugar beet, among others. Praj already has a plant that will be producing ethanol in Ormoc, Leyte by March 2008.

The DA is now identifying more than 400,000 hectares of land for private sector investments, of which about 90,000 ha are in North Luzon, 10,000 ha in Central Philippines, and 300,000 ha in Mindanao. Investors can choose from these arrangements: straight purchase, lease, contract growing, joint venture. Agriculture Secretary **Arthur Yap** expects that the growing of biofuel crops for clean fuels will not only energize vehicles but, first of all, Philippine farms – the small farmers will benefit immensely from their harvests and the country will enjoy more and more independence from imported fossil fuels. If everything goes as expected, incomes of farmers will be guaranteed, more jobs will be created, and the local as well as national economy will perk up, animated, multiplying

the effects on everyone. How is that possible? Agriculture is crucial in the country's economy because it accounts for 25% of the gross domestic product (GDP) and 35% of the labor force, according to Yap (Amy Remo, newsinfo.inquirer.net).

In the Philippines, Mariano Marcos State University (MMSU) is the ICRISAT pilot site for sweet sorghum. In the village of Bungon in Batac, Ilocos Norte, there is a sweet sorghum cane mill and they are producing ethanol, vinegar, jaggery, syrup, cookies, popgrain.

Now, which crop for biofuel?

Senator Migz Zubiri is for bioethanol from **sugarcane**. Earlier, he said: 'The Philippines would need at least 10 bioethanol plants by 2009' (Carla Gomez, newsinfo.inquirer.net). That would be to meet the E-5 (5% ethanol-90% gasoline blend) requirement following the Biofuels Act. Zubiri is the Father of Biofuels in the Philippines. Signed by President Arroyo early January (Maricel Cruz, manilatimes.net), the Act took effect May 7 (planetark.org). Zubiri is one of the top sugar producers in the country (alternat1ve.com). So, sugarcane is the sugarcane farmer's choice. To each his own.

The DA's choice is appropriate: the investor's choice considering the farmer's choice. They have to have the same crop choice if they are to work together. Not to each his own as has been the case for centuries.

But if I were the farmer, **sweet sorghum** is the fuel of the future for me. Based on information from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), *sweet sorghum can grow with too much or too little moisture in the soil*. Sounds too good to be true. I must see this with my own eyes.

Soil moisture. Having read much and thought about crops and water, years ago I came to the conclusion that the problem of lack of water for irrigation can be solved best by? Lack of water. That is to say, do not irrigate at all, or irrigate sparingly. My lack-of-water theory explains why I became interested in sweet sorghum, a crop I had never seen and finally did see with my own eyes courtesy of **William Dar**, Director General of ICRISAT. I joined the August 29 Laguna field trip of the experts convened for the 'Expert Consultation On Biofuels' co-sponsored by the Asia-Pacific Association of Agricultural Research Associations (APAARI), International Rice Research Institute (IRRI), Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT), International Food Policy Research Institute (IFPRI) and ICRISAT meeting at IRRI. At Los Baños, we saw sweet sorghum growing. (The photo comes from ICRISAT; it shows Dar, who is tall for a Filipino, being dwarfed by sweet sorghum.)

In the Philippines, Mariano Marcos State University (MMSU) is the ICRISAT pilot site for sweet sorghum. In the village of Bungon in Batac, Ilocos Norte, there is a sweet sorghum cane mill and they are producing ethanol, vinegar, jaggery, syrup, cookies, popgrain (Ma Eloisa E Hernandez, bar.gov.ph). A farmer can earn 50K pesos from a hectare. I would like to see that too. It's easy to imagine because I understand you can use the same small-farm sugarcane mill on sorghum with just a little adjustment.

ICRISAT has a flyer online by Belum Reddy, 'Sweet Sorghum: A water-saving, bio-energy crop for the Philippines' (icrisat.org). Reddy says that, compared to using sugarcane in producing ethanol, sweet sorghum (1) costs less, (2) gives added value in the grains (2-6 tons/ha), (3) bagasse is rich in nutrients and minerals, good for livestock, (4) process is less polluting, (5) ethanol has higher octane rating, better for your vehicle. I have written about sweet sorghum and ICRISAT myself here: 'On Discovery Sorghum' and 'The Sweet Sorghum Initiative.'

I'm looking at the ICRISAT printed 4-page 4-color pamphlet titled 'BioPower: ICRISAT'S Pro-Poor Bioenergy Initiative in Asia and Africa' aimed at 'energizing a pro-poor revolution.' Smart, if you put it that way.

Is the Philippines ready for a crop-based, car-rich, capitalist-run economy? If any country can be, it already is. The islands are good for tanning visitors from other lands as well as growing vegetation that love the tropical atmosphere.



The business approach is to take a calculated risk. Personally, I would encourage the government and business sectors in their biofuel crop enterprises.

Meanwhile, the experts in the consultation I mentioned earlier worry about biofuel crops competing with food supply, and they recommend to do biofuels research first, which is the scientific approach. Aside from investing in biofuel crops and food crops, *we're investing in people, people*. People come first, especially the poor. I'm thinking small-farmer approach (and mitigating global warming), this: Government encourages and supports 1M small farmers planting 1M ha of degraded lands with sweet sorghum, for income and carbon credits. **ICRISAT gives me the impression sweet sorghum is perfect for problem soils – drylands, wetlands, infertile soils – and I'm impressed.**

9.

SEEDS FOR MY SWEET.
SORGHUM FOR MY HONEY,
SATISFACTION GUARANTEED!

The Yankee poultry raisers feed their chickens with *expensive* food: *corn*. That is because corn prices have jumped following the high demand for corn for ethanol, ^{GW} Bush's biofuel of choice. Are they riding Volkswagens now? Do Yankees always make terrible food-for-non-food choices?



With each jump in the corn price, the Yankee farmers are happier and the poultry raisers in the US and in the Philippines are sadder. You see, we Filipinos purchase Yankee jokes and buy their corn. This one is for the birds.

Lester Brown, President of the Earth Policy Institute, says, 'We're putting the supermarket in competition with the corner filling station for the output of the farm' (Matthew Wald, 2006 January 16, nytimes.com). 'We' here refers to the Yankees, who thrive on competition, which drives their economy. They have capitalism, don't they?

Robert Brown, a professor in agricultural engineering at Iowa State University, says 'The impression is that we're taking food out of the mouths of babes' (nytimes.com). No, Professor, we don't give babies our corn. Where life is harsh, as is often the case, we give them our grit.

Corn aside, Wald says, '**A global shift to farm-based fuel could reduce the need for oil and slow climate change.**' *That's about the best summary of the whole scenario I have come across.* There's economy of words that reminds me of Henry David Thoreau's injunction: 'Simplify, simplify, simplify! ... Simplicity of life and elevation

of purpose' (heartquotes.net). Thoreau inspired by Walden, Wald inspired by his own elevated sense of purpose, if I may put it that way. Wald has simplified it well; his sentence of 17 words has 11 essential ones: *Global shift, farm-based fuel, reduce, need, oil, slow, climate change*. That's what this is all about, isn't it? That's => more ethanol from farm crops => less oil from fossil fuels => less carbon dioxide from cars => less ozone depletion => less abrupt climate change. An act hard to follow, if not hard to swallow.

Have faith in corn for ethanol: That could be the new Protestant ethic. Brown and other Yankee experts are afraid that the new ethic will cause corn and other food shortages in many states, because more farmers would plant more corn, plant less wheat, plant less soybeans. Wendy Wintersteen, Dean of the College of Agriculture, Iowa State U, says that this summer, 'we will have areas of the state we would call corn deficient.' But Keith Collins, Chief Economist of the US Department of Agriculture, reminds us that 'the United States is paying farmers not to grow crops on 35 million acres, to prop up the value of corn.' That is to say, theoretically, 14M ha can go into the growing of corn and wheat and cotton, so there shouldn't be any corn deficit anywhere in the United States.

What Collins is saying makes sense to me. But, I say, corn for ethanol is a thoroughly corny idea. Corny, as in insignificant. Corn is only a second-rate feedstock for ethanol. It's more expensive to produce than, say, sweet sorghum.

What Collins is saying makes sense to me. But, I say, corn for ethanol is a thoroughly corny idea. *Corny*, as in *insignificant*. Corn is only a second-rate feedstock for ethanol. It's more expensive to produce than, say, sweet sorghum.

Joe Jobe, Executive Director of the National Biodiesel Board, thinks differently. He says, 'There's a historical shift under way, not to grow more crops for energy and less for food, but to grow more for both.'

By Jobe, amen to that! We don't all have to eat corn. We can eat sorghum. Did you know that sugar is sweet but, as I have already written, sweet sorghum is sweeter? You better believe it. Heraldo Layaoen, a pioneer scientist-sorghum grower in the Philippines, says sugarcane has 14% sugar content, sweet sorghum has 23% (thesweetsorghuminitiative.wordpress.com).

You don't entertain the idea of eating sweet sorghum like you eat corn? No problem. If you are in India, you may be able to eat chicken and eat sweeter. That's because the chicken wing you have in your hand may have come from a bird fed with sweet sorghum. Not necessarily tasting sweeter in the sense of sugar, but tasting *nicer, more delicious*. Satisfaction guaranteed.

It is as if I have seen it myself. I read in her 2005 annual report that the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has a project titled 'Exploring marketing opportunities through a research, industry and users coalition: sorghum poultry feed.' The report says (pages 16-17) that the coalition comprised ICRISAT, the Acharya NG Ranga Agricultural University (ANGRAU), Federation of Farmers Associations (FFA), Andhra Pradesh Poultry Federation (APPF), and Janaki Feeds. The aim: replace expensive corn in the feeds.

First, small farmers from 4 villages of Mahabubnagar and Ranga Reddy districts of Andhra Pradesh were supplied with new, improved sweet sorghum seeds from ICRISAT in 2003. Satisfaction gained: The harvests impressed the project partners and farmers themselves. Noting their enthusiasm, ICRISAT supplied seeds in 2004 to more than 500 small farmers from 12 villages. From the harvests, the sorghum grains went into new feed formulations for poultry. The feed trials were done on broilers (Cobb chicks) and layers (ILR 90 Jubilee birds). Results? (1) *Better* – The sorghum-feed broilers and layers had comparable body weights and their feed costs were lower than the corn-feed broilers. (2) *And Better* – Except for a paler yolk, the sweet sorghum layers did as well as the corn layers in body weight gains and eggs produced, at lower cost.



Team ICRISAT has been able to tell this double-sweet bird story as a product of what it calls the 'coalition approach,' whereby partners 'work together right from the project conception stage to the concluding stage towards a common goal with synergistic effect.' That's easier said than done; it is to the credit of the Team as well as the Team Captain, **William Dar**, their Director General, that the bigger team of ICRISAT + ANGRAU + FFA + APPF + Janaki Feeds had been successful with sweet sorghum grains as corn substitute in feeds for poultry.

Success favors a coalition – with a great coalition coach.

10.

BEING A DIFFERENT KIND OF CV. GLOBALLY YOURS, WILLIAM DAR

Today Danumán, tomorrow the world!? Today, the drylands. It's the water. There is pleasant irony in the fact that William Dollente Dar comes from a village called Danumán West in the lowlands of Santa Maria, Ilocos Sur, Philippines while he was ensconced as the *Chair of the Committee on Science & Technology (CST)* starting at the September 3-14 meeting of the UN Convention to Combat Desertification (UNCCD), with 191 countries having signed the Convention – a very high honor. *Danumán* indicates, from *danúm* (*water* in Ilocano, his native tongue) *a waterlogged or watery place* while *desertification* suggests *all sand and hardly a drop of moisture*. Extremes. Givens that he learned to accept and work from there.



Where he is now, Dar is high and dry, safe above the water, although with a new, top-level responsibility. He is quietly happy for this added window of service to peoples in Africa, Asia, Latin America. It shows in his face. He is quite happy with his family, with lovely wife **Beatriz Meria** and his beautiful girls **May, Celeste, Christine**. The only boy, *William Jr*, died young, but they have gotten over that. You overcome a tragedy before it overcomes you.

This happy story begins 1953 April 10, when a boy was born. Let us now trace his intellectual growth from grade school to graduate studies, 1959 to 1980, on to achievements.

He finished his elementary education at the Santa Maria West Central School in his hometown. That means he grew up in a semi-arid tropical site, a water-challenged zone. Much of the Ilocos Region is in need of soil moisture to nourish the crops grown there: rice, tobacco, cotton, corn, onion.

In 1969, he graduated from the Ilocos Sur Agricultural College as **Valedictorian**. That means he can excel in his studies when he wants to. High school can either be the best or the worst years of your life as a student.

In 1973, he finished his **Bachelor of Science in Agricultural Education** at the Mountain State Agricultural College (MSAC, now Benguet State University or BSU). That means he knows how to teach, construct lesson plans, measure the outcome of his own teaching; he knows his parliamentary procedures, having been a member of the Future Farmers of the Philippines (FFP) in those years.

That's not surprising. He is a prophet, in the sense of predictor of events. Peter Drucker says, 'The best way to predict the future is to invent it.' William Dar invents it in his mind and makes things happen to realize it.

In 1976, he obtained his **Master of Science in Agronomy** from MSAC. That means he knows his soil management, land cultivation and crop production.

In 1980, he received his **Doctor of Philosophy in Horticulture** from the University of the Philippines Los Baños (UPLB). That means he knows flowers, fruits and vegetables grown in appropriate places: orchards, gardens, greenhouses.

From Education to Agronomy to Horticulture; further, I see many other paradigm shifts as I trace his ascent from management technician in rural Philippines to Chair of a UN Committee on Science & Technology. The many paradigm shifts in his life explains why he has a flexible touch of management, a wide grasp of dreams and realities in the field; why he is innovative, adaptive; how he has come to know, seemingly instinctively, the value of partnerships. His published books, much of the content being invited lectures, display his grasp of science in the mind of the scientist, different from science in the mind of the policymaker, different from science in the mind of the entrepreneur, different from science in the mind of the poor. 'Science with a human face,' he calls it.

He was **Farm Management Technician** for the Bureau of Agricultural Extension of the Department of Agriculture, assigned in Benguet Province from February to May in 1973, a new BS graduate. The Technician was expected to advise traditional farmers on modern farming.

Within the same year, from Technician, he graduated to **Teacher** at the Baguio City High School and taught there from 1973 to 1975. From farm to classroom was a professional switch, a paradigm shift from working with hard-to-move minds of farmers to working with moldable minds of students.

He moved on to MSAC and taught there and stayed, rising from **Instructor I** in 1975 to **Instructor V** in 1977, **Assistant Professor** in 1979, **Professor III** in 1981, **Planning Development Officer** in 1982, **Special Assistant to the President** for Research, Planning and Development in 1983, **Professor VI** in 1986, **Vice President for R&D Support Services** of BSU (the old MSAC) in 1987. Not many people can rise from an equivalent Teacher to Assistant Principal like he rose from Instructor to VP in only 12 years. He was **Research Coordinator** of the Highland Agriculture and Resources Research and Development Consortium of PCARRD from 1979 to 1987. He

had a project funded by the Ford Foundation, the 'Highland Rural Development Project,' promoting participatory R&D and harnessing modern as well as traditional technologies to increase productivity in highland soils. MSAC, PCARRD, BSU, Ford Foundation must have sensed that they were dealing with someone with extraordinary mind, manner, method.

Then another paradigm shift. From being VP for R&D Support Services at BSU, we next find him in 1986 as a **member of the Board of Directors** of the Federation of Crop Science Societies of the Philippines (FCSSP). In 1987, he became the founding **Director** of the Bureau of Agricultural Research (BAR), a new agency of the Department of Agriculture (DA). Under him, BAR set out to rationalize agriculture-related R&D as well as the resources in support of programs and projects all over the country. He stayed there for 7 years, up to 1994, effectively directing the flow of the science of agriculture as input and output, soon making BAR a credible, respected government agency.

And yet another paradigm shift. From managing R&D for agriculture, he went on to managing R&D in other fields, becoming **Executive Director** of the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) in 1994. Here, he was also **Godfather** to one brainchild after another: *Magsakang Siyentista* or Farmer-Scientist Program (FSP); the Farmers' Information & Technology Services (FITS) arm of PCARRD, with FITS strategically located in the regions. The FSP treated farmers as co-developers of technology; the FITS was the disseminator of technology, both software and hardware. He was head of PCARRD up to 1998.

And another shift. After PCARRD, he rose again and became **Secretary of the Department of Agriculture** in 1998. He was the first and is still the only UP Los Baños graduate to head that office, staying up to 1999.

Those were troubled times for Philippine agriculture, the country being visited by the El Niño phenomenon in 1997-1998, with 90% of the archipelago receiving 50% less rainfall than usual (interrogate.info). When Mother Nature acts, man can only react.

Within 1999, he became **Presidential Adviser on Food Security and Rural Development**, as well as **Chairman-Coordinator** of the National Agricultural and Fishery Council (NAFC) and **Executive Director** of NAFC, Office of the President. He was now in a position to influence the highest executive of the land in matters of agriculture. The Instructor in a small college in rural Benguet was now the Food Security Adviser to the President. He had a Room with a View at the Top on Philippine agriculture and what ails it and what can make it well again.



And then again, another paradigm shift, this time a giant leap from Presidential Adviser to **Director General** of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), an international institute with hundreds of staff, based in faraway India, in 2000. As start, he advocated a *Grey to Green Revolution* in the semi-arid tropics of Africa and Asia through *Science with a Human Face*. He spurred a new vision, mission and strategy for the Institute; he sought or strengthened strategic partnerships with stakeholders – national agricultural research systems, research institutes, NGOs, development agencies, private sector. He molded the staff of the Institute into *Team ICRISAT* and transformed the agency from going under to being on top, from loser to winner of awards (among others, 2 King Baudouin awards under Dar, from CGIAR), from lackluster to **Outstanding** overall performance applauded by no less than the World Bank, which awarded ICRISAT this year a US\$2.4 grant. *Reward is a sincere form of flattery.*

From 1995 to 1998, he was a Member of the Philippine Council for Sustainable Development under the National Economic Development Authority (NEDA). From 1994, he has been a Member of the National Selection Committee for the UNDP Global Environmental Facility-Small Grants Programme. From 1993, he has been Chair of the National Coordinating Committee of the Sustainable Agriculture and Natural Resources Management-Collaborative Research Support Program (SANREM-CRSP) funded by the USAID.

That's not surprising. He is a *prophet*, in the sense of *predictor of events*. Peter Drucker says, 'The best way to predict the future is to invent it.' William Dar invents it in his mind and makes things happen to realize it.

Now, *William Dar is a prophet not without honor in his own country*. He was honored with the most prestigious *Ten Outstanding Young Men* (TOYM) award (Jaycees International, Philippines) in 1988, *Outstanding Science Administrator* (Dioscoro Umali Medal, Department of Science & Technology) in 1997, *Outstanding Young Scientist of the Year (Agriculture)* (National Academy of Science & Technology) in 1995.

As an alumnus, he received the awards *Kalsa: The Most Distinguished Alumnus Award* (BSU) in 2006, *Anahaw Leaf Award: Most Outstanding Alumnus* (Ilocos Sur Polytechnic State College) in 2003, *Outstanding Professional in Agriculture* (UP Alumni Association) in 1996, *Distinguished Alumnus in Research Management* (UPLB Alumni Association, College of Agriculture) in 1995, *Outstanding Alumnus* (BSU) in 1991, *Outstanding Alumnus* (UPLB Alumni Association, Metro Manila Chapter) in 1990.

In management, he received the *Research Leadership Excellence Award* (Philippine Association of Research Managers or PhilARM, its top award) in 2004, *Achievement Award for Research Management* (Crop Science Society of the Philippines, or CSSP), *Symbol of Excellence in R&D management* (PCARRD, its highest and most prestigious award) in 2002.

Middle of this year, 2007, he was chosen by the Professional Regulation Commission of the Philippines as the *Outstanding Professional of the Year in Agriculture*. He received the *Golden Grain Award* from the Central Luzon

State University for his intense pro-poor advocacy in 2004. He was conferred an honorary degree of *Doctor of Science* by the Mariano Marcos State University (MMSU) in 2003.

And more than outstanding outside his country. He is the *first Filipino and Asian to be Director General of ICRISAT* (and rewarded with a second term, up to 2010 yet), as well as the *first Filipino Chair of the Alliance Executive of the Alliance of Centers (AoC)* in 2005, the AoC being the collegial body that enables collective action among the 15 centers of the Consultative Group on International Agricultural Research (CGIAR), which is supported both by the World Bank and FAO. With his exceptional leadership as Chair, the AoC was made the third pillar of the CGIAR system. There's always a first time.

Still abroad, he has received other distinctions. The Vietnamese government conferred on him the *For the Sake of Agriculture and Rural Development in Vietnam Award* in 2003. He was **Chair** of the Public Awareness & Resource Mobilization Committee of the CGIAR, 2001-2002. He was a **Member** of the UN Millennium Task Force on Hunger (2004-2006). He also served as **Member** of the Policy Advisory Council of the Australian Center for International Agricultural Research (ACIAR, 1997), **Member** of the Board of Trustees of the International Maize and Wheat Improvement Center (CIMMYT, 1997-1999), **Member** of the Governing Board of ICRISAT (1997-1999), Oversight Committee of the CGIAR (1997-1999). He was **Chair** of the Asia-Pacific Association of Agricultural Research Institutions (APAARI, 1994-1996), as well as **Chair** of the Governing Board of the UN/ESCAP Coarse Grains, Pulses Research and Training Centre (CGPRTC) in Indonesia 1991-1993.

In other respects, he was **Affiliate Professor** of the Institute of Environmental Science & Management (IESAM) of UP Los Baños in 1997. He was **Chair** of the Council for Partnership on Rice Research in Asia (COPRA) and **Project Manager** of the Mango Information Network of PCARRD, both 1997-1998. He was **President** of the PCARRD Scholars Association and **Honorary Fellow** of CSSP in 1996. He was **Vice President** of the Conservation Farming Movement 1995-1997. He was **President** of and became a **Life Member** of the CSSP and the Society for the Advancement of the Vegetable Industry (SAVI) in 1995. He was **Project Director** of the Development Support Communication for International Agricultural Technology Transfer Projects (FAO-UNDP) 1994-1995. He was **Chair** of the National Council Committee of the Plant Genetic Resources of the Philippines 1994-1998. In 1994, he was **National Coordinator** of the UN-FAO Underutilized Tropical Fruits in Asia Network; in the same year, he was a **Member** of the following bodies: Technical Panel for Agricultural Education of the Commission on Higher Education (CHED), Governing Board of the Philippine Rice Research Institute (PhilRice), Academic Consultative Committee-Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). He was a **Member** of the Governing Board of the Cotton Research and Development Institute (CRDI) 1987-1998.

One can see and expect from him passion, purpose and people-oriented procedure in whatever he does. He has turned around ICRISAT from loser to champion status by managing science with a human face, by deciding on the basis of the Big Picture, by innovating, by arousing a positive attitude and nurturing high morale among the staff, all with integrity.

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ICRISAT is a non-profit, non-political center of R&D in crops for the drylands of Africa, Asia and America; it is based near Hyderabad in Andhra Pradesh, India. The Institute is under the aegis of CGIAR. Before him, ICRISAT was floundering. Three years after he took over, in 2003, ICRISAT passed two reviews by the CGIAR, the findings of which acknowledged outstanding science quality, sound and excellent management. This energized ICRISAT into designing its further transformation and renewal into becoming a leading institution of science and technology for the peoples of the semi-arid tropics in the 21st century. That same year, 2003, ICRISAT leaped from almost lost to second place among the 15 CGIAR Centers in terms of financial health based on World Bank standards. From then on, ICRISAT thrived, showing surplus budgets in 2004, 2005, 2006.

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He has published many books and articles in print and electronic media. An indefatigable speaker, he has lectured internationally, on different topics. Since 1990, starting with **Basic Elements Of Farming Systems Approach And Extension** (with BAR), he has published 17 books. To cite a few more: In 1995, it was **Support For Agricultural Research System In Southeast Asia – Impact On Growth And Development** (APAARI, FAO); in 1996, **Reshaping The National Agricultural And Natural Resources R&D System** (PCARRD); in 1998, **Building Partnership And Capacity: A Centennial Achievement Of PCARRD**.

In the last 7 years, the list of his books clearly indicates where ICRISAT went and is going forward:

2000: **Bringing Science With A Human Face To The Semi-Arid Tropics**

2001: **Towards A Grey To Green Revolution: Turning Adversity Into Opportunity**

2002: **Building A Strong ICRISAT For A Food-Secure SAT**

2003: **ICRISAT Moving Forward In The Service Of The SAT**

2004: **ICRISAT'S Turnaround: Strategic Partnerships For Impact**

2005: **Germinating The Seeds Of Success In The Semi-Arid Tropics**

2006: **Nurturing Life In The Drylands Of Hope.**

If I may summarize in 5 words what his books all espouse, it's these: *science with a pro-poor face.*

This week, his being elected Chair of the science committee of the UN body on desertification is both a crown of personal achievement and a challenge for global leadership. This requires that he further widen his view and think not only of the semi-arid tropics but of 191 countries who have signed the UN Convention in a common fight against desertification, that is, the denudation of lands and degrading of soils in much of the world. When the trees go, the watershed goes; when the land is abused, the nutrients go with the water down the river.

The fight against global warming may be seen as one against carbon dioxide pollution, a good fight, that which Al Gore with his prophetic leadership is now at home with. The fight against desertification may be seen as one for the intelligent use of water, a good fight, that which William Dar with his inspired leadership should be at home with.

11.

AL GORE OF SCIENCE. BEING ABOUT WILLIAM DAR & 'SCIENCE WITH A HUMAN FACE'

In the developing world, agriculture is the most promising site of growth – since the Green Revolution, it has always been full of promises, promises, promises. We need leaders in science – as well as politics – who do not merely promise but deliver. And we do have an outstanding one, in the field of international agriculture: **William Dar**, Director General of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). ICRISAT is based in Andhra Pradesh, India; Dar is from the Philippines; the match is made in heaven. Led by Dar, Team ICRISAT, the name they call themselves, have given the world an outstanding crop for mitigating global warming: **sweet sorghum**, a variety of *Sorghum bicolor*.



To simplify, agriculture equals crops. Agriculture is the redeemer from heaven – but only if the crops by themselves multiply the number of people who reap their own golden harvests from their own sweat in the offices *and* in the fields.

Sweet sorghum is an outstanding example of such a crop, as it is a **multiplier crop** like no other – it multiplies the opportunities:

- (1) *It multiplies the planted fields.* In science, they have what they call multi-location testing; in sorgho, we have what I call a multi-location crop that doesn't need much more testing – sorghum grows well anywhere, including temperate countries (2006 March, Oklahoma State University, osu.okstate.edu).

(2) *It multiplies the farmers.* Have the farmers no capital for fertilizer or pesticide? There is a sorghum variety for him, and him, and him; they don't have to apply fertilizer or pesticide. That is crucial, as fertilizer and pesticide comprise the major costs of cropping (fao.org).

Sorgho is the single crop that can theoretically be the silver bullet we can shoot to kill the vampire called global warming. That crop can be neither corn nor sugarcane because these are needed mostly for food and feed. If you take corn or sugarcane as your feedstock for producing ethanol, you are competing with the humans and animals for their sustenance, solving a problem and creating another.

(3) *It multiplies the carbon gas guzzlers.* All vegetation captures carbon dioxide from the air and via photosynthesis turns it into organic matter: stems, leaves, fruits, flowers. All crops clear the air; from what we've known of sorgho, planting sweet sorgho is *the better farmer's clean air act*. With its corn-like wide and long leaves, sorgho is the best crop drinker of bad air and therefore the best mitigating crop for climate change.

(4) *It multiplies the consumers.* Sorgho has multiple uses: food (grains, syrup and jaggery from both stalk and grains), feed (from grains), fuel (for firewood, biofuel), forage (leaves, stalks), fertilizer (the whole plant) ('Sweet Sorgho,' icrisat.org). And the syrup is valued by the food industry for its color and taste; it is also high in iron (Texas A&M University, sorgho.tamu.edu).

(5) *It multiplies the water.* Since sweet sorgho grows with much less water than most crops, especially rice, (a) we don't need expensive irrigation systems, and (b) we can have more uses of precious water.

Sorgho is the single crop that can theoretically be the silver bullet we can shoot to kill the vampire called global warming. That crop

can be neither corn nor sugarcane because these are needed mostly for food and feed. If you take corn or sugarcane as your feedstock for producing ethanol, you are competing with the humans and animals for their sustenance, solving a problem and creating another.

And the processing of ethanol from sorgho is more environment-friendly than ethanol from corn (the us' choice of biofuel crop), since sorgho goes straight to ethanol extraction, no messy necessary prior transformation from starch to sugar (icrisat.org): sorgho is all sugar.

Already, there are sweet sorgho initiatives worldwide: India has started producing ethanol from sweet sorgho (business-standard.com); the Philippines has initiated its own sorgho ethanol program according to Agriculture Secretary Arthur Yap (bar.gov.ph); China is shifting from corn to cassava and sweet sorgho as its source of ethanol (ap-foodtechnology.com); Africa (Zambia) is 'energizing itself' with sugarcane and sweet sorgho as sustainable sources of power (gfse.at); and Texas is currently establishing farmer co-ops to produce every year 12 M gallons of ethanol from sweet sorgho (cleanhouston.org).

Outstanding. Sweet sorghum as the biofuel crop of choice has barged into the consciousness of the world largely because of the efforts of Team ICRISAT. *Outstanding* has always been the word to describe what Dar has been doing at ICRISAT since he became Director General in 2000, transforming a non-performing asset of an international institute into what I have described as an outstanding performance in a major role (2007 April 9, 'Discovery Manager: William Dar, Merlin of Ethanol,' globalnation.inquirer.net).

For its 2006 overall achievements, ICRISAT has just been rated *Outstanding* by the CGIAR. ICRISAT is a member of the Alliance of Centers of the Consultative Group on International Agricultural Research (CGIAR). This 2007 award is for total excellence 'with regards to outputs, impact, quality and relevance of research, institutional and financial health, and stakeholder perception.' In other words, the award belongs to Team ICRISAT. The honor comes with a funding support of \$2.4 M for 2007 from the World Bank (thehindubusinessline.com). I'm not surprised. Under Dar, ICRISAT has won twice the most prestigious CGIAR trophy, the King Baudouin Award, in 2002 and 2004 (icrisat.org). ICRISAT also won the World Bank's Development Marketplace Award in 2005 (thehindubusinessline.com).

That is all 'science with a human face' (icrisat.org).

The other day, June 22, the Professional Regulation Commission (PRC) handed the 2007 award for **Outstanding Professional of the Year in Agriculture** to **William D Dar**. This is not an ordinary award, even as it is 'the highest award bestowed by the Commission as recommended by his/her peers for having amply demonstrated professional competence of the highest degree and conducted himself/herself with integrity in the exercise of his/her profession,' in the words of the PRC (from letter of invitation to Dar dated May 08). The awarding was held at the Sofitel Philippine Plaza Manila, CCP Complex, Roxas Boulevard, Pasay City.



Sorgo is the redeeming crop; William Dar is the AI Gore of science. He is a manager equal to the best; sweet sorghum, his baby, is equal to the challenge of mitigating global warming.

12.

THE TELUGU PARADIGM.
UNDERSTANDING VASAT,
THE ILLITERATE'S INTERNET

'అటవీలుబటబా? అక్షరంబునంబు? ఎజు?'

don't speak the language either. It's Telugu, Sahiti tells me so (sahiti.org). If I could write Telugu, Sahiti will translate me into English *instantly*, and it's *free*. No, I didn't find Telugu a trickery; I found it a treasure once I started thinking Marshall McLuhan who understood media like nobody else (read **Understanding Media: The Extensions Of Man**, McGraw-Hill 1964).

అ	ఆ	ఇ	ఈ	ఊ	ఋ	ౠ	ఋ	ౠ	ఋ	ౠ	
a	ā	i	ī	u	ū	ṛ	ṝ	ṝ	ṝ	ṝ	
ఆ	[a]	ఇ	[i]	ఊ	[u]	ఋ	[ṛ]	ౠ	[ṝ]	ౠ	[ṝ]
క	కా	కి	కీ	కు	కూ	కృ	కౄ	కృ	కౄ	కృ	కౄ
ka	kā	ki	kī	ku	kū	kr̄	kr̄̄	kr̄̄	kr̄̄	kr̄̄	kr̄̄
Consonants											
క	ka	[k]	ఖ	kha	[kʰ]	గ	ga	[g]	ఘ	gha	[gʱ]
చ	ca	[tʃ]	ఛ	cha	[tʃʰ]	జ	ja	[dʒ]	ఝ	zha	[dʒʱ]
ట	ṭa	[ʈ]	ఠ	ṭha	[ʈʰ]	డ	ḍa	[ɖ]	ఢ	ḍha	[ɖʱ]
త	ṭa	[tʰ]	థ	ṭha	[tʰʱ]	ద	ḍa	[d]	ధ	ḍha	[dʱ]

We're in India, where Mohandas 'Mahatma' Gandhi lived – and died – for non-violence. So did a Telugu, another martyr, another hero to this country. Since Jawaharlal Nehru was against the creation of linguistic states (hinduonnet.com), **Potti Sriramulu** decided to fast for the creation of a state of Andhra, for the Telugus. The fast went beyond 50 days, beyond physical endurance. Sriramulu died but his dream came alive, a state coming out from the Telugu parts of Madras and Hyderabad, now Andhra Pradesh. In his honor, there is a Potti Sriramulu Telugu University (twincitiesbbs.com). The University is in Hyderabad, capital of Andhra Pradesh; it is a State University offering Carnatic classical music, Kuchipudi dance, folk arts, sculpture-drawing, *mridangam* or *veena*-playing, acting, astrology (india9.com).

Elsewhere, the Tri-State Telugu Association and Telugu Association of Greater Chicago (telugu.org) invites us to a dinner in honor of Sri Nara Chandrababu Naidu, 'the force behind Andhra Pradesh progress,' who will speak July 3. It's too late for that now, but progress is never too late.

Telugu speaks to me of growing, moving forward, succeeding.

`అటవీముబటబా? రక్షణవజనం?? ఎజ; ?' That's from omniglot.com; I'm looking at the Telugu alphabet; I note Telugu is spoken by about 75 M people in Andhra Pradesh and neighboring states. Telugu is Greek to me, and I wouldn't learn it for all the Home Theater systems in the world, but I'm head over heels in love with it now.

If I were a scientist and would like my knowledge in poultry husbandry to serve the Telugu people, would it be better for me to learn Telugu, or for the Telugus to learn English? I have had to learn English myself.

There is a middle ground: I hire a Telugu who knows English and train her on my science – or at least, to translate Telugu into English good enough to ask me a pertinent question.

That's the idea of the Virtual Academy for the Semi-Arid Tropics (VASAT). I'm in Addakal in the Mahboobnagar district of Andhra Pradesh, where VASAT has been partnering with the all-women Adarsha Mahila Samaikhya (AMS) since 2004 'to foster learning and information exchange between rural families and expert institutions' (icrisat.org/vasat). Fine. I hear Telugu and I'm beginning to understand. Telugu is an ancient tongue that can grow further; VASAT is a new, revolutionary language that has grown out of its own experiences that the whole world should be listening to.

If I were a scientist and would like my knowledge in poultry husbandry to serve the Telugu people, would it be better for me to learn Telugu, or for the Telugus to learn English? I have had to learn English myself.

I suddenly realize that VASAT has in fact transformed Telugu into a different language the whole world already understands.

And how can the world suddenly understand Telugu? Why, it's in English of course.

`అటవీముబటబా? రక్షణవజనం?? ఎజ; ?' First, let me inform you that, aside from Telugu, VASAT speaks Hindi – and English, French, African, Braille. You see, VASAT is a virtual coalition of the willing:

African Centre of Meteorological Applications for Development

African Virtual University-Universite Abdou Moumouni

Africare

Central Research Institute for Dryland Agriculture

Comite Permanent Inter-etats de lutte Contre la Secheresse dans le Sahel Centre Regional

Commonwealth of Learning (COL)

Conseil Superieur de la Communication, Niger

Desert Margins Program (DMP)

Dr BR Ambedkar Open University
 Echos du Sahel
 First Voice International
 Freeplay Foundation
 Helen Keller International
 Home.id.net
 ict-km Program of the CGIAR
 Indian Council for Agricultural Research (ICAR)
 Indian Institute of Technology, Bombay
 Indian Institute of Technology, Kanpur
 Institut National de Reserches Agronomiques du Niger
 International Livestock Research Institute (ILRI)
 International Research Institute for Climate Prediction
 International Water Management Institute (IWMI)
 Maharashtra Knowledge Corporation Limited
 Mission 2007
 MS Swaminathan Research Foundation
 National Institute of Agricultural Extension Management
 National Oceanic and Atmospheric Administration
 Oxfam-Quebec
 Peace Corps
 Radio Communautaire Marhaba de Kahe
 United Nations Fund for Population Activities



'అటవీ యుబుటబా? రక్షణ ఎజెండా?? ఎజె; ?' A heady mix-up of interests and intentions, how can they talk the one language of VASAT? Not to worry. VASAT is facilitated by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) headed by Director General **William Dar**, manager par excellence.

From an email by **Rex Navarro** (ICRISAT Director of Communication & Special Assistant to the Director General), I learn that VASAT was designed and continues to be developed further for farmers in the drylands; thus, it has 5 main goals:

- (1) build a consortium of Communities of Practice;
- (2) develop non-formal instructional materials;
- (3) transform VASAT-developed learning objects into learning materials;
- (4) design and test a knowledge & information exchange model;
- (5) assess the impact of knowledge sharing on families & extension as a whole.

In other words, VASAT is knowledge sharing between those who know and those who don't understand, between scientists and farmers, between theory and practice, between the lab and the field, between mental workers and manual laborers, between neat scientific explanations and the realities of life.

All that reminds me to go back to Telugu, to the AMS women of Addakal, one of the poorest regions of India: total area 19,397 ha, 15% irrigated, 60% dryland, 25% wasteland; 37 villages, 46,380 people, mean literacy rate 49%; 75% of workers in crop and livestock production (icrisat.org/vasat).

A farmer visits a Village Information Center (VIC) with a question – and he speaks only Telugu. It's his birds. At the VIC, one of three AMS volunteer Village Network Assistants (VNAs) talks with him. I understand his concern goes like this:

VASAT has a language all its own. Not Telugu, not English, not sign language, not programming. Science is language. Science with a human face. In VASAT, a scientist speaking English with a farmer speaking Telugu understand each other very well.

`అడవీముబడబా? రెడెంజెడెడ?? ఎజ? ?' *Not all lay eggs. All 21 weeks old. All hybrids.*

The VNA inputs the question into an electronic format an expert understands. The question becomes this (my sentence, my formulation):

What are the possible causes of poultry not producing eggs at the age of maturity?

A paradigm shift if ever I saw one. The VNA sends that question through the Internet to any of 2 Para-Extension Workers (PEWs) stationed at the central hub in the AMS building somewhere in

Addakal. The PEW then communicates with any of the Subject Matter Experts (SMEs) through a Web-enabled Learning Content Management System (LCMS). Here are two possible LCMS-delivered poultry husbandry responses:

'Some birds are male.' 'You're not giving them the right feed at the right time.' Imagine hearing that in Telugu! `అడవీముబడబా? రెడెంజెడెడ?? ఎజ? ?' The bird farmer now understands. The service is free, if not instant.

VASAT has a language all its own. Not Telugu, not English, not sign language, not programming. Science is language. *Science with a human face.* In VASAT, a scientist speaking English with a farmer speaking Telugu understand each other very well.

Science with a human face begins – and ends – with understanding.

`అడవీముబడబా? రెడెంజెడెడ?? ఎజ? ?' That's Telugu asking you: 'Understand?'

13.

THE TURNING POINT. KNOW THAT SILENT WATER RUNS DEEP

Questions: (1) What is the very basis of life? (2) What is the single most important feature of our planet? (3) What is the most threatened world resource today? I have already given you two clues. There is only one answer: *Water*. One word for 'turning point' is 'watershed.' *Water*. I'm the author of this but not the authority on this. *They are:*



TK Sreedevi, B Shiferaw and SP Wani; and they have written their report titled 'Adarsha Watershed in Kothapally: Understanding the Drivers of Higher Impact' (icrisat.org/journal). The report is of a project by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) with Hyderabad partners – Central Research Institute for Dryland Agriculture (CRIDA), National Remote Sensing Agency (NRSA), District Water Management Agency (DWMA). Here are the very first words of the Adarsha Report:

Water, the very basis of life and the single most important feature of our planet, is the most threatened resource today.

TK Sreedevi & Company are scientists working for ICRISAT with headquarters at Patancheru, Andhra Pradesh, India. I thought I knew my watershed until I read their Adarsha Report. I worked for the Forest Research Institute

(FORI) in the mid-1970s to the early 1980s and read and wrote about the watershed and its components: trees, orchids and other vegetation, wildlife, soil, organic matter, bacteria & fungi & other forms of life in the forest litter. I learned that the forest was a watershed. I was happy knowing all that.

Today, I learned that I'm sitting typing this with my very new Core 2 Duo PC in a very old apartment sitting on an ancient watershed. I got that from this definition given by the Smithsonian Environmental Research Center:

A watershed is an area of land that captures water in any form, such as rain, snow, or dew, and drains it for a particular stream, river, or lake. All land is part of the watershed for some creek, stream, river or lake.

Now, the Adarsha Report and the Smithsonian clarification both make me unhappy because I know I have done little toward taking good care of this, our watershed.

The authors of the Adarsha Report tell me further: 'A watershed is made up of soil, vegetation and water along with the people and animals who are the integral parts of the system.' That's revelation to me. So, I am part of the watershed. Up to a few minutes ago, I didn't realize that a favorite quote, something I recall fondly, John Donne's meditation, describes to me, in truth if not in fact, a watershed!

The authors of the Adarsha Report tell me further: 'A watershed is made up of soil, vegetation and water along with the people and animals who are the integral parts of the system.' That's revelation to me. So, *I am part of the watershed*. Up to a few minutes ago, I didn't realize that a favorite quote, something I recall fondly, John Donne's meditation, describes to me, in truth if not in fact, a watershed!

No man is an island, entire of itself; every man is a piece of the continent, a part of the main. If a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as if a manor of thy friend's or of thine own were: any man's death diminishes me, because I am involved in mankind, and therefore never send to know for whom the bells tolls; it tolls for thee. (The Literature Network, online-literature.com)

Beautiful! Now, let me translate:

No man is an island, entire of itself; every man is a piece of the watershed, a part of the land. If a clod be washed away by the rain, the village is the less, as well as if a hill were, as well as if a house of your friend's or of your own were: any man's lack diminishes me, because I am involved in mankind, and therefore never send to know for whom the bell tolls; it tolls for you.

There's more to the Adarsha Story. The Adarsha watershed lies in the village of Kothapally in Ranga Reddy District, Andhra Pradesh, India: 465 ha, 274 families, 1,492 heads. I gather that the Adarsha watershed was selected as a project area by ICRISSAT and partners precisely *because it had all the negatives*: lack of rains, frequent droughts, low harvests, infertile soils, no irrigation, no villagers conserving water on their farms, little incomes. **If they could make a difference here, they could make a difference anywhere.**

The Adarsha project taught the villagers – and the project partners – the values of, among other things, better crop varieties, soil conservation, water conservation, water harvesting, tree planting, contour planting, check dams, percolation tanks, gabion structures, gully plugs. It taught the villagers concerted, cooperative, community-wide action; it gave the feeling of community ownership. These were not easy lessons and it took years before the Adarsha Story could be told in happy terms, in 2004.

Reading all that and reading between the lines, I see the underground water as an integral, important part of the watershed: Silent water runs deep. That is why the Adarsha Report is happy to state that the Adarsha project efforts have resulted, among other things, in a rise in the groundwater level. That's good news for the homes as well as the crops thirsty for water.

More. With new opportunities for livelihood the project brought in, Adarsha farmers' incomes doubled in 3 years, and these were about twice as large as farmers' incomes outside the watershed.



Appropriately, the Adarsha Report credited success also to, among others: local leadership; partnership, trust and shared vision among the project partners; transparency in the financial dealings; low-cost structures and equitable sharing of benefits.

In July 2006, the watershed development program of ICRISAT and consortium of partners was reported by CGIAR Newsroom as reaching out to the world as a model. After India, China, Vietnam and Thailand, this model had reached East Africa (cgiar.org/newsroom).

Finally, Thomas J Hoban (North Carolina State University) tells me: 'Scientists and leaders now recognize the best way to protect the vital natural resources is to understand and manage them on a watershed basis.'

It's people and water. Silent water runs deep; we can't hear it unless we're listening. The Adarsha Story from ICRISAT is a new turning point in my continuing education.

14.

TO CATCH AN INSIGHT.
FORGET THESIS, ANTITHESIS,
SYNTHESIS

If you're looking for trouble, you came to the right place. If you can't solve it, you're half of the problem! Last night, I surfed to <http://www.icrisat.org/Vision/chapter1.htm>, and while I was reading 'ICRISAT's Vision and Strategy to 2015,' I realized that the first chapter was showing me, in between declarations of intentions, such things as affirmations of complexities, headaches, quodlibets. No matter; I've never been afraid of any intellectual thesis, antithesis, synthesis – except when I don't understand it.



Science writing is exactly like that.

Translating: The farmer is poor, the soul is poor, the weather is bad, the harvest is few.

Then I had a brainstorm. So here's MyLaundryList of problems besetting Eastern and Southern Africa from the files of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). ICRISAT did it right; if you want to solve a problem, first you have to define the problem. Theirs was an exercise in fertility. Now, let's have ours. I'm asking you to scan the list of difficulties and note that out of the chaos have come the new vision, mission and strategy of ICRISAT. Can we come out with a different vision? We can. Will our vision be clearer? Now, that's a problem. Will our mission be possible? That's another problem. Will our strategy be achievable? That has to be worked out.

What's the prize if you can unravel this, MyLaundryList? A broad smile on your face at the very least; a laugh would be a bonus. A flash of intuition would be best.

Now, I'm asking you to translate technical language (coming from bureaucrats like them) to popular language (coming from infocrats like us). A *bureaucrat* is a stickler for language; an *infocrat* is a stickler for information, a hoper for insight. The real exercise here is: *Trying to catch an insight*. The thing is, when you're not paying attention, when you're not logical, when you're not reasoning out, only then may you catch an insight. Only then Eureka!

In any case, let me help you – you read, I translate, amplify, simplify. To paraphrase Henry David Thoreau: 'As you simplify your list, the laws of the universe will be simpler; solitude will not be solitude, poverty will not be poverty, nor weakness weakness.' Translating is one road to insight. Let's see:

Poverty, malnutrition, food insecurity and degradation of the natural resource base are major problems afflicting many countries in Eastern and Southern Africa (ESA).

Translating: The people of the drylands of Eastern and Southern Africa are poor, malnourished, don't have enough food. Their lands are infertile; their soils lack water; their crops yield only so much; their livestock don't produce enough. To catch an insight: What's common among the four problems?

Translating:
The people of the drylands of Eastern and Southern Africa are poor, malnourished, don't have enough food. Their lands are infertile; their soils lack water; their crops yield only so much; their livestock don't produce enough. To catch an insight: What's common among the four problems?

Sub-Saharan Africa is at the epicenter of the HIV/AIDS epidemic. The short-term effects have been a decline in agricultural labor, production and incomes and a concurrent and dramatic increase in expenditures on health and funerals. In the longer term, there will be loss in inter-generational transfer of knowledge and traditional social security mechanisms.

Translating: Sub-Saharan Africa is the nerve center of infectious, contagious, preventable AIDS. Today, the farms are short of workers, the workers are short of income, the funeral parlors are short of coffins. Tomorrow, this generation shall have passed away, including its wisdom, including its social fabric. Insight: Avoidance is worth a pound of prevention.

The ESA constitutes some 21 countries with a population of over 350 million people, more than half of whom live in extreme poverty, making the region one of the highest concentrations of poor people in the world.

Translating: The ESA covers 21 countries, more than 350 million people, more than 175 million of whom are extremely poor, lead lives of quiet desperation.

Over the last decade, the region has witnessed increasing incidence of poverty through its various manifestations including an increase in the number of hungry and malnourished people.

Translating: In the last 10 years, the region made more poor, more underfed, more under-nourished citizens.

About 75% of the population live in rural areas that account for over 80% of the total extremely poor.

Translating: In ESA, 3 out of 4 people live in the countryside, 4 out of 5 are very poor.

The incidence and severity of deprivation is highest in the less-favored semi-arid and marginal areas that suffer from poor infrastructure, geographical isolation, poor market access, and vulnerability to climatic variability and drought.

Translating: You can find the most number of poor people in the drylands and wastelands of ESA, with all those bad roads, bad markets, bad weather, dry soils in the long dry months.

High levels of soil erosion, nutrient depletion and degradation of agro-ecosystems contribute to low productivity and declining ecosystem resilience in many areas.

Translating: The soils are wasting away, their nutrients are exhausted. The villagers' produce have been declining; the carrying capacities of their farms and gardens have long been reached.

The magnitude of soil fertility depletion on arable lands is one of the highest in the world and by far exceeds the rates of nutrient replenishment through application of organic and commercial fertilizers.

Translating: You can find here some of the poorest lands on earth, so infertile that the organic and inorganic fertilizers applied so far have not solved the problem of soil poverty.

Low productivity is due to degraded soils, lack of inputs and unfavorable weather conditions.

Translating: The farmer is poor, the soil is poor, the weather is bad, the harvest is few.

Most of the resource-poor farmers grow their crops in degraded soils without inputs such as chemical fertilizers or pesticides.

Translating: Most of the poor farmers plant their poor soils expecting much, even as they invest little in them. Today, farmers cannot afford the new ways of farming, and may have forgotten yesterday's.

Rainfall is extremely variable in amount and distribution, making rainfed agriculture risky and thus preventing farmers from investing in inputs that enhance productivity.

Translating: The rains come, the rains go at their own pleasure, the farmers at their mercy. Insight: How do you catch a rain?



The area under irrigation is very low in Sub-Saharan Africa, only 3.7% compared to 10% in South America, 29% in East Asia and 41% in Southeast Asia.

Translating: Irrigation is very much a problem. In Sub-Saharan Africa, less than 4% of the farms are irrigated. Compare that with 10% in South America, 29% in East Asia and 41% in Southeast Asia. Insights: The African farmers are poorer than the Southeast Asians. Water is the great leveler.

Poor market access is a result of many factors such as the lack of a functioning marketing system that links the many small producers with domestic and international buyers.

Translating: To simplify, a market is people to sell to. In the region, beyond their farms, the farmers can hardly link to local traders, much less to international buyers. Insights: The problem with the market is that there's none. Market is another great leveler.

There already are cooperatives to produce seeds; as they are, they have one opportunity and one problem. The opportunity is the high demand; the problem is the low quality of the seeds produced. There are two problems here. One, small producers are miles apart, which does not encourage co-operation for economies of scale. Two, small farmers supply the market with mixed, not graded produce.

Several highly dispersed small producers supply non-homogenous products to local markets.

Translating: Insight: Consumers know what they want, farmers don't.

The volume of marketable surplus is very low, and hence the transaction costs of marketing for individual farmers are high.

Translating: As is, for each farmer, since his produce is low, his marketing cost is high. Insight: Don't bring the farmer to the market; instead, bring the market to the farmer.

Varieties currently grown by farmers are not able to satisfy the quality attributes required by diverse markets.

Translating: Farmers reap what they sow, when they fail to consider what the consumers want. Insight validated.

Africa has poor infrastructure – roads are few and not well maintained, the railroad length is under 2% of the world's total and dilapidated, storage and product handling systems are inefficient, all adding to the cost of doing business on the continent.

Translating: The roads are few and the worse for wear; the railroad is short and impaired, not repaired. Storage for farm produce is poor, the handling leaves much to be desired. All that adds up to bad business. You are in Africa.

Poor dissemination of improved varieties is another challenge. Improved varieties that are adapted to target environments and both farmer and market needs have been developed but have not been disseminated.

Translating: Good seeds are hard to find. The varieties that grow well even in bad fields, that fit farmer's practice, that the people like to buy – the farmers never heard of them. Insight: What the farmers don't know hurt them, and us.

One of the major limitations of the technology delivery system is lack of an efficient and effective seed multiplication and supply system.

Translating: One of the big headaches of experts in Africa is that there is the lack of a system of seed producers and seed suppliers. Where there is a system, it is inefficient and ineffective – the seed growers are earning too little, the seed suppliers are earning too much.

While some effort is being made to improve seed availability by involving farmers and primary cooperatives in seed multiplication, the lack of quality control and low capacity at the local level are hurdles to progress.

Translating: There already are cooperatives to produce seeds; as they are, they have one opportunity and one problem. The opportunity is the high demand; the problem is the low quality of the seeds produced. Insight: Modern farming has so far failed to teach the farmer the value of quality.



The extension systems in most African countries are weak, thus causing a bottleneck in technology dissemination.

Translating: The extension systems in most African countries are weak, causing sags or snags in the delivery of technology: seeds, fertilizers, pesticides, data, information – not to mention credit where necessary and the produce where profitable. Insight: Should not extension be subsidized by technology?

A pro-poor agricultural policy is not in place and systems of rights of land tenure inhibit farmer investment in agriculture.

Translating: Each Government needs to come out with guidelines in agriculture based on this dictum by the late great Philippine President Ramon Magsaysay: 'Those who have less in life should have more in law.' Insight: If by land tenure you mean land distribution, at some point in time you will run out of land to distribute – what then?

Capacity-building in various sectors dealing with agriculture is weak, starting from research, extension, postharvest, linkages with market and extending as far as trade-related negotiations.

Translating: Africa is weak in the necessary sectors, in people, procedures, policies: research, extension, postharvest, market, trade relations with other countries. Insight: Agriculture is not a priority in Africa. Why not?

Investment in agricultural research and training is also inadequate.

Translating: Africa must invest much more in research and training in agriculture.

Weak private sector: The dominance of the Government and the public sector in African agriculture has not been effective in accelerating intensification of production, technology adoption and has not brought the desired growth.

Translating: African governments have not been able to convince the private sector to invest in more productive and diverse agriculture, in modern technologies to bring about higher productivity and further public growth. Insight: The private sector has failed to see the opportunities for higher harvests and more products for more markets.

Despite the surplus reserve of grains, food insecurity and child malnutrition in SAT Asia remain at unacceptably high levels, both in favored and less-favored areas.

Translating: Even where there are food reserves, too many people suffer from lack of food and too many children suffer from malnutrition everywhere.

Owing to the high levels of population growth and unequal access to productive assets, the gains from productivity growth in agriculture were not sufficient to bring down the levels of poverty.

Translating: Where the population multiplies faster than the food can be produced and farmers lack modern tools and cannot get affordable credit, higher agriculture cannot lower the number of poor people. Insight: Do we know which is the bigger problem: more people or less access to inputs?

Agriculture and livelihoods in the SAT have evolved under the influence of biotic (pest and disease incidences) and abiotic constraints. The most binding abiotic constraints are related to water scarcity and poor fertility of soils (largely related at present to micronutrient deficiencies as N and P fertilizers are widely used).

Translating: Agriculture in the dryland tropics has many enemies: pests, diseases, water scarcity, infertile soils. The effects of the first two can be mitigated; the occurrences of the last two can be prevented. For instance, farmers must learn to supply their soils with at least 7 micronutrients: boron, chlorine, copper, iron, manganese, molybdenum, zinc, not simply the macronutrients: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur. Insight: The current lab analysis for soil nutrients is only for detecting a few macronutrients. Why neglect the trace elements?

Since water is vital for crop growth, the low and unreliable rainfall in the region for rainfed agriculture makes drought management a key strategy for agricultural development.

Translating: Crops need water to grow. As humans need crops, humans must learn to manage water for their society to grow. Insight: To manage the drought, we must manage the water.

Translating:
African governments have not been able to convince the private sector to invest in more productive and diverse agriculture, in modern technologies to bring about higher productivity and further public growth. Insight: The private sector has failed to see the opportunities for higher harvests and more products for more markets.

With increasing openness in the global economy, national self-sufficiency may not be a viable development strategy, as certain food products may be cheaper to import than to produce domestically. However, considering agriculture's role as a means of livelihood for millions of poor people, enhancing its competitiveness by cutting average costs of production is critical for the survival of many smallholder farmers.

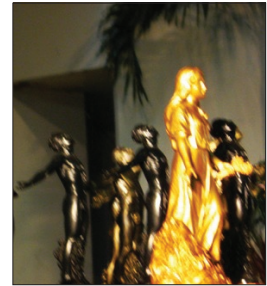
Translating: With the world knocking at your door, it is cheaper to buy import than local produce. But pity the poor farmers, millions of them. Some live next door to you. What governments can do is decrease the price of farming and increase the prize. Farming would then become a good fight against pests, diseases, the vagaries of nature, competition. Insight: Government can do more; they can subsidize the farmers like the United States do the American farmers. For their own good.

Now then, are my translations perfect? Of course not. But they're practical. So, we've been playing a game. Now you ask me: What's the meaning of all this!?! Simple. We need bureaucrats like them. Bureaucrats need infocrats like us.

15.

THE ACADEME AS ANTI-POOR.
UNIVERSITY OF THE PHILIPPINES
A HUNDRED YEARS HENCE

And so *Asiaweek* ranked the University of the Philippines Diliman #48 among Asia's Best Universities in 2000 (asiaweek.com). A very hard slap on a proud face in a very public place. By reputation, UP Diliman *is* the best of the University of the Philippines; the *Asiaweek* rank ranked the UP System, but it was true – the whole of UP had sunk below her very own standards. The exercise of academic freedom had turned out to be mostly academic and not instructive, mostly theoretical and not practical. I'm UP '65, and I've been around so long I know: *Been there, done that!*



This essay is about how two institutions thousands of miles apart, one in the Philippines and one in India, address the poor. One can learn from the other. UP being educational should have known more, ICRIASAT being developmental would know better.

(1) The University of the Philippines

The University activists had insisted on being the voice of the poor, but the poor needed more than a voice. In the first place, the University needed to be the voice of itself first, as *Asiaweek* showed it to her face that UP had failed all 5 subjects! In the following list, the lower the number, the higher the rank (UP should be in the Top 10): Academic Reputation rank #18 (Failed), Student Selectivity #44 (Failed), Faculty Resources #61 (Failed), Research #60 (Failed), Financial Resources #67 (Failed). UP's reputation was undeserved; she selected her students unintelligently; her faculty resources were deficient; her research efforts were insignificant; her financial resources were scarce.

Did the University of the Philippines learn from that and mend her ways? Well, UP is 100 years old next year and you can't teach old dogs new tricks. Still, UP has to make a paradigm shift in order for her to be able to teach herself. A new University charter is only a makeover, not a fundamental change. It's the attitude, not the altitude.

Poor soils? The wise use of inorganic and organic fertilizers is not enough. The soils have to be conserved, and at little cost to farmers and with little disturbance of the cycle of life and death. If you get from the soil (crops) but don't give back (crop refuse), you're a robber, and you know about robbers – only Judas not pay.

Consider: Is UP a champion of the poor? If so, it should be *anti-poor*. Now, how do we measure whether this University, or any University for that matter, is anti-poor? Allow me to submit my own biased list as follows; so I ask if the University does address:

Poor farmers? Too many farmers are mendicants, sorry to say. I know, been there, done that. I'm a farmer's son, and I stopped for 2 years before college to work the stone-dry hard clods of soil in our *bangkag* (rainfed farm for vegetables) by the Agno River in Asingan, Pangasinan, and the weeds and mud in our *talon* (irrigated field for rice). UP professors talk about self-sufficiency, but talk is not enough.

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Poor access to credit? Many have been flashes in the pan, fire flashes in the field (*ningas cogon*). Why can't I read of hundreds of UP projects that continue to this day by virtue of well-supervised credit schemes?

It's easy to borrow and difficult to pay.

Poor access to information? The information scientists give to farmers is mostly technical, a language that only the experts understand. If you don't believe me, click on any Philippine-based website featuring a knowledge bank now.

Poor markets? If I harvest much and get only so much for my labors, what good is farming to me? It's only a survival kit – for me to survive, not prosper.

Poor distribution of the benefits of labor? A good scheme for this is the farming cooperative. Is UP for cooperatives? I know UP to be un-cooperative!

Poor educational services? Is UP interested in rooting out those who don't know how to teach and know only to terrorize their students? One or two even brag about failing everyone.

Poor communication services? Does the University computer system work well? We received yesterday the report of grades of our daughter Daphne who graduated 12,960 hours ago (18 months). The system should be faster than turtle slow.

Poor water supply? How do you expect the UP scientist to worry about the water problem of others when he has his own? On campus, the water supply is bad.

Poor leadership? Those from UP get a kick out of demonstrations. Not demonstrations of initiative, entrepreneurship, creativity, leadership. A team is necessary, a leader is paramount.

Poor health services? Why can't UP develop a model health service system and stop pointing to the Philippine General Hospital as the one and only solution of health-with-a-cash problem of the poor?

Poor Government services? It is not enough that the academics complain of the national Bad Government. Teach by example; show Good Government services within the University itself.

Poor entrepreneurship? UP and all other universities in the Philippines are dedicated to the proposition that students must study first and then seek employment after graduation. There is no degree option for entrepreneurship – UP professors are not enterprising enough.

Poor social contribution? Do you wonder why agriculture in the Philippines is not as vibrant as it can be, given the rich soils, pleasant climate, open export markets for farm produce? That's because UP Los Baños has abrogated her duty to country to contribute intellectually to policy, procedure, monitoring, evaluation. Been there, *not* done that.

UP must be able to transcend the mirror of greatness it looks into every morning, un-Harry Potter-like, and ask questions what next needs to be done. UP, if you are farmer-centered, and you should be, ask the farmers, all kinds of farmers. Ask the right questions. If you are needs-based, and you should be, ask them and they will tell you their virtual



needs – and then go ahead and find out what their real needs are. Do not go there and pretend you know everything, because you don't; do not assume that you have all the answers, because you don't even have all the questions. I know; been there, seen that.

Even the Nobel Prize Committee is convinced that human activity is contributory to global warming and can be mitigated if we act now. Global warming is a problem, not a given; to solve a problem, look at it as an opportunity. Gaunt from intellectual nourishment of only one kind, UP Los Baños is a giant half-asleep and half-awake. Bleary-eyed, it refuses to look at climate change as a wide-open horizon for opportunities in instruction and research and extension – the 3 pillars it claims it is built on. There are tons of funds for research for development (R4D) inside and outside the country; all that is needed is a brilliant R4D proposal. Why can't UP Los Baños make one, and another, and another? Been there, *not* done that.

(2) International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Can UP in general and UP Los Baños in particular learn from ICRISAT? A learning place.

William Dar comes from Danumán West, a village in Santa Maria, Ilocos Sur, Northern Philippines. Theirs is a farming family of 6 siblings (4 girls); he first learned his agriculture from his father. 'I've done it all – planting, land preparation, harrowing, everything. So farming or agriculture is *not* abstract for me.'

I see that while the UP Los Baños paradigm derives from the bird's eye-view (the all-seeing eye), the ICRISAT paradigm derives from the worm's eye-view (the one-eyed one). ICRISAT is *pro-poor* – it looks at the problems from the point of view of the poor, not the expert.

I'm not surprised. Only 7 years ago in India, ICRISAT was languishing, its energy spent, its genius discouraged, its will wilted. Along came a man called **William Dar** from the Philippines, and that made all the difference. He brought with him instincts sharpened by confronting adversities positively, seeking options, pursuing his dream. His dream was to rise from poverty. He knew how it was to be poor, and wanted out. 'Poverty is not abstract for me. Poverty was there for us,' he says. So: 'I challenged myself to be one of the most successful people from my village.' That's what he is now.

William Dar comes from Danumán West, a village in Santa Maria, Ilocos Sur, Northern Philippines. Theirs is a farming family of 6 siblings (4 girls); he first learned his agriculture from his father. 'I've done it all – planting, land preparation, harrowing, everything. So farming or agriculture is not abstract for me.' Rice, onions, sweet potato, corn, peanuts, pigeonpea. *You don't know how cold is cold until you have*

shivered with your raincoat of a layer of palm leaves in the middle of the field in the middle of a heavy rain and there's nowhere to hide. I know: Been there, done that.

His maternal uncle helped him through college. He graduated from the Benguet State University (BSU, then Mountain State Agricultural College) in 1973 with a BS in Agricultural Education. His first mentor was BSU Vice-President for Planning and Development **Saturnino Ocampo**. His other mentors were **Fortunato Battad**, now President of BSU; **Santiago Obien**, who became the Founding Director of the Philippine Rice Research Institute (PhilRice) and built PhilRice into a world-class institution. 'Battad made a good PR man, specialist at marketing, while Obien was the kind of man who would show you the way, the person with technical knowledge, very focused. These two are honest men,' he says. 'This association with stalwarts has given me the professional edge.'

He has always tried to inspire others to work *with*, not *against* each other. Team, not steam. Dar says:

I believe in group strength. I remember my father asking us to help out in the household chores. There was division of labor. I would have to feed the dogs in the evening and sometimes cut grass before dusk (to be sold next day) while my sister would be cooking. There was one message for all of us. You help one another. Do the task assigned to you responsibly but at the same time help one another. This hard training in the family imbued in us a sense of oneness. It gave us the confidence that together we could achieve something. Wherever I have served I have always laid stress on the gains to be had from working as a team, much more in a public institution. That is the work ethic that I have tried to inculcate in ICRISAT. That's the genesis of Team ICRISAT.

So, the withering ICRISAT became a challenge to him. 'I began wondering how to rekindle the enthusiasm of everyone. My past experience made it easy for me, for I had in similar situations created a Team Philippines and a Team Singapore. The slogan served as a platform to unify an institution. All it needed was a leader who could motivate.'

So, as a challenge, ICRISAT was heaven-sent. This poor boy was ready, willing and eager to soil his hands for the poor in the lands of poverty called the semi-arid tropics: 55 countries, 2 billion people, 50% poor, no water, crops devastated by insect pests, people ravaged by disease (HIV/AIDS and malaria), soils degraded, biodiversity endangered.

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'Now I call myself an international public servant who is determined to make a difference in the lives of the poor. My personal mission is to serve with a heart the poor living in the drylands,' Dar says. The team is necessary, so you have Team ICRISAT. The team still needs a leader with a vision to make true and a mission to make it happen, and ICRISAT has William Dar.

Does UP have anyone **like William Dar inside?**

Been there, seen that. I know that there happens to be one Dean in UP Los Baños who has that same heart, and she was one of my students: **Candida Bernabe Adalla** of the College of Agriculture. She is on her second term as Dean; I must have taught something well; she must have done something good.

The art of the academic is useless without the heart; the private science of the researcher is useless without the public service. Until she learns that lesson with a grade of 1, on the whole UP will continue to be half-aware, half-relevant to the affairs in her own country until 2107. **Alas, two halves have never been seduced by a genius to become a whole. Never been there, never done that!**

16.

AN INCONVENIENT TRUTH:
WILLIAM DAR, THE FILIPINO
AS GLOBAL MANAGER

The inconvenient truth, its origin is Western. Al Gore's film, our film, directed by David Guggenheim, has just won the Oscar for 'Best Documentary' as I revise this 26 February 2007, high noon Manila time. An inconvenient truth is that it is high time we revise everything we have on our hands that has anything to do with polluting the physical environment, aside from polluting the psychological, spiritual, political, economic environments, not necessarily in that order.



The Inconvenient Truth as documentary also won the Oscar for 'Best Original Song' with the one written by Melissa Etheridge, 'I Need To Wake Up.'

We need to wake up to the reality that we have to have faith in whom we can't see, such as God and gravity, and to believe in the things we can't touch, such as the ozone layer above our heads and the bottom of the iceberg beneath our feet. A crewman said of the Titanic: 'God himself could not sink this ship' (*National Geographic* quoted in NextTag.com) – well, an iceberg tipped the unsinkable ship. The ozone layer protects us from the relentless ultraviolet radiation of the sun; in return, the ozone layer is not protected from our own relentless greenhouse gas emissions, thereby depleting the ozone layer. So: Global warming is of our own making. Planet Earth is our Noah's Ark; God would not sink Noah's Ark, but we would.

After the disquieting UN Report on climate change early this month, I happily note in quiet that the Academy of Motion Picture Arts & Sciences (the one that awards the Oscars) has not gangrene but has gone green. The difference is gross: In case of injury or disease, *gangrene* results from an *insufficient* blood supply to body tissue;

in the case of Hollywood, *gone green* results from a *sufficient* blood supply to the brain tissue. With that observation, I shall assume most managers will take a lesson from Mr Global Warner himself. Observe how Al Gore is behaving intelligently in his advocacy: Acting locally, acting globally. Thinking locally, thinking globally. Advocating business unusual.

Let's go Indian, choosing the inconvenient fruit. Among those I call the climate crops, sweet sorghum is relatively unknown among those species that catch the CO₂ from the air and turn it into food, feed, fuel, fertilizer for the survival of the species. I know that to advocate sweet sorghum as the global source of ethanol for biofuel is to advocate a relatively unknown and largely unappreciated crop in Asia, Africa and America – to write two major feature articles on this poor man's crop may be on my part an inconvenient froth over an inconvenient fruit. This should not be the case at all.

So now I can tell myself: 'There *is* intelligent life on earth.' I asked myself some 40 years before this: 'Is there intelligent life on earth?' In those times I thought I was the only intelligent life on earth. You call that *conceit*. Today, some managers' conceit is that there is no global warming. Insisting business as usual.

We need to go back to the basics of faith and reason. We are 30 years late in responding to Yankee Al Gore's global warning but, I hope, not too late. In an interview after the Oscars, he told Kim Chipman (25 Feb, bloomberg.com) about how to behave globally toward climate change and knowing many Yankees wanted him to run again for President of the mightiest nation in the world: *It's not a political issue; it's a moral issue. We have everything we need to get started, with the possible exception of the will to act. That's a renewable resource; let's renew it.*

The will to act? The 79th Oscars acted on its will – in fact, it went green like this (Mary Milliken, 26 Feb, in.today.reuters.com): first, they made sure the Kodak Theatre in Hollywood underwent an energy audit; then on The Day of the Oscars, movie stars rode in plug-in hybrids and all-electric cars; all around, print materials being distributed had been printed on recycled paper; organic food was served at the Governor's Ball, with advocacy by the National Resources Defense Council. How green was the Hollywood valley!

About the strange creatures called hybrid vehicles and Hollywood stars, FTM tells us (forthemmen.com) that Cameron Diaz (**Shrek**) has one, Leonardo di Caprio (**The Departed**) has two. The *Toyota Prius*, the first hybrid car released to the public, is very popular with Hollywood stars. The Honda Insight was the first hybrid car sold in the us. Thank God for Toyota and Honda and Hollywood.

How about those of us outside of Hollywood? We can do no less! CNN (06 Feb, cnn.com) quotes Al Gore as saying:

Our responsibility to our children and those who come after us is sacred and we must discharge our responsibility. And the good news is the changes we need to make are ones that will improve the quality of life. They're things that we should be doing anyway.

'My fellow Americans,' Mr Green Al Gore told the Oscar audience in the us and all over the world (Gary Gentile, Associated Press, 26 Feb, cbsnews.com), 'people all over the world: We need to solve the climate crisis.' Global warming is 'the overriding world challenge of our time,' he said. 'I really hope the decision by the Academy to honor the work by Director David Guggenheim and these producers will convince people who did not go see it to see the movie and learn about the climate crisis and become a part of the solution.' The producers – Lawrence Bender, Scott Burns, Laurie David (Wikipedia) – have become part of the solution while we're still part of the problem.

To those who can't manage their global doubts, or global indifference, I suggest this: First, look at whatever you're doing (thinking locally) and then think long and hard about what it's doing outside of you (thinking globally). What about freedom? you Americans may ask. You're free to decide what to do next. I only hope you appreciate the fact that this time you can't manage to evade your responsibility in the exercise of your freedom. And why is that? Freedom is like this: *You are free to swing your arm short of my nose* (I borrowed that from Dean Ricardo Pascual of the College of Law of the University of the Philippines, something I memorized more than 40 years ago). You are free to ride your car and throw your CO_2 (acting locally) short of my nose (acting globally).

In case you didn't know, carbon dioxide (CO_2) is the most infamous of the man-caused exhausts. Of the 6 major greenhouse gas emissions that contribute to global warming, carbon dioxide leads all the rest: methane, nitrous oxide, sulfur hexafluoride, HFCs and PFCs (Larry West 2007, environment.about.com). And the United States is still leading all the rest of the countries with her contribution of 5 trillion tonnes of CO_2 a year, and all 16 countries of the European Union with their total of 6 trillion tonnes (West 2007). This should not be the case.



Enter The Inconvenient Fruit, a different kind of hybrid.

THE INCONVENIENT FRUIT, ITS ORIGIN IS EASTERN.

Belonging to the inconvenient class, fossil fuels are non-renewable; so, making them the major energy source for cars should not have been the case in the first place. Those gas-guzzling-and-therefore-gas-emitting cars have become the antithesis of man's civilized progress.

We need to completely junk fossil fuels in favor of biofuels – that's an inconvenient truth. Meanwhile, hybrid cars in many states in the us now use 10% to 90% ethanol to gasoline blends while Brazil now uses 24% (Madhu Chittora, 2 May 2005, projectsmonitor.com). We do have a choice of source: The Yankee gets his bioenergy from

Zea mays (corn); the Brazilian gets his from *Saccharum officinarum* (sugarcane); the Indian gets his from *Sorghum bicolor* (sweet sorghum). To each his own species.

As I see it, ICRISAT's advocacy of a 'Grey to Green Revolution' (William Dar 2007, *Nurturing Life In The Drylands Of Hope*, ICRISAT, Andhra Pradesh, India, in CD) is the Institute's global mission. So: Growing sweet sorghum for ethanol production is implementing a Grey to Green Revolution towards achieving a global vision.

Let's go Indian, choosing the inconvenient fruit. Among those I call the climate crops, sweet sorghum is relatively unknown among those species that catch the CO₂ from the air and turn it into food, feed, fuel, fertilizer for the survival of the species. I know that to advocate sweet sorghum as the global source of ethanol for biofuel is to advocate a relatively unknown and largely unappreciated crop in Asia, Africa and America – to write two major feature articles on this poor man's crop may be on my part an inconvenient froth over an inconvenient fruit. This should not be the case at all.

Meanwhile, they have gone Indian at the campus of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Andhra Pradesh. They have come up with what I shall refer to here as *the sweet sorghum initiative*. For having come up with the initiative, the concept if not the term, for having led

Team ICRISAT in the rediscovery and nurturing of sweet sorghum as an energy crop, for having successfully marketed the idea of sweet sorghum ethanol first to the private and government sectors in India, for now boldly propagating sweet sorghum as the climate crop in Africa and Asia:

Dr William Dar, Director General of ICRISAT in faraway India, Filipino, is My Global Manager of the Year (2006).

Since there is no such award, it has been necessary to invent it. I have 7 reasons choosing Dar as my global manager because he has chosen:

A global crop – Sweet sorghum used to be the least famous of those species that catch the CO₂ from the air and turn it into food, feed, fuel, fertilizer for man and beast – and help mitigate global warming for all of us sinners & saints, black & white & brown. I happen to believe that sweet sorghum is the best climate crop of them all, for 7 reasons; here's a summary of what I said about it in 'The Yankee Dawdle. On Discovery Sorghum, The Great Climate Crop,' earlier published in *American Chronicle*:

- (1) Sorghum is a much cheaper source of ethanol for blending with gasoline than sugarcane.
- (2) It is plantable in wastelands, drylands and wetlands, so it does not have to compete for space with major food crops like rice, wheat and corn.
- (3) Like rice, sweet sorghum is a cash crop; it grows fast and the farmer harvests in 4 months.
- (4) Since it thrives even on poor soils, sweet sorghum can save on millions of dollars of fossil fuel-based fertilizer imports where the optimum – not the maximum – sustainable yield is the objective.
- (5) Sweet sorghum is the crop of millions of poor farmers, and therefore any increased need for the harvest increases their benefits from their crop.
- (6) Cultivating sweet sorghum as crop for ethanol production will save more millions of dollars in terms of fossil fuel non-imports than corn or sugarcane.
- (7) An ethanol distillery based on sweet sorghum is less polluting than that based on sugarcane or corn.

A global reach and impact - Today Africa, tomorrow the world. Already, ICRISAT has regional centers and research stations in Africa: Kenya, Niger, Mali, Zimbabwe, Malawi, Mozambique. ICRISAT is now reaching out to Asian and American countries with its sweet sorghum initiative.

A global vision – ICRISAT'S global vision is 'Science with a Human Face.' A 'corporate vision is a short, succinct, inspiring statement of what the organization intends to become and to achieve at some point in the future' (1000ventures.com). 'Corporate success depends on the vision articulated by the chief executive or the top management.' As chief executive of ICRISAT, Dar has been articulating this global vision for 7 years now. I have not seen or read a vision more global than that for science. So: Sweet sorghum for ethanol production is a global crop with a global vision.

A global mission – A mission must be that which is designed to help bring about a vision. With that in mind, as I see it, ICRISAT'S advocacy of a 'Grey to Green Revolution' (William Dar 2007, **Nurturing Life In The Drylands Of Hope**, ICRISAT, Andhra Pradesh, India, in CD) is the Institute's global mission. So: Growing sweet sorghum for ethanol production is implementing a Grey to Green Revolution towards achieving a global vision.

A global strategy – From Vadim Kotelnikov (2001, 1000ventures.com), we learn that a strategy is 'the way in which a company orients itself towards the market in which it operates and towards the other companies in the marketplace against which it competes. It is a plan an organization formulates to gain a sustainable advantage over the competition.' As I see it, sweet sorghum was chosen by ICRISAT as its climate crop not for maximizing production but for optimizing it: what you sow is what you get (wysiwyg). To optimize is to make the most of what

you have; ergo, to wysiwyg is to optimize. So: ICRISAT has come up with sweet sorghum hybrids that are 'photoperiod insensitive' – meaning, they can be planted at different months so that there can be harvests of the crop all months of the year, ensuring continuous supply of raw materials, which is necessary for successful manufacturing and marketing. As far as I know, we don't have corn or sugarcane hybrids that grow well whatever the month or season. So: The planting of ICRISAT'S sorghum hybrids for ethanol production is a global strategy to implement a global mission / global revolution towards achieving a global vision.

We can say then that 'global warming' is merely scenery, so we don't have to present it to the citizens of Our Town. If we believe that, we lack five square feet of understanding and the passion to feel what life means to us, all of us together.

A global outlook – An outlook is a point of view, an attitude (**American Heritage Dictionary** 2000). By dictionary, the word *global* has many shades of meaning: *international, worldwide, multinational, great, powerful* (American Heritage); *universal, comprehensive, total, inclusive, overall, large-scale* (**Microsoft Encarta Dictionary** 2005). I will now summarize all those and thereby add my own definition in one word: *shared*. Within ICRISAT itself, the work ethic is shared – the work force call themselves Team ICRISAT. William Dar, Team Captain, leads and guides the ICRISAT staff to work together for the good of all, literally and figuratively. This is how ICRISAT has been able to produce hybrids of sweet sorghum as well as sell the species as a global crop for ethanol production to Rusni Distilleries Ltd so that now Rusni is producing commercial ethanol from sweet sorghum stalks (IPR, 11 Oct 2006, seedquest.com). So: Teamwork is ICRISAT'S internal global outlook

in nurturing sweet sorghum as a global crop using a global strategy to implement a global mission to achieve a global vision.

A global reach and impact - Today Africa, tomorrow the world. Already, ICRISAT has regional centers and research stations in Africa: Kenya, Niger, Mali, Zimbabwe, Malawi, Mozambique. ICRISAT is now reaching out to Asian and American countries with its sweet sorghum initiative. Sweet sorghum is actually already grown in many countries: the United States, Australia, Africa (where it is known as *durra*), India (*jowar*), Ethiopia (*bachanta*). On her part, directly inspired by the Rusni sweet sorghum distillery as proof of concept, led by President Gloria Macapagal-Arroyo, the Philippines has embarked on her own program of producing ethanol from the crop despite the fact that sweet sorghum is exotic to the islands (INF, 10 Sept 2006, nordis.net). So: ICRISAT is reaching out globally in nurturing sweet sorghum as a global crop using a global strategy to implement a global mission to achieve a global vision.

A global mode of operation – My readings of the many reports of ICRISAT and on ICRISAT have given me another idea. The global mode of operation that this international research institute has adopted for its successful sweet sorghum initiative may be referred to as the *sci-fi mode*. That's an acronym for *science, citizen, financing, management, good offices, distribution of benefits, ecology*. The assumptions here are that there is (a) *a coalition of the willing*: science, citizen, financing, management, good offices, and (b) *a qualification of benefits* to man and the ecology. It is science that brings the crop to the attention of the citizen farmer who cultivates the soil and the

citizen entrepreneur who brings in the needed technology and financing for a distillery. The good offices that have been supportive of the sweet sorghum initiative of ICRISAT are (a) in terms of policy – the local and national governments of India, and (b) in terms of advocacy – the Consultative Group on International Agricultural Research (CGIAR), of which ICRISAT is one of the 15 international centers under its wings. Since the growing of sweet sorghum is labor-intensive, starting with the sowing of the seeds, this crop benefits more people by way of job creation. This kind of sci-fi must be managed well, remembering that what sci-fi management needs is not a business model but rather a development model. And since ethanol lowers the cost of energy for cars as well as lowers the threat of global warming, the sci-fi mode for sweet sorghum distributes the benefits of science-citizen-finance collaboration on a global scale, to the largest ecology of them all: Planet Earth.

Al Gore's film is *Our Film*, as *Planet Earth* is *Our Town*. Thornton Wilder is quoted as saying about his play '*Our Town*' (PBS, pbs.org):

Our claim, our hope, our despair are in the mind – not in things, not in 'scenery.' Moliere said that for the theatre all he needed was a platform and a passion or two. The climax of this play needs only five square feet of boarding and the passion to know what life means to us.

We can say then that 'global warming' is merely scenery, so we don't have to present it to the citizens of *Our Town*. If we believe that, we lack five square feet of understanding and the passion to feel what life means to us, all of us together.

Now then, an inconvenient truth is that what the world needs now is to go into not only a paradigm shift but a mode shift. The sci-fi mode I have just described for the sweet sorghum initiative of ICRISAT is so far a successful attempt to scale up science as to become global, as in:

- (a) pandemic, involving wide geographic areas within a country
- (b) universal, involving applicability under varied conditions
- (c) multi-sectoral, involving all sectors of society
- (d) multi-national, involving international partners within a country
- (e) total, involving production, processing, marketing, distribution of benefits
- (f) regional, involving formal groupings of countries in a geographical setting
- (g) worldwide, involving multiplier effects or ramifications throughout the world.

Al Gore's Occidental initiative is global warming; William Dar's Oriental initiative is global cropping. Oh, East is East, and West is West / And it's up to us to make sure / The twain ever shall meet. Al Gore is a layman talking science; William Dar is a scientist talking layman. They are talking the same language: it's called Global Warming. The Oscar for *The Inconvenient Truth* is another global warning about the survival of Planet Earth as we know it, our own survival as a species as we cherish it.

Cannot the climate change initiative of Al Gore learn from all that?

Sugarcane ethanol is the Brazilians' choice, corn ethanol is the Yankees' choice. Sweet sorghum ethanol is ICRISAT's choice. This has lower sulphur and higher octane and is cheaper to produce than sugarcane ethanol (Belum VS Reddy et al. 2006, 'Sweet Sorghum,' ICRISAT brochure), as well as is cheaper than corn ethanol (Michael H Lau et al. 2006, afpc.tamu.edu).

With a global manager in the person of a Filipino from Santa Maria, Ilocos Sur in Northern Philippines, an inconvenient PhD (Horticulture) graduate from the University of the Philippines Los Baños working in inconvenient India, sweet sorghum as an inconvenient fruit is proving to be a convenient fruit of science in the service of the people, directly aimed at effectively delivering good fire to stronger car engines, contributing good wealth to fuller people's pockets, distributing good health from cleaner everyday winds.

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Al Gore is a layman talking science; William Dar is a scientist talking layman. They are talking the same language: it's called Global Warming. The Oscar for **The Inconvenient Truth** is another global warning about the survival of Planet Earth as we know it, our own survival as a species as we cherish it.

These times are the beginning of mankind's history of the millennium, or the end of all history.

Francis Fukuyama is another 'scholar of grand ideas,' in Andrew Leigh's own words (2000, econrsss.anu.edu.au), who is into politics and economics and is Chairman of the Board of a new magazine, *The American Interest*. Fukuyama is best known as the brash author and proclaimer of **The End Of History And The Last Man** published by the Free Press in 1992. Fukuyama says in his book **The Great Disruption** (1999): 'A great deal of social behavior is not learned but part of the genetic inheritance of man and his great ape forbears' (quoted by Marc D Guerra 2001, acton.org). Now, I don't think Fukuyama's theory of the great disruption of social order worldwide in the 3 decades between the 1960s and 1990s is correct, but if we continue to ignore the 3 decades of global warning by Al Gore, it is not to the American interest only that we are not descendants but that we are the great apes ourselves and Fukuyama's prediction will come true; there will be no one to write, if I may paraphrase him:

The End Of History And The Last Ape.

17.

'SURVIVAL OF THE FITTEST' REVISED. TO THE BREEDERS, TO MAKE MUCH OF TIME

This time, when I looked at the numbers, lo and behold! I saw Charles Darwin amidst 13 new varieties of sweet sorghum, 13 survivors of selection. Darling, I'm referring to the biologist who revolutionized the world of thought by inventing the concept of evolution, coming out in 1859 with such radical thought in his book **The Origin Of The Species By Means Of Natural Selection**. Darwin's works were violently attacked in those days (blupete.com); this article is another attack on another front today. How time flies when you're thinking of evolution!



'Natural selection' Darwin says; those who are the fittest to live are the ones who survive. The law of the jungle. Well, today, we're going to talk about un-natural selection, that is, man-made. The law of the juggle; *let me explain this one using theoretical, what-if data:*

In India, the plant breeders of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) created 13 new varieties of sweet sorghum coded as follows: AA, BB, CC, DD, EE, FF, GG, HH, II, JJ, KK, LL, MM. Afterwards, the Director General of ICRISAT, **William Dar**, a Filipino, brought seeds for trial-planting by the University of the Philippines Los Baños (UP Los Baños), which promptly test-planted all 13 varieties in 13 regions of the Philippines. (Remember, this is what-if data, every single data coming from me, an armchair researcher; I'm using the #13 deliberately, as I'm not afraid of numbers.) In 4 months, they had results, 100 days actually.

Here are the highest average yielders per hectare:

91 tons, AA, Region 03
 69 tons, BB, Region 10
 78 tons, CC, Region 04
 50 tons, DD, Region 05
 55 tons, EE, Region 11
 40 tons, FF, Region 08
 65 tons, GG, Region 07
 70 tons, HH, Region 12
 73 tons, II, Region 06
 78 tons, JJ, Region 02
 78 tons, KK, Region 13
 99 tons, LL, Region 01
 78 tons, MM, Region 09

**I'm happy for the peasants,
 because I believe sweet
 sorghum is the single best
 crop for small Filipino
 farmers. To the poor tillers of
 the soil, sweet sorghum
 yields food from the grains,
 animal fodder from the stalks,
 fuel from the bagasse,
 fertilizer from the crop
 residue; sweet sorghum can
 be grown in the worst places.**

The law of the juggle says the highest goes to the top, the lowest to the bottom. So, following 'survival of the fittest,' following protocol, we recommend to the Philippine Seed Board (PSB) variety LL (99 tons) for public consumption. LL is the fittest of them all. The PSB approves.

Now, the mean best yield of the 13 ICRISAT sorghums is 71 tons ($91 + 69 + 78 + 50 + 55 + 40 + 65 + 70 + 73 + 78 + 78 + 99 + 78$ equals 924 divided by 13). That means the top 2 new sorghums yield higher than the average new sorghum by at least 20 tons. I'm happy for the peasants, because I believe sweet sorghum is the single best crop for small Filipino farmers. To the poor tillers of the soil, sweet sorghum yields food from the grains, animal fodder from the stalks, fuel from the bagasse, fertilizer from the crop residue; sweet sorghum can be grown in the worst places. In short, *sweet sorghum equals hope*. Syrup from sweet sorghum gives us ethanol, a biofuel priced above diamonds now that gasoline and diesel are priced above rubies.

But, I have a problem recommending the top new variety to farmers in those 13 regions of my country. Why? Because, looking again, I find the yields in:

Region 03: AA highest, the rest lower;
 Region 10: BB highest, the rest lower;
 Region 04: CC highest, the rest lower;

Region 05: DD highest, the rest lower;
 Region 11: EE highest, the rest lower;
 Region 08: FF highest, the rest lower;
 Region 07: GG highest, the rest lower;
 Region 12: HH highest, the rest lower;
 Region 06: II highest, the rest lower;
 Region 02: JJ highest, the rest lower;
 Region 13: KK highest, the rest lower;
 Region 01: LL highest, the rest lower;
 Region 09: MM highest, the rest lower.

13 different highest yields. Do you realize what that means? Recommending the same 1 to different 13 is recommending to 13 *less than the best sweet sorghum in each region* – except naturally Region 01.

You see, if the UP Los Baños data is at all accurate and reliable, the most outstanding variety of all, LL, yields 99 tons in Region 01, true – but *lower than 78 tons in Region 13, lower than 65 tons in Region 07, lower than 40 tons in Region 08, and so on and so forth.* The data means that LL is best suited to Region 01, to the climate prevailing and soil conditions obtaining there; AA is best suited to Region 03, and so on and so forth.

I must therefore revise ‘survival of the fittest’ to ‘survival of *all* the fittest’ – it is fittest that I recommend not just 1 or 2 but a total of 13 highest-yielding varieties (HYVs) – that is, a different HYV fits best a different region. In other words, there are 13 sorghum HYVs all in all for me to recommend, each one the highest for that region. That means I have saved at least 12 generations of sorghum breeding & selection for 12 other new varieties of sorghum. 12 years saved?



I submit that the faulty logic of 'survival of the fittest' in testing new crop varieties originated from *the concept of the average (or mean)*. Suppose the average yield for II was derived from these yields in 9 different sites in that same region: EE 88, NT 93, NF 95, NS 97, NE 98, OH 100, OO 100, OT 100, OX 120 tons. So, we find 99 tons as the *mean* yield (no site), 98 tons (Site NE) as the *median* yield, and 100 tons (Sites OH, OO, OT) as the *mode* yield. The difference between mean and median and mode is a significant 1 ton. Since there's no such thing as an average sorghum; the median is an arbitrary figure – I'll pick the mode yield, reflecting the trend of the yields of LL in that region – there are 3 sites with 100 tons. LL's best yield is 100, not 99 tons. 120 tons (Site OX) is a fluke.

Don't forget that a crop variety is site-specific, growing best in one place and not another. Therefore, in un-natural selection, 'the survival of the fittest' fits best the Site in the Region, not the Country. That's the fittest I can say, right?

18.

BIOPOWER TO THE PEOPLE! THE SONG OF SWEET SORGHUM

Celebration is the word. While my hometown Asingan, Pangasinan, Northern Luzon, Philippines was celebrating her fiesta the other week, inadvertently I went there to celebrate my newfound inspiration crop: sweet sorghum (*Sorghum bicolor*), a crop I believe will revolutionize agriculture in Asia, Africa as well as the Americas, a plant I have yet to see. Blessed are those that have not seen but have believed?



Attending a meeting of Balikbayans, and talking with those who had resources for investment, in my enthusiasm, I tried to 'sell' sweet sorghum to one millionaire, Mr G, who is from our town; with another millionaire, Mr E, who is also from our town, we visited another millionaire, Mr A, who is in another town but who is not from there. I learned that for sweet sorghum, Mr A had already dipped his fingers and reached into his pockets long before this, and I had the distinct impression he knew more than I did. No hard feelings. While I'm a good asker of questions, a good volunteer of information, I'm also a good listener. Not only to millionaires.

Quietly, as he talked I noted Mr A's technology package for sweet sorghum as source of biofuel differed essentially from what I was thinking, he thinking of minimizing management risk (controlling the operations) and I thinking of maximizing human involvement (multiplying jobs), which I understand is the untravelled road Rusni Distillery has taken: human hands feed stalks to crushers. But I didn't tell Mr A that in fact I wasn't thinking of mechanization, that I was thinking of humanization, that I wanted more human hands factored in, more people employed, that he was thinking of high tech while I was thinking of low tech. It would have spoiled the afternoon for both of us. I didn't forget: After all, people selling themselves to sweet sorghum? Already that was music to my ears.

While I'm not an expert of sweet sorghum the way **William Dar** is, who is Director General of ICRISAT (the International Crops Research Institute for the Semi-Arid Tropics), the way the scientists are at ICRISAT, I can say I'm becoming an expert at generating feature stories about sweet sorghum without repeating myself. So far, I have written and published:

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- (1) 'The Yankee Dawdle. On Discovery Sorghum, The Great Climate Crop' published by the *American Chronicle* 4 February 2007 – on the competitive advantage of sweet sorghum as source of biofuel over sugarcane (the choice of Brazil) and corn (the choice of the United States). ICRISAT 'discovered' it as a candidate crop to harvest carbon dioxide from the air and turn it into food, fuel, fodder, fertilizer.
- (2) 'An Inconvenient Truth: William Dar, The Filipino As Global Manager' published by the *American Chronicle* 26 February 2007 – on Dar as a global manager with a global strategy & outlook, ICRISAT with a global reach & impact & mode of operation - with focus on sweet sorghum as a global crop to mitigate global warming.
- (3) 'Discovery Manager: William Dar, Merlin Of Ethanol' published by *Inquirer.Net* 9 April 2007 – in which I liken management to magic, a metaphor as to how Dar in leading his Team ICRISAT transformed a poor man's crop into a genie with the power to run engines and make money out of grains and fresh stalks and bagasse.
- (4) A fourth feature article, also published by *American Chronicle* (3 March 2007), 'Primate Change? Or Climate Change? You Choose! – *The Blogal Village Voice*' is wholly on global warming and what bloggers can do about it, but

is connected to the other 3 articles because I relate sweet sorghum to the worldwide enterprise to mitigate global warming: being a poor man's crop, it is to me the best crop in the name of transforming the economics country to country along with counteracting climate change worldwide.

I have just been inspired to write this with an email from Dar attaching a PowerPoint presentation on 'BioPower' as developed by a team led by **Bellum Reddy** and **Mark Winslow**. So now I know that they now have a new website, named BioPower of course, a subdomain of icrisat.org.

I say sweet sorghum is the crop that launched a thousand sweets because it has been cultivated for at least 2000 years in Africa (Sandhill Farm) and at least 300 years in the United States alone, to where it was introduced in the 17th century ('Growing a Nation'). This crop makes excellent or high-quality molasses no matter where you grow the plant (Paul L Mask & William C Morris, University of Tennessee); it gives you a truly delicious syrup (Ken Christison & Keith Kinney, Hercules Engines); it is called a 'Life Saver' because you get more (in yield) from less (in cost of growing) compared to other crops (Janqui Zou & Yuxue Shi, Sorghum Institute of LAAS).

It's clear, 'BioPower is pro-poor,' says the ICRIAT PowerPoint presentation, sent to me by Dar in pdf form. How? Reading the pdf and with what I know while focusing on sweet sorghum, I understand that:

1. BioPower crops are those poor farmers can grow. That is to say, the seeds are inexpensive. Compared to hybrid rice, sweet sorghum seeds are cheap.



2. Biofuel crops produce not only fuel but also food and feed. Thus, rice produces food and feed but not the added value of ethanol that comes from processing corn, sugarcane or sweet sorghum.

3. They increase productivity so that food rides the biofuel wave. Some people argue that biofuel crops count out the food crops because food becomes fuel instead, as happens with corn (Yankees' choice for biofuel) and sugarcane (Brazilians' choice). Not with sweet sorghum; that's why I like sweet sorghum.

4. Non-food biofuel crops grow in wastelands. The corollary argument to that in #3 is that biofuel crops crowd out the food crops because they supplant them in real space. That is avoided with sweet sorghum, which grows well in bad soils. Food biofuel crops such as sweet sorghum also grow in wastelands.

5. As feedstock, biofuel crops increase income. Also, since sweet sorghum is cheaper to grow, the grains and fodder can be used by poor farmers to raise livestock, boosting their farm income.

6. Biofuel crops can be used to enrich those poor soils themselves such as through green manuring and trash mulching. Sweet sorghum is sure to do that, as it is a hardy crop that grows where other crops would not thrive.

'BioPower: Empowering the poor through bio-energy' says the BioPower website. To me, **to empower the poor is to help them help themselves**, for them to get rid of the popular bad habit of mendicancy, the baggage of centuries especially with the Filipinos. Mendicancy partly explains the indolence of the Filipinos. I'm imagining sweet sorghum as providing the biological energy and financial health to boost the psychological power of people to transform themselves from being helpless to being hopeful.

And two towns away from Asingan, that is, in Rosales, with the advocacy of Mayor **Ricardo Revita**, ICRISAT and the Department of Agriculture, Rusni Distillery will be erecting its first distillery of sweet sorghum for ethanol production in the Philippines (LCMY, 25 January 2007). Added music to my ears.

ICRISAT led by Dar (a Filipino), had inspired and convinced Rusni Distillery led by AR Palani Swamy, to put up one of the world's first ethanol-producing sweet sorghum distillery in the world. That is even more music to my ears.

You can then say I'm listening to The Song Of Sweet Sorghum.

19.

THE CHILDREN OF MAIDANEK.
OR, DRAWING GAS &
DRAWING BUTTERFLIES

I'm looking at a visible universe on the road to *Dabda*, a word I have just invented, the acronym for the 5 stages of grief according to Swiss psychologist Elisabeth Kubler-Ross: Denial > Anger > Bargaining > Depression > Acceptance. Shifting paradigm, I say to those who deny global warming, look at *Dabda* as a global warning from Ms Elisabeth, who presented *Dabda* as a psychological road map to the world some 40 years ago. The world is in the first stage: Denial. We even deny that we are denying.



I'm walking on a parallel, invisible universe; I'm *on the road to Taniap*, turning a negative into a positive, the route to take if we want to go from bad to worship, from fire to fresh air, from dying to living again.

The best thing that ever happened to Ms Elisabeth was a global warning in her head that dying was about living. 'Teacher Of Life' (wic.org), this Swiss-American studied terminally ill patients and wrote her seminal book **On Death And Dying** in 1969, introducing the idea of '5 stages of dying' or '5 stages of grief' (growthhouse.org).

In teaching the world about dying, Elisabeth Kubler-Ross taught the world about living. In teaching the world about global losing, with *An Inconvenient Truth* Al Gore is teaching us about global winning.

Ms Elisabeth was a pioneering woman of deeds – among others, she fought and won for the rights of dying patients, 'including hospice care, living wills, and speaking openly about life and death' (elisabethkublerross.com).

And for all that, on 29 March 1999, *Time* listed her among 'Time 100,' the magazine honoring 'The Great Minds Of The Century' (time.com).

So I want to speak openly about living and dying *on* this planet, *of* this planet. While Terra Cognita is not yet terminally ill, we must now recognize that we have to talk globally and locally about life and death, the Eternal Circle, and that, learning from Ms Elisabeth, in fact we can for instance apply the concept of Living Wills to mitigate global warming.

Living Wills for Climate Change can be in the form of grants for projects for R&D in biofuels, and loans for enterprises to encourage villagers to blanket Planet Earth with **gas-guzzling green monsters** - that is to say, plants harvesting carbon dioxide from the air, decreasing air pollution. An intelligent species nursing wastelands back to life with its

own refuse; for this, we already have the crop: Sweet Sorghum. In 2002, FAO called it the 'camel among crops' because it can grow in problem soils: dry or wet, salty or sweet (fao.org). A Survivor Crop. We must learn from the camel and be a Survivor Species.

Living Wills for Climate Change can be in the form of grants for projects for R&D in biofuels, and loans for enterprises to encourage villagers to blanket Planet Earth with gas-guzzling green monsters - that is to say, plants harvesting carbon dioxide from the air, decreasing air pollution.

Now I dare say global warming is the best thing that ever happened to farmers in the tropics, for now they have to face the reality that they can no longer be profligate with water, and they can plant a survivor crop where no other crop dare grow.

Sweet Sorghum? In the United States, Sorgho used to be big; in 1888, the total us production was 20 million gallons of syrup, mostly from family farms in neighborhoods with one farmer with a mill for squeezing the canes and an evaporating pan for cooking the syrup (Ken Christison & Keith Kinney, 2002, herculesengines.com). Kentucky syrup alone in 1994 was worth \$8 M, a mere half of Kentucky's potential (Morris J Bitzer, ca.uky.edu). According to Morris, community Sorgho projects of one or more counties are becoming common.

Family farms and community projects - the Sorgho potential is all there. They are all to the good - if only we can bring ourselves to graduate from the stages of Denial of Global Warming to Anger to Bargaining to Depression to Acceptance. I'm thinking you don't know *global warm* if you are in a cold country. That is bad enough. You don't know *global hot* until you are in the tropics, such as the Philippines. It's badder such as it is.

I'm half naked as I write this, and it's May, traditionally the onset of the rainy season, and it's only 0944 hours in Manila. I'm actually in good old cool Los Baños, not anymore the summer capital of Southern Luzon. The air is dry and hot even inside the apartment. If you don't call this *global warming*, you're using a different language. Or you don't call a spade a spade.

The old world is dying, and we are not about to grieve over it? Elisabeth Kubler-Ross' study of *global grieving*, if I may call it that, started when she saw hope in dying in Maidanek, a concentration camp in Poland, where Adolf Hitler had many children gassed to death. She was amazed that the children filled the camp walls with drawings of butterflies (Daniel Redwood, 1995, healthy.net). Why would dying children think of butterflies? Butterflies are free. The children had all accepted not death but the idea of dying, and still harbored in their hearts the hope to live and/or be free again.

If the living cared for the dying and gave them dignity, the living would be free to live life in full again. In Ms Elisabeth's 1969 brainstorm **On Death And Dying**, 'she not only provided a window into the minds of the terminally ill; she offered a psychological road map for the end of life and the course of grief' - that is to say, 'she taught us how to die' (Marianne Szegedy-Maszak, 29 August 2004, usnews.com). Rather, I think Ms Elisabeth taught the dying how to die, and simultaneously taught the living how to live.



What is called for is not simply **Tuesdays With Morrie** but *all days*. In nursing the dying, we are nursing the living. In nursing dying soils, we are nursing Earth back to life.

Living Will? While I can, I will continue to write about dying soils brought back to life by the Survivor Species called Sorgo, and I will expect to watch *real butterflies* fleeting about in the green fields, reminding me always to be free, and that to learn about dying is to learn about living.

20.

SCIENCE PARKS, STOPS.
BEING A PROPOSAL FOR
INNOVATION TEAMS

No, no, no! *Science parks?* The concept is all wrong. *Science parks* not, *Science stops* not. If it doesn't change, if it stays as is, it's not Science – it's Status Quo. Or Art. That goes whether you are in Los Alamos (a nuclear weapons town), Los Baños (a university town), or Las Vegas (a gambling town). You will find science in all those towns furiously working, not hibernating.



My conclusion? Whoever thought of 'science park' was thinking with his mind adumbrating, dictionary out of sight. The **American Heritage Dictionary** tells me a *science park* is an *industrial zone, manufacturing quarter*. Science doesn't stop there – it produces, reproduces, multiplies goods, industrial or consumer goods, things to eat, employ, experiment with, exploit, exhaust. Consider: a *park* is an *area of land set aside for public use*; reconsider, a science park is not for public use; it is for private use.

Embarrassing! The 'science park' is an error in logic, I must say, not simply in grammar. Still, I just surfed the Internet, with these search entries – "science park" Philippines – and I got 70,400 English pages under Safesearch. I see Science Park of the Philippines Inc (Mitsui & others), UP Diliman Science & Technology Park (Quezon City), Light Industry & Science Park I (Cabuyao, Laguna), Laguna Technopark, Laguna International Industrial Park, Light Industry Science Park II (Calamba City), to list a few.

So, *science park* is a bad idea whose time has come!

Still, I'm not comfortable with the term. So I now suggest a compromise; I'd like to call it by its acronym, *spark*, and I'll tell you why. Spark is synonymous with *vigor, flash, energy, generator*. To spark is to *trigger, to set off, to begin, to launch*. Defining, a *spark* is *a zone assigned and designed to trigger the launching of industries*.

So, let me call the Agri-Science Park of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) the *Agri-Spark*, the Science & Technology Park of the University of the Philippines Los Baños the *Spark of UP Los Baños*. And now I can tell you that this has indeed sparked a new idea in me: the Spark of UP Los Baños *ought to be patterned after* the Agri-Spark of ICRISAT if UP Los Baños knows what's good for her.

My conclusion? Whoever thought of 'science park' was thinking with his mind adumbrating, dictionary out of sight. The American Heritage Dictionary tells me a science park is an industrial zone, manufacturing quarter. Science doesn't stop there – it produces, reproduces, multiplies goods, industrial or consumer goods, things to eat, employ, experiment with, exploit, exhaust. Consider: a park is an area of land set aside for public use; reconsider, a science park is not for public use; it is for private use.

By our definition, the Spark of UP Los Baños should be not simply a learning place, a gathering place, but a launching pad for new enterprises, new industries, innovations. The Spark, wherever it is, should trigger off the creation of new teams made up of private interest, science and public service.

That's exactly what the Agri-Spark of ICRISAT is in its campus in Andhra Pradesh, India. A model spark that UP Los Baños ought to investigate, draw conclusions from, and emulate in her own campus.

Out of separate pieces called Hybrid Parents Research Consortium (HPRC), Agri-Business Incubator (ABI), Ag-Biotech Innovation Center (AIC), Bioproducts Research Consortium (BRC), SAT Eco-Venture arose the concept of the Agri-Spark of ICRISAT, which was set up 2003 December as a flagship initiative of the institute (agri-sciencepark.icrisat.org). The initiative signed an agreement with the Government of Andhra Pradesh to become part of the Genome Valley project, positioned as the agriculture-biotech hub of the Valley. Through the initiative, ICRISAT proposes to transfer technologies, enter into joint ventures with the private sector, to develop and commercialize innovations and knowledge; it will 'act as the umbrella for all the partnership related work done at ICRISAT in order to integrate the approach into one framework.' It must be noted that the initiative is 'to ultimately benefit the poorest of the poor.'

That is a given; whatever ICRISAT does, it must ultimately improve the lives of the very poor in the semi-arid tropics where millions of families eke out their living under deprived conditions and circumstances.

That said, there is one other thing I would like to mention here, and it is about ICRISAT often using 'partner' or 'partnership' or 'partnering' when it comes to working in tandem with other institutions, groups or sectors. That's a

good habit, and it does underscore the value of co-operation. But I prefer to use another term, which ICRISAT uses every now and then to refer to her own group: *Team*. To me, *partnering* is limited in concept that *teaming* is not; that is why Team ICRISAT is a powerful idea whose time came when William Dar became the institute's Director General in 2000. Team ICRISAT is what I call an *innovation team*.

Speaking of the model, the working framework of the initiative, ICRISAT says 'it has reached a stage wherein this concept can be easily replicated, customizing to any given geographic location.' ICRISAT is ready to set up such initiatives 'through strategic alliances and collaborative partnerships in the developing countries to create such vehicles which will boost public-private partnerships.'

Now then, UP Los Baños can do worse than reproduce the spark that ICRISAT has emitted using *science with a human face* in pursuit of the *Grey To Green Revolution*. (I will note here that the head of ICRISAT is a UP Los Baños alumnus, with a PhD in Horticulture; he comes from Santa Maria, Ilocos Sur.) What will it take the University to do that? Some entrepreneurship, some risk-taking, some planning, some leading, some reorganizing, some controlling. I'm hopeful for the University, my alma mater (I'm BSA '65), but she will have to learn appropriate corporate visioning, missioning, strategizing; above all, to reinvent herself.

And she can begin by declaring her independence from the University of the Philippines System and designing her own future as the State University of the Philippines, self-reliant, self-propelled. She needs to be innovative. Further, I envisage the State U as embracing financial independence in the model of Robert Kiyosaki, the inventor of the concept of financial independence. How? That is for me to say and for UP to find out!



I have read 4 of Kiyosaki's books: **Rich Dad, Poor Dad**; **Cashflow Quadrant**; **Rich Dad's Guide To Investing**; **Rich Kid, Smart Kid**.

'A large part of Kiyosaki's teachings focus on generating *passive income* by means of investment opportunities, such as real estate and small businesses, with the ultimate goal of supporting oneself by such investments alone' (Wikipedia). Now a millionaire many times over, Kiyosaki has shown that investing in real estate makes a lot of sense – and a lot of money.

So, what's that to UP Los Baños? A house and lot is real estate; inside and outside the campus, there is a dearth of dormitories and residences so much so that even cramped one-room affairs are paid for almost willingly by occupants. I know; for the last 40 years, my big family and I have stayed in as many residences as the number of my children: 13. Los Baños is a university town, and there are many of us who don't own homes.

If not engage in real estate the Kiyosaki way, UP Los Baños can teach Kiyosaki's formula for financial independence. With thousands taking such short courses, UP Los Baños should become financially independent herself in only a handful of years. One of the surprises of the Kiyosaki approach to real estate is that you don't need any capital at all – you just have to know the principle of it.

UP Los Baños, if not Kiyosaki's, it's time to innovate anyway. If the Filipino can with ICRISAT, I don't see why the Filipino can't with UP Los Baños.

21.

PRIMATE CHANGE?
OR CLIMATE CHANGE?
YOU CHOOSE!

– *THE BLOGAL VILLAGE VOICE*

Primate, I go ape! If you are *Homo sapiens*, the thinking species that I think you are, before you finish reading this, you will too. In my primate mind's eye, right in the forefront of country-to-country efforts to mitigate *Global Warming*, I envision *Blogal Warming*, a rise by 2 degrees Celsius in the body temperature of primate bloggers all over the world to the level of passion in their advocacy for *A Greener World*, greener & cleaner.



Personally, only last month, I found that *that* is a damn good reason to write more ardently, not the least to blog more arduously, to fever-pitch. Normally, before this, I had been held prisoner by other primal interests.

Primates of the world, unite: You have nothing to lose but your chains!

Consider this Frank Hilario's Blogal Warning, a 3-decades-delayed response to Al Gore's Global Warning: We need to change perspective about Climate Change. Houston, we have a problem. The Global Village is fact in that the electric impulse connects us all through the Internet, as Marshall McLuhan predicted, yet the Global Village is fiction in that the connection is divisive and not distributive, elitist and not equitable, devoid of commitment to community, without a shared vision. Whose fault is it? THE PRIMATES, THE GREAT THINKING APES – THE US.

If billions of us Primates will not change, the one single Climate will change us!

For love of the great apes, I have been thinking of inviting people to join in the grand adventure of **The Late Great Planet Earth** – it's late but not too late to be great. Global Warming, The Beast is yet to come, even if Al Gore warned us 30 years ago. Just remember one thing: *If we can't be great this time, we can't be.* With finality, Hamlet's soliloquy haunts us: 'To be or not to be, that is the question.'

Now then, I present here what I have defined as *7 Primal Instructions* for sapient primates to build the Second Noah's Ark, to inspire sagacious primates to their late (hopefully not their last) great act of kindness to the planet and therefore to themselves:

- (1) Visit the Global Village.
- (2) Make out the Blogal Village.
- (3) Take the road not taken.
- (4) Choose the high road.
- (5) Speak of reason.
- (6) Declare your faith.
- (7) *Wage peace, not war.*

Warning: We need to change perspective about Climate Change. Houston, we have a problem. The Global Village is fact in that the electric impulse connects us all through the Internet, as Marshall McLuhan predicted, yet the Global Village is fiction in that the connection is divisive and not distributive, elitist and not equitable, devoid of commitment to community, without a shared vision.

Come see that you are part of it and can't be an outsider even if you want to. Come realize the bloggers' village. Come see about making a difference. Come see the need for ideals. Come see the need to be rational. Come see the need to be hopeful. Come see the promise of peace and the premise of war. Come one, come all!

(1) Primate, come visit the global village.

If you're not with me, you're against me. Looking at the Internet as a *global network of electronic structures and systems designed for unlimited interactions through messages sent back and forth*, I see irresistible Promise, but I don't see intense Practice in terms of translating the Global Village from virtual to verifiable. I see the Internet denizens still have to get their acts together to make the Net a major tool for thinking global, thinking local, acting global, acting local. As of today, it's more scenes than sense, more bravado than brave, more sex than sexy, more invites than inviting, more tease than ease, more disarray than array. The Net is still as daunting to use as it was in the beginning – and ever shall be?

More, in the McLuhan sense, in the Internet, I can see that the Medium is *not* the Message *yet*. The ideal social relationships coming out of the electronic interactions are imperative but not empirical; they are more theoretical than practical. The experts are simply talking to fellow experts or addressing themselves. So, we know that the Internet is too serious a matter to be left to the experts alone! So, we know that *the best of the Global Village is yet to come*.

Another way of looking at the Internet is that the medium is not one single message but many conflicting messages. As old as of 24 BC, *Babylon* meant 'the gateway of the gods' (Wikipedia) – as young as of 24 years ago, the Internet is simply the modern *Babble-On*, the gateways of many gods with many tongues, some forked. Today still, in the Internet, there are too many people talking at the same time without trying to see each other's point of view. And multitudes are trying to hurt each other by words, short of the sword.

Notwithstanding, because of the Internet, it is much easier for you and me to realize that we are members of a global tribe called **Mankind**. In the early 1960s, decades before the Internet came into being, Marshall McLuhan saw whom he called *Tribal Man* and called this virtual community *Global Village*. McLuhan saw that radio and TV interconnected man to man by sights and sounds, some of these interactively. In a TV broadcast on 18 May 1960 aired by the Canadian Broadcasting Corporation (CBC), the interviewer mouthed McLuhan's thoughts, saying by way of introduction: '*Touch a button, the world is yours. You know, they talk about the world getting smaller?*' And 'Everyone is now our own neighborhood ... The world is now a global village ... a global village.'

Reading again McLuhan's little big book **Understanding Media: The Extensions Of Man** (1964, 13th ed, New American Library, 318 pages), I agree with William Stewart (2006, livinginternet.com) that McLuhan effectively predicted the Internet (the Net), saying: 'Marshall McLuhan's insights made the concept of a global village, interconnected by an electronic system, part of our popular culture well before it actually happened.' I see the Net as the global network of networks of computers. With the invention of the World Wide Web (the Web), the Net exploded in the 1990s. I see the Web as the global network of publications online. And therein lies a great promise, a hidden power. Primate, let us discover it.

(2) Primate, come make out The Blogal Village.

I see the Internet as a publisher, The Universal Publisher, and I revel in that thought. With McLuhan's eyes, I can see that from the Web has arisen the Phoenix of Unpublished Authors in the form of the *blog*. I see a blog as an uploaded, instantly & automatically approved, published musing, sometimes amusing. There are millions of blogs out there in cyberspace, and millions of bloggers. That computer-generated world I now want to call, in honor of the one and only Marshall McLuhan and the millions of bloggers: *The Blogal Village*. I love it! I have written a few hundred blogs myself since 04 October 2002 when I posted my first pair of blogs. Now then, paraphrasing Alfred Lord Tennyson, I have become a part of all that I have writ. (And passionately, if not magically. Even as a Muggle, in 30 days, I have written and published in the *American Chronicle* alone 3 long feature articles on greening the world: 'The Yankee Dawdle' 04 Feb, 'An Inconvenient Truth' 26 Feb and now 03 March 'Primate Change'.)

Not only blogging, I take to writing like a turtle takes to water. I take it seriously, even when I'm funny. I learned it all by myself, almost. In the mid-1950s, I began to teach myself to write, encouraged by the *Reader's Digest*. I began to blog earnestly in 2005, encouraged by my son Jomar. Thank God for the Digest and the children! I learned to upload images to my blogs late last year and, a few weeks later, to link the source to it. Interestingly, I called my first blogsite *INNOVISION* (set up 2002 at blogger.com), a pun on *innovation*, and now, 5 years later, I get an error message when I click 'View Log.' Some passions last, some innovations don't.

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From what I've seen and heard, the voice of the blogger is largely that of a lone wolf crying in the wilderness. But I am undaunted. I do not write just to count how many will read me afterwards; rather, I write either because I have a new or different message, or I have an old message that I know it would be of value to express in my own way.

I am Blogger, and my name is Legion. Ah, to think of the awesome power the bloggers can exercise as one Village Voice if only they will! I wrote this because I want them to realize *that*, because they haven't already. Let the Blogal Village Voice rise in symphony with the stars!

I propose that the Blogal Village Voice be the Global Village Voice. To speak to Primates for Primates. To espouse Primate Change to moderate Climate Change.

Now, what can we expect of the Blogal Village Voice? To speak of the road not taken. To speak of the high road. To speak of faith, of reason, of peace. Never mind if the Village Voice will be one crying in the wilderness of the Internet.

(3) Primate, come take the road not taken.

So how will the Blogal Village Voice move the Global Village to act?

I now call on all bloggers: Remembering that we are primates ourselves (assuming Charles Darwin's theory of evolution is correct), let us blog to bring about primate change to bring about climate change. Be warned that it is a lonely road; it is the road taken by one in a million primal bloggers.

Precisely! A few of us can make more of a difference, more of us can make small worlds of a difference. For inspiration, I offer these verses from one of my favorite Yankees, John F Kennedy's personal choice of poet laureate, the earthy one of San Francisco (born 26 March 1874) and New England:

The Road Not Taken

By Robert Frost (1915)

Two roads diverged in a yellow wood,
 And sorry I could not travel both
 And be one traveler; long I stood
 And looked down one as far as I could
 To where it bent in the undergrowth;
 Then took the other, as just as fair,
 And having perhaps the better claim,
 Because it was grassy and wanted wear;
 Though as for that the passing there
 Had worn them really about the same,
 And both that morning equally lay
 In leaves no step had trodden black.
 Oh, I kept the first for another day!
 Yet knowing how way leads on to way,
 I doubted if I should ever come back.
 I shall be telling this with a sigh
 Somewhere ages and ages hence:
 Two roads diverged in a wood, and I –
 I took the one less traveled by,
 And that has made all the difference.

Remember, primates: If we don't make a difference today, we won't make a difference tomorrow. Remember, Big Brother Global Warming is watching!

One of the first research for development (R4D) institutions to travel the road not taken that I know of is the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). It had to. When **William Dar** became Director General in 2000, at ICRISAT, it was the worst of times, it was the best of times. It was the worst because the Institute must have been at the lowest rung in the ladder of success; it was the best because when you're down, there's no way to go but up – assuming you know exactly what you have to do next.

Primates, if our mind is open, we learn from our experience, or from the experience of others. In July of 2006, as the Plenary Speaker during the 1st *Outstanding Young Scientists Inc Annual Convention* at the Manila Hotel, Dar said:

In 2000, I took over the reins of ICRISAT. It was a time when donor funding was at all-time low; reduced core funding had plummeted from \$20.8 million (1997) to \$15.8 million (2000); downsizing had reduced staff morale and operating and infrastructure costs had ballooned. ICRISAT faced an uncertain future and a declining image. Adopting a programmatic structure, investments in biotechnology and others steps had scant impact on the state of affairs.

That's a \$5 million decrease in core funding between 1997 (\$20.8M) and 2000 (\$15.8M), or a 24% decrease in 3 years. It must have been a little terrifying to watch that year after year, the funds were growing smaller and smaller, and there didn't seem any way to stop them. It is impossible to stop a leak if you don't know where it is or you refuse to acknowledge it.

With decreased core funding, the staff had to decrease, further reducing morale. When bad things happen, they happen in pairs. And worse piled on worse, while funding and staff had decreased, operating and infrastructure costs had increased. Had ICRISAT reached the point of no return?

When Dar became Director General, he energized ICRISAT into a proactive mood. No more waiting for things to happen; they had to make things happen. Thinking had to become dynamic, not stagnant, not unchanging; it had to look into the future, not simply lament the present.

The image of ICRISAT had declined and the future looked dark. So they adopted an organizational structure based on programs – it didn't work. They invested in biotechnology – it didn't work. They took other steps – they failed.

After the year 2000, ICRISAT went into proactive mode. Dynamic and futuristic thinking were predominant. I strongly believed and had the confidence that there was value worth restoring. This called for a fundamental shift in the way we were doing business, adopting new strategies and inventing a new organizational culture. And we introduced a new credo in ICRISAT, which is –Science with a Human Face.

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The path not taken had to be taken *now*. There had to be a paradigm shift, an elemental change in the way they were doing things. This called for, Dar said, 'adopting new strategies and inventing a new organizational culture.' And institutionalized a new thinking in the institute: *Science with a Human Face*. When all you see is science with a non-human face, you have essentially divorced yourself from society, even from reason.

Was not Dar singed by the heat of pessimism that spread through the air and wilted the flower of hope? No. He was a survivor. He had been poor and now he had overcome poverty. He believed in himself; he willed himself to succeed as some of the villagers in his hometown showed they could. 'I strongly believed,' he says, 'and I had the confidence that there was value worth restoring.' You have to believe in yourself; you have to believe in others – even when, or *especially when they no longer believe in themselves!*

Inspired by the External Program and Management Review (EPMR) panel's suggestions, I set forth overhauling the Institute's vision and mission, redefining research strategies, mapping a new structure and

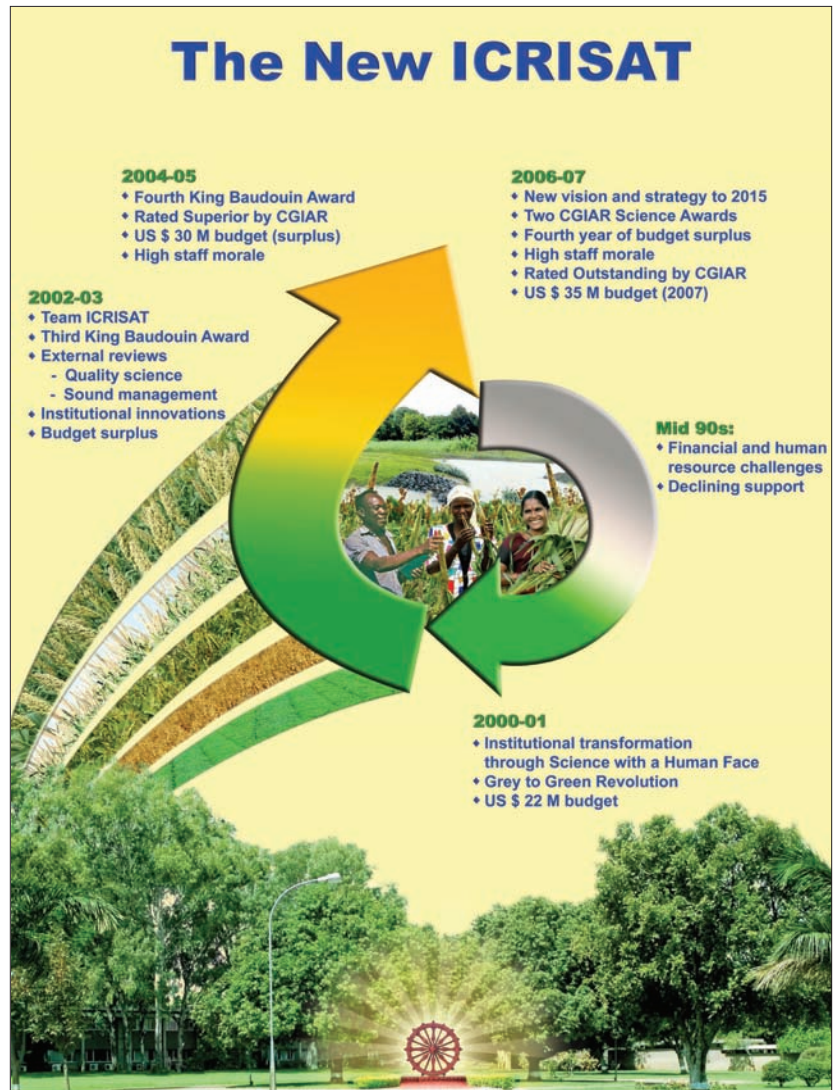
reengineering organizational processes. I needed a toolbox of approaches to tackle the myriad of problems. You don't need consensus when there is fire in the building but a command and control approach. Tackling these challenges called for personal leadership, mixing encouragement with ultimatum and fostering desired cultural norms.

He ordered an external review of the whole of ICRISAT, from top to bottom, from inside out. The reviewers found the need to recreate the institute's vision, restate the mission in the light of the new vision, redefine research strategies following the revised mission, map out a new structure and re-engineer organizational protocols. *He took command*, knowing 'You don't need consensus when there is fire in the building.' He was ready to be the Captain of the Sinking Ship That Could Still Be Saved. In his country, the Philippines, his leadership had been battle-scarred several times, but had always emerged the winner. It was difficult but not impossible; he had to encourage and threaten at the same time; he had to lead in the cultivation of a new corporate culture.

The new strategy involved adopting a 'grey to green,' demand-driven participatory approach, establishing strategic partnerships and a greater focus on public awareness and resource mobilization, team work and transparency and participative decision making. Poverty reduction and improving the livelihoods of the poor in the semi-arid tropics became ICRISAT's overarching concern.

In the inside still, under the dynamic leadership of Dar, they teamed up among themselves; the transactions were made transparent; the decision-making was made consensual.

On the outside, ICRISAT made the poor the institute's primary concern: to help decrease their number and increase their incomes. The institute adopted a 'grey to green' mantra, graduating from deficiency to sufficiency, progressing



from poor to rich soils, advancing from low to high harvests. To find solutions to problems, ICRISAT searched for the problems first, among the people, not among the experts that were themselves. They teamed up with other institutions and groups; they introduced the new ICRISAT to the public; they explored for sources of funds.

What they sought, they found. ICRISAT had been born again.

(4) Primate, come take the high road.

Primates all, we have refused to acknowledge the fact of global warming until it is *this* late. WE HAVE SEEN THE ENEMY, AND IT IS US. So, in trying to defeat the enemy within us, let us defeat evil not with evil but with good.

Primates all, we have refused to acknowledge the fact of global warming until it is this late. WE HAVE SEEN THE ENEMY, AND IT IS US. So, in trying to defeat the enemy within us, let us defeat evil not with evil but with good.

So, primate bloggers, allow me to offer you what I wrote 19 months ago, 'The (Real) Ten Commandments Of Blogging,' published 15 Feb 2006 in my blogsite *Bloggng Rights* (braggingrights.blogspot.com). They are reality-based and clearly patterned after *The Ten Commandments of God*. There are other Ten Commandments of Blogging out there but none of those sets are created equal, that is to say, the commandments in a blogger's ten are *not* mutually exclusive of each other, even as they are convenient lists of ten things to do or not to do. In my case, I wanted a real group of ten memorable, practical, Bible-based commandments to help bloggers become constructive rather than destructive, creative rather than critical, based on my own writing experience of 50 years. So now, dedicated to a higher good, I give you those ten commandments that I have

retitled and rewritten as my contribution to the Blogal Village Voice:

The Ten Commandments Of Blog

I.

I am the Lord, your Blog; thou shalt not have strange blogs before me. Don't write blogs that are ambiguous, indeterminate, hazy, fuzzy, muddled. Follow the 4 Cs of communication and be clear, concise, comprehensive, coherent. And: Be convinced that your fight is right, in this instance, that **the only way to combat climate change is primate change** – man has to change his attitude, from one of indifference to concern, and from concern to concerted action, about greenhouse gas emissions to the atmosphere that deflate the ozone layer and cause global warming. If that primate change has to begin with you, just do it!

II.

Thou shalt not take the name of your Blog in vain. Be serious, but do not swear when you blog. To be funny or ridiculous? You choose. Be productive, but don't lie, don't fabricate, don't exaggerate, don't obfuscate,

don't prevaricate. Above all, remember that as a blogger, you have a high moral duty to not make a joke of it at the expense of others.

III.

Remember the sabbatical, to keep it holy. Sabbath is a day of rest. To be creative, learn to relax even as you write your draft, as you revise what you have written. Refresh and give yourself long breaks and weekends from being critical. Enjoy the masters of thinking like Ray Bradbury and his theory of association, Edward de Bono and his theory of lateral thinking, Howard Gardner and his theory of multiple intelligences, even Robert Pirsig with his motorcycle & art of Zen maintenance. Don't write as if you are always in a hurry. Write a draft; after finishing a draft, set it aside and do something else; then go back to that draft the following day. If you want to write well, learn to revise well, and that takes time. Take it from me. I find that I am very happy with the results when I have 1 draft and 4 revisions of that draft. Starting to write this 01 March, I will publish only after the 5th draft.

IV.

Honor thy fodder and thy madder. Think well and do better. Think fodder, to remind yourself about the need to put food on the table: you have to eat, your family have to eat. Think madder too, and remind yourself along these lines: Do not get mad, do not get madder, do not get even – get religion!

V.

Thou shalt not kill. Be stout of heart as you wrestle with big or unwieldy theories, but entertain no murderous thoughts. Do not abort unborn infant ideas; instead, let them be delivered unto the world; be a good parent to them. Do not oppose the delivery of babyish concepts and constructs; instead, expose and offer them as sacrifice to the minds of the world and let *The Great Wind Of The Survival Of The Greatest* run its course. If you do that, you will be traveling the road to healthy, invigorating creativity. Let me be the judge of that!

VI.

Thou shalt not commit adultery. Be pure of heart. Be honest. Do not contaminate your attack, or defense, with any *ad hominem*, *argumentum misericordiam*, *non-sequitur* or any of the other defects of debate. Argue logically, beautifully; convince imaginatively.

VII.

Thou shalt not steal. Learn more. Stop, look & listen. Read & revise, not plagiarize. If you have to copy ideas, cite your sources. To avoid embarrassing quotation marks, learn to extract the essence of what you

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read and put them down in your own words. With software, you can cheat on Grammar & Spelling (click the icon), but you can't steal vocabulary; to be able to write well in your own fashion, you have to increase your stock of words. Use the Thesaurus – how do you think I wrote this one?

If you ask for proof, you're asking for the testimony of science. 'A solid understanding of the world is the first step for improving living conditions of all people throughout the world,' Gene Shackman says (2006, gsociology.icaap.org). You need science for that. The theory is that we need to be certain, if not know for sure, before we can wisely act. But that has been the paradigm of the world since the invention of the scientific method as early as 1600 BC; from that time on, the steps of the scientific method adapted had been: examination, diagnosis, treatment and prognosis (Wikipedia).

VIII.

Thou shalt not bear false witness against your neighbor. Build, not destroy. Do not manufacture evidence; do not misinform, do not twist facts. Be truthful and tactful. Do what the Romans do in Rome following Saint Paul: As much as possible, be at peace with everyone.

IX.

Thou shalt not covet your neighbor's wife. Admire, not desire. Let him have his own gimmick, stratagem, ruse, device, ploy or contrivance. Learn from it if you can. Be original, think up your own artifice. Or get ideas from the Bible – Shakespeare did. Get ideas from the Internet – I always do. And yes, learn from marketing, such as to transform a negative into a positive.

X.

Thou shalt not covet your neighbor's gods. Remember: Love of money is the god of all evil. Use but not amuse yourself with wealth. Trust your heart on what is the true treasure, the higher value, the utmost ideal. *Finally, primates, following Saint Paul, be seekers of whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report, if there be any virtue, and if there be any praise, dwell on these things.*

If you like, call them 'The Ten Commandments For Primates To Love.' But: What if primates can't follow The Ten Commandments? Let the primates do their best anyway – only their best is good enough.

(5) Primate, come speak of reason.

It may be that even at this point you're not convinced global warming stands to reason. Where's the proof? you ask. I say: *We don't need proof.*

If you ask for proof, you're asking for the testimony of science. 'A solid understanding of the world is the first step for improving living conditions of all people throughout the world,' Gene Shackman says (2006, gsociology.icaap.org).

You need science for that. The theory is that we need to be certain, if not know for sure, before we can wisely act. But that has been the paradigm of the world since the invention of the scientific method as early as 1600 BC; from that time on, the steps of the scientific method adapted had been: *examination, diagnosis, treatment and prognosis* (Wikipedia).

And where are we now after 3,607 years of the application of science to life? We are in *after the beginning of global warming*. That is The Inconvenient Truth.

You still doubt that there is global warming? Then the Hollywood stars are more discerning than you are – the members of the American Academy of Motion Picture Arts & Sciences have just bestowed the 2007 Oscar for 'Best Documentary' on Al Gore's **The Inconvenient Truth**. Read the news, watch the film! This is a film that substantiates the claim of global warming with evidence from around the world and conclusions of scientists & experts after much deliberation & debate. Oh, it's a film I myself haven't seen but have believed. Didn't Jesus Christ say? 'Blessed are those that have not seen but have believed!'

Earlier, the United Nations came out with a report that global warming is a fact ('unequivocal') (for more details, see also my other *American Chronicle* article, 'An Inconvenient Truth'). In response (to the UN Report, not to my article), European Environment Commissioner Stavros Dimas was reported to have said (William Echikson, 1 Mar 2007, nasdaq.com):

I am deeply concerned at the accelerating pace and the increasing extent of climate change that (the UN Report) shows. It is now more urgent than ever that the international community get down to serious negotiations on a comprehensive new worldwide agreement to stop global warming.

Next, we must further raise the consciousness of those who are already aware into the level of curiosity, further to lead them into desiring to do something about it, whatever they can where they can with what they have.

The EU has been urging the us to agree to a unilateral cutting of greenhouse gas emissions at least 20% by 2020. But the United States is not about to be persuaded. That is because us officials are convinced that unilateral cuts of gas emissions will result in a damaged economy for the us (AP, 2 Feb 2007, foxnews.com). *What is bad for General Motors is bad for the us.*

We need the Blogal Village Voice to say that the Yankee explanation for the us Government's refusal to order public and private cuts in greenhouse gas emissions is damaged reasoning. We primal bloggers need to keep faith with the people if the politicians will not.

(6) Primate, come declare your faith.

Man is the creator of the Internet, the Web, the email, the chat, the blog – and primates see that it is good. Something tells this primate we have an intelligent species here, truly *Homo sapiens*, a sapient human, a thinking species. I have faith that the Blogal Village Voice can help the fight against global warming that threatens the global village *if more primates open their mouth*.

Fortunately, all bloggers are driven; unfortunately, millions of primate bloggers are driven by selfish motives: they blog only for self-expression or self-aggrandizement. That is why I write: To raise the consciousness of Blogal Villagers from being parochial to being pivotal, from being insular to peninsular, from being narrow-minded to broad-minded, from being present-thinking to future-thinking.

The voice of faith calls for the Blogal Village Voice, that is, us bloggers, to use the medium of the Internet to get the message across. And we need teamwork so that we can conduct not sporadic, uncoordinated efforts but a Village Voice *Campaign* – and if it's a campaign, it must follow the AIDA precepts for the diffusion of knowledge that graduates into a clarification of theory which must precede a determination of practice:

In all that the Blogal Village Voice must do, it must be the voice of peace. The premise of war is that it is for peace – a contradiction. I know this is almost impossible for primate bloggers who equate primal freedom with primeval license, but primal blogging must follow AJ Muste's dictum: 'There is no way to peace; peace is the way.'

Awareness – First, we need to raise the consciousness of the people from the ground up as well as from top to bottom, about climate change. By *awareness*, I refer to an alertness or watchfulness on changes in environmental conditions prevailing over certain periods of time: temperature, wind, water of all forms everywhere: rain, clouds, snow, iceberg, irrigation water, evaporation, transpiration, groundwater.

Interest – Next, we must further raise the consciousness of those who are already aware into the level of curiosity, further to lead them into desiring to do something about it, whatever they can where they can with what they have.

Decision – Then we must be able to convince those who have expressed desire to select a path for them to take and then to make the decision and go ahead and do what they have to do.

Action – Above all, we must get our acts together. There must be a corporate plan in the first place. We will need to have a common vision, a common mission to achieve that vision, and a common goal to carry out that mission.

My primal goal in this article is not to provide the practice (what to do) but to promote the theory (what to think before one has to do what has to be done).

(7) Primate, come wage peace, not war.

In all that the Blogal Village Voice must do, it must be the voice of peace. The premise of war is that it is for peace – a contradiction. I know this is almost impossible for primate bloggers who equate primal freedom with primeval license, but primal blogging must follow AJ Muste's dictum: 'There is no way to peace; peace is the way.' Now, in this planet where every movement seems to point to violence, how can we bloggers blog in the name of peace? At this point in time, I can think of no primal guide but this prayer of St Francis of Assisi:

*Lord, make me an instrument of your peace:
where there is hatred, let me sow love;
where there is injury, pardon;
where there is doubt, faith;
where there is despair, hope;
where there is darkness, light;
and where there is sadness, joy.*

*Divine Master, grant that I may not so much seek
to be consoled as to console,
to be understood as to understand,
to be loved as to love.*

*For it is in giving that we receive,
it is in pardoning that we are pardoned,
and it is in dying that we are born to eternal life.*

Primates, unless we make a paradigm shift to love, in time Planet Earth will make a parabola shift and launch us in a well-deserved orbit either *toward* the sun (fire) or *away from* the sun (ice) – then and there Robert Frost's poem 'Fire And Ice' will finally show us poetic justice.

22.

WHAT'S IN A NAME? IGNRM. A PHRASE OR SOME OTHER NAME WOULD BE NICE

IGNRM? The full word is at the tip of my tongue, but I can't say it. Ignoring it is what I have been doing. But there comes a time when you can no longer ignore the technical term, that which I suspect was invented to add some mystery to the science. Or that which was designed to confound science writers like me who already have enough problems grasping for a metaphor or two. A metaphor for a mouthful. IGNRM: integrated genetic and natural resource management. And what would that be, I ask? The name 'IGNRM' is a long way from a rose memorable by its pleasant smell. A phrase or some other name would be nice.



I anticipate a steep learning curve here, a giddy ride up and down. IGNRM is the strategy adopted by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in her campus in Andhra Pradesh, India to carry out its world-wide mandate (icrisat.org), and since **I'm applying myself to a study of ICRISAT as an exemplar of a global agency engaged in international research for development (IR4D) in the Age of Information**, one that goes from theory to practice in a continuous motion, from poor farmer back to poor farmer, in many different places at the same time, I have to confront this problem of translating the technical to the practical. So whether I like it or not, as an interpreter of research for development, I have to translate this:

ICRISAT adopts integrated genetic and natural resource management (IGNRM) as its overarching research strategy to attain scientific excellence and relevance in agriculture in the semi-arid tropics, focusing on key livelihood and income opportunities to improve the well-being of the poor with equity, multi-disciplinarity, sustainability and community participation as core principles.

That's an even bigger mouthful. Long words in a long, complicated single sentence-single paragraph are entirely unnecessary to impress on me that the work of ICRISAT is necessary and significant in R4D for farmers in the degraded lands of the semi-arid tropics, and that IGNRM is *that crucial* to the work of ICRISAT. My problem right now is that I don't understand what exactly is IGNRM? I know it means *integrated genetic and natural resource management*, but I can't tell myself what does that mean precisely.

You understand that I have two problems here. One, I have to be able to explain it to myself before I can write about it; so, I have to go and see if I can extract the essence of IGNRM. Two, I have to understand how the genetic resource is integrated with the natural resource; since nobody is helping me, I have to go and clarify to myself the IGNRM process all by myself.

Via the perspective of the social sciences, scientists are able to probe into how the new varieties would impinge on the lives of people sociologically, psychologically, anthropologically, economically, politically, historically.

I have to get to the bottom of this. *If you can't solve a problem, change the problem!* Since I can't understand it as a whole at first sight, I will now dismember it – if this is **deconstruction** I don't recommend it; I've never been an admirer of **Jacques Derrida** – and see if I can create a whole out of those parts. As usual, I shall consult my favorite **American Heritage Dictionary** and take it from there:

Integrated. Made into a whole by bringing the parts together; something unified.

Genetic. Said of genes, which are units of life in a chromosome that determine particular characteristics of an organism such as height, offspring, method of reproduction, resistance to disease (or susceptibility).

Natural resource. A material source of good or benefit that occurs in a state not made or altered by man: denizens of the forest, the

forest itself, timber, orchids, fresh water, mineral deposits, fish, shellfish, etc.

Management. Handling, supervision or control.

So, what in heaven's name, is integrated genetic and natural resource management? Analyzing, I see that *that* is a good question but not the proper first question; these are the proper first questions, in sequence:

What do you mean by genetic management?

What do you mean by natural resource management?

What do you mean by integrated management?

The ICRISAT website tells me:

IGNRM ... is a powerful integrative strategy of agricultural research that seeks to maximize the synergies among the disciplines of biotechnology, plant breeding, agronomy, agro-ecosystems and social sciences with people empowerment at its core.

Which means two things: (1) IGNRM calls for synergy (2) among these sciences: biotechnology, plant breeding, agronomy, agro-ecosystems and social sciences. That tells me that these are the science fields in which activities happen that are unified under the concept of IGNRM. That is like saying this: Biotechnology + plant breeding + agronomy + agro-ecosystems + social sciences = IGNRM.

I am beginning to like my steep learning curve on the IGNRM.

Interpreting now, and recalling what I know, IGNRM is all of these:

Through biotechnology and plant breeding, Team ICRISAT is going to create new varieties of crops that are superior to those currently planted in terms of resistance to stresses (water, temperature), insect pests, diseases. Correct me if I'm wrong, but I see that:

Via *biotechnology*, scientists are able to transfer the genes of resistance from one variety that has these genes to another that doesn't have them, creating by the application of science a new crop variety.

Via *plant breeding*, scientists are able to create new varieties that not only accept those gene transplants but also possess other superior characters such as high yield and low cost of cultivation (say, the crop is drought-resistant and so there is no need to irrigate the field).

Via *agronomy*, scientists are able to determine what are the soil and crop practices that bring out the best in the new varieties.

Via the perspective of *agro-ecosystems*, scientists are able to predict or at least appreciate how these new varieties will relate in the natural scheme of things, in relation to, say, other crops, poultry, livestock, the atmosphere, soils and water.

Via the perspective of the *social sciences*, scientists are able to probe into how the new varieties would impinge on the lives of people sociologically, psychologically, anthropologically, economically, politically, historically.



Combine all that and you have IG_{NRM}, I mean, what I have just told you is what I understand is Integrated Genetic and Natural Resource Management. *If you can't define it, describe it. If you can't see the whole, look at the parts and tell me what you see.*

So, IG_{NRM} is *that* complicated! Well, I don't know of any science that is not complicated as long as it deals with people – as long as it is the scientists themselves explaining themselves. Which is a good thing. Because when scientists have problems explaining research intentions, implementations, interpretations, implications, they call on us popularizers of science, and I love that! That proves that we writers are their significant other and, you know, we like to feel needed too.

From a website, I read this: 'With improved rainwater management as an entry point along with Integrated Genetic and Natural Resource Management ...' (worldbank.org). Which means that with the simple act of teaching the handling of rainwater in the context of a good farming practice, scientists can enter into the lives of people in the villages and soon immerse them in IG_{NRM}.

You understand that I have two problems here. One, I have to be able to explain it to myself before I can write about it; so, I have to go and see if I can imbibe the essence of IG_{NRM}. Two, I have to understand how the genetic resource is integrated with the natural resource; so, I have to go and clarify to myself the IG_{NRM} process.

The report is that with IC_{RISAT}, in Kothapally, Andhra Pradesh, India, IG_{NRM} has consisted of introducing broad-bed and furrow cultivation, planting Gliricidia on bunds for green manure, introducing new crops and cropping systems, integrated pest management, developing micro-enterprises (icrisat.org). In the Tad Fa and Wang Chai watersheds in Thailand, and Thanh Ha and Huong Dao watersheds in Vietnam, IG_{NRM} has comprised of legumes being included in the cropping systems, contour cultivation, vegetative bunds, integrated pest management, diversified cropping. Like I told you, IG_{NRM} is a tangle of items, a complication of terms. Are they trying to help the farmers, or are they trying to confuse them?

Let me put it more simply: In practical terms, IG_{NRM} is the use of knowledge in different fields of science for farmers to produce more for less, and to be able to enjoy a life of dignity without exploiting people or natural resources – or without other people exploiting them for their personal interests.

That's still complicated, but that will do for now. And I still don't like IG_{NRM}, the name, but I have to accept the stark reality of it. Acceptance is the beginning of wisdom.

Yet, why not? 'O, be some other name! / What's in a name?' Juliet asks of Romeo, his sweetheart in William Shakespeare's tragedy **Romeo & Juliet**, in that very famous balcony scene (Act II, Scene 2). 'That which we call a rose / By any other name would smell as sweet; / So Romeo would, were he not Romeo call'd ...'

Juliet is asking Romeo to change his name, to deny his father in fact, as their two families are engaged in a destructive war against each other. (All wars *are* destructive.) If Romeo changes his name, he changes the nature of that war.

So, what's in a name? If it happens to be *IGNRM*, what's in a name is a whole universe of sciences from agronomy to zero cultivation, and it can get confusing. Actually, with this essay, I have tried to clarify what *IGNRM* is and incidentally made it memorable, famous even, but I still don't like the looks of it: *IGNRM*. So I make with Juliet her plaint:

'O, be some other name!'

23.

CHOOSING JOY.

BEING ON HOW TO INTERPRET SCIENCE LANGUAGE

When the customer says 'No!' the sale begins. That's a mantra of sales people, and it's a daunting challenge to be creative about a critical situation. So: When the science writer says 'No, I don't understand this material at all,' the science writing begins. A problem is not a problem, it's an opportunity. It's all in the attitude. Strange as it may seem, but a science writer can learn from a salesman about being creative. In fact, this is a 30-year-old idea; Elmer Leterman wrote his seminal book *The Sale Begins When The Customer Says 'No'* in 1977 (amazon.com). The lesson here? One never stops learning.



Let me illustrate. Note that the two quoted paragraphs that follow (in italics) both come from the Executive Summary of 'ICRISAT's Vision and Strategy to 2015' (icrisat.org). (I chose the material from the International Crops Research Institute for the Semi-Arid Tropics since I'm studying this institute because it's a model science agency in modern times; it's an award-winning institute many times over; I like to give credit to whom credit is due; at the same time I'm enjoying trying to learn how can it relate to the poor farmers in the drylands of the tropics armed only with her 5 mandate crops: sorghum, pearl millet, pigeonpea, chickpea, groundnut. And what have I found so far? ICRISAT relates to the farmers by relating to everyone: farmers, entrepreneurs, academe, local government, advocates, funding agencies, not to mention the media who must understand and interpret what the institute is doing. I am media, and my name is legion.)

The language is technical English; as a science writer, you are supposed to translate it into popular English. But before you attempt to interpret it, let me give you some advice. First, read it once, fast. You don't understand a thing? You're running about average! Read again, this time thoroughly, word for word. Still don't get it? You're not supposed to – if you do, I salute you. But I expect you to read once, twice, thrice. Only then are you ready to get to the heart of it.

Now you try understanding it:

The onset of the Green Revolution in the late sixties and early seventies brought unprecedented increases in food production in favorable areas of the developing world. However, many regions in less-favored, rainfed areas such as the semi-arid tropics (SAT) have been bypassed. The SAT covers parts of 55 developing countries populated by about 1.4 billion people, of which 560 million (40%) are classified as poor, and 70% of these live in rural areas. The SAT has very short growing seasons, separated by very hot and dry periods. Natural soil fertility is very low and pest and disease pressure are intense. With persistent drought and land degradation as the overarching constraints, SAT farmers face perennial risks in improving their productivity and livelihoods.

The language is technical English; as a science writer, you are supposed to translate it into popular English. But before you attempt to interpret it, let me give you some advice. First, read it once, fast. You don't understand a thing? You're running about average!

So, can you explain that as a magazine writer or a columnist in a newspaper? Of course not. *Just looking*, I can't do it myself.

So, what do you do? Here's what you can do. First, get to a PC. (Don't tell me you cannot be bothered; if you're a writer, you're either afraid, in awe, or an enemy of information technology.) Then type the text as you see it – never mind the italics, never mind the indents left and right – just type. Don't ask someone to type it for you; you do it – but not using a typewriter, for God's sake. (One of my favorite writers, Ray Bradbury, still uses the typewriter exclusively and rides the bicycle only, as far as

I know – me, I ride only a bicycle and type exclusively on the keyboard of the Hilarios' PC.) I do it all the time, been doing this for 20 years. Writing is a do-it-yourself kit, some assembly required. If you didn't know it, typing is assembly required, as you will shortly see me demonstrate.

You know what happens when you type onscreen? There are two ways the words and their meanings are registered in your brain: by touch and by sight. You're two times better off toward understanding your material this way. Some of the meanings of the words, sentences get into your head, even if you are *not* referring to the dictionary or encyclopedia for terms you don't understand. (But it's better if you do refer *while reading* when you meet a word you don't understand; just right-click on the word. Me, more often, I refer to the dictionary and the Internet.)

After you have typed those two paragraphs above, read them once, twice, thrice. Still don't understand much of it? Then it's time for Enter to Enter. I'm assuming you have typed the text: For the first paragraph, position your

cursor at the beginning letter of the second sentence and press Enter. Do the same with the third sentence, and the fourth, and the fifth, and the sixth. The paragraph should now look like this:

The onset of the Green Revolution in the late sixties and early seventies brought unprecedented increases in food production in favorable areas of the developing world.

However, many regions in less-favored, rainfed areas such as the semi-arid tropics (SAT) have been bypassed.

The SAT covers parts of 55 developing countries populated by about 1.4 billion people, of which 560 million (40%) are classified as poor, and 70% of these live in rural areas.

The SAT has very short growing seasons, separated by very hot and dry periods.

Natural soil fertility is very low and pest and disease pressure are intense.

With persistent drought and land degradation as the overarching constraints, SAT farmers face perennial risks in improving their productivity and livelihoods.



Read those sentences separately and you will begin to understand a little more. Now, type these (those in italics; again, you don't have to format):

1st sentence: Green Revolution, sixties, seventies, unprecedented, increases, food production, favorable areas, developing world.

Even if you don't understand 'unprecedented' (literally, 'no precedent;' it means this is the first time it happened), the meaning of that sentence has now become clearer to you, right?

2nd sentence: many regions, less-favored, rainfed areas, semi-arid tropics (SAT), bypassed.

Because you are the one who typed, you remember that in the first sentence, the words 'favorable areas' appear and, now, in the second sentence, 'less-favored' or unfavorable areas. (Does 'less-favored' refer to 'rainfed areas?' The sentence is not clear on that.)

3rd sentence: SAT, 55 developing countries, 1.4 billion people, 560 million (40%) poor, 70% live rural areas.

The *semi-arid tropics*: what does the term mean really? Check the Internet. (Oh yes, when I'm writing, I'm at the same time surfing the Internet searching, reading. It helps me think some more, and in a more relaxed manner –

because what I don't know, I can find out in a few seconds. Thank God for the Internet! *And yes, thank God for the personal computer. Thank God for everything.*) You don't need good grammar to understand the story told in the language of science. At this point in time, grammar is the least of your worries.

4th sentence: semi-arid tropics, short growing seasons, very hot and dry periods.

This is in fact a description of the semi-arid tropics. You don't worry about short growing seasons because, of course, the crops that grow well there *know* all about short growing seasons, hot and dry days or weeks or months.

5th sentence: Natural, soil fertility, very low, pest pressure, disease pressure, intense.

At this point, I know that now you're getting the point. (I just checked the Internet for "pest pressure" and I got 3,130 English pages, but no one is explaining it. In other words, they are assuming the reader understands it – I think it refers to actual infestation (by an insect pest) or infection (by a disease-causing organism).

6th sentence: persistent drought, land degradation, constraints, SAT farmers, perennial risks, improving, productivity, livelihoods.

Many very long words, but you will admit that it's all getting clearer and clearer.

(By the way, I'm using Word 2003 – not Word 2007 – in typing this. I like Word 2003 better because it's Frank A Hilario-friendly. Exactly what do I mean by that? Example: I can change the font size of a book of 132 pages, which is this one, with only 1 command that will take less than 1 minute, and the pages, lines and words will adjust accordingly, automatically. Another example:

Do you notice that ICRISAT is smaller than ICRISAT? ICRISAT is small caps, 13 pt (the words in much of the text of this book are in 12 pt); the bigger ICRISAT is allcaps, 12 pt. I changed all the 160 entries of big ICRISAT to small ICRISAT in 60 seconds. That's what I call user-friendly.)

And now, I will tell you there is another way to understand the quoted materials without breaking up the paragraphs into individual sentences. My Way. I will now type the next paragraph, so now I have both:

The onset of the Green Revolution in the late sixties and early seventies brought unprecedented increases in food production in favorable areas of the developing world. However, many regions in less-favored, rainfed areas such as the semi-arid tropics (SAT) have been bypassed. The SAT covers parts of 55 developing countries populated by about 1.4 billion people, of which 560 million (40%) are classified as poor, and 70% of these live

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in rural areas. The SAT has very short growing seasons, separated by very hot and dry periods. Natural soil fertility is very low and pest and disease pressure are intense. With persistent drought and land degradation as the overarching constraints, SAT farmers face perennial risks in improving their productivity and livelihoods.

On the whole, agriculture in the SAT faces gigantic challenges due to the lack of technological and institutional innovations and the unfinished transformation of subsistence agriculture. Many of the measures associated with the United Nations Convention to Combat Desertification (UNCCD) remain unimplemented. There is now an emerging pessimism among the world community that the Millennium Development Goals (MDGs) may not be achieved by 2015, especially in Sub-Saharan Africa (SSA). Hence, the imperative of improving agriculture productivity using Integrated Genetic and Natural Resource Management (IGNRM) propelled by institutional innovations has become more compelling in the SAT.

Instead of breaking up the second paragraph, I will simply read it again, read the first paragraph again and see what catches my attention. I open my mind to any thought whatsoever – and that’s the key to this trick, how to open the mind – and the word *poor* jumps out of those forbidding paragraphs. So I read:

Poor soils from ‘unfavorable areas,’ ‘less-favored,’ ‘semi-arid,’ ‘fertility is very low.’

Poor farms from ‘land degradation’

Poor water supply from ‘rainfed areas,’ ‘very hot and dry periods,’ ‘persistent drought’

Poor technology, poor support from ‘lack of technological and institutional innovations’

Poor farming from ‘unfinished transformation of subsistence agriculture’ – yields are unnecessarily low because of traditional farmers’ practices.

Looking at my list again, I can discern that the first three lines are statements of problems and the next two lines can be translated so that they become statements of solutions. Thus, ‘less-favored areas’ and ‘land degradation’ and ‘persistent drought’ among others are answered by introduction of technological and institutional innovations, and by modernizing agriculture. Easier said than done.

Going back to Elmer Leterman, ‘Dean of American Salesmanship,’ America’s first multi-billion dollar life insurance salesman, he famously said, ‘And remember, you have to be able to sell yourself successfully before you can take the next step – selling something for somebody else’ (elmergleterman.com). As a science writer, you have to be

At this point, you’re only beginning! So, I hope you are enjoying the whole thing. The first secret of science writing is *not to love* what you do, writing, but to *enjoy* it. ‘You’ve got to find what you love,’ says Steve Jobs, one of my idols (news-service.stanford.edu). Steve, that works with you as an innovator. What works with me as a science writer is to find love with what I’ve got, with what I’ve found. And to find love, I begin with joy.

able to sell to yourself, that is, be the first to appreciate the subject matter at hand, before you will be able (and be happy enough) to translate it in the language of others and be able to communicate with the many more.

Oh yes, when I'm writing, I'm at the same time surfing the Internet searching, reading. It helps me think some more, and in a more relaxed manner – because what I don't know, I can find out in a few seconds. Thank God for the Internet! And yes, thank God for the personal computer. Thank God for everything.

In case you haven't noticed, in teaching you how to understand the technical language first before you translate it into the popular, I actually was teaching you one way of how to study a difficult subject.

At this point, you're only beginning! So, I hope you are enjoying the whole thing. The first secret of science writing is *not to love* what you do, writing, but to *enjoy* it. (I guess it's all right if it's love at first sight, when suddenly you're a-tingle.) 'You've got to find what you love,' says Steve Jobs, one of my idols (news-service.stanford.edu). Steve, that works with you as an innovator. What works with me as a science writer is to find love with what I've got, with what I've found. And to find love, I have found that I should not begin to look for love; I should begin to look for joy instead.

So, choose joy. It's what the doctor ordered. Take joy before and after every meal, before and after sleeping. Those of you who are wont to measure *love* as you are wont to measure *quality time*, I assure you that love (as well as quality time) is

immeasurable. Didn't you hear the prophet say? 'Love covers a multitude.' So let's leave it at that. Joy you can gauge, joy you can easily tell, joy you can easily infect someone with.

You can easily tell I'm enjoying all this. And exactly how does one choose joy? Ah, I can write another book on that!

About The Author



His first love was writing, not a girl. Frank A Hilario began writing – and reading and memorizing the *Reader's Digest*, *Time*, and English and American authors, including William Shakespeare, Edgar Allan Poe, Christina Rossetti, Elizabeth Barrett Browning, Walt Whitman, Earl Stanley Gardner, and verses of the Bible – when he was still in high school. He has never stopped since. Now that he is out of school, while he has finished reading word-for-word all the 7 books on Harry Potter by JK Rowling, he isn't finished reading the Internet English pages checking facts, searching for information, waiting for insights to enter his open mind.

Four books that changed his writing life were those of Rudolf Flesch (on how to write and think more effectively), Edward de Bono (on how to think creatively), Marshall McLuhan (on how to think about technology and media), the Epistles of St Paul (on how to think of oneself and others, his favorite quote being Romans 12).

He is the first writer in the Hilario Family, unless you consider **Marcelo Hilario y Del Pilar** (the correct name), considered by many as the foremost Filipino journalist. Marcelo was writing against the Spanish friars; He is writing for the Filipinos. You don't have to be against to be for.

He has read and edited so many theses that he can read your dissertation manuscript in 5 minutes and tell you what's basically wrong with it. He jots down thoughts wherever he is, and then sometimes he cannot read his own writing. He writes in drafts, very rough drafts, random sentences, or non-sentences – because he thinks fast while he's at it. Like a baby, he plays with his food – always, his is food for thought.

He writes – edits, desktop-publishes – in Word 2003; even his blogs begin in this program. His essays are written in what today he calls *My Franciscan Order*, that is, no order at all, random, helter-skelter – in the beginning. (Franciscan? His first name is Francisco.) That follows the biblical story, right? In the beginning there was chaos. After the creation, God saw that it was good. My Franciscan Order is a delirious cocktail of Ernest Hemingway, George Bernard Shaw, Ray Bradbury, Rudolf Flesch, Ogden Nash, *New York Times*, *National Geographic*, Nick Joaquin. The describing in verbs is Flesch; the zest for language is Bradbury; the storytelling is Geographic and Times; the inventing of words is Nash; the way of the ending returning to the beginning as well as local color is Joaquin; the humor is often *Reader's Digest*, occasionally *The New Yorker*.

He keeps learning. Recently, he discovered that Google Docs creates automatic HTML codes for Word 2003 files that, with a little more Wording, is perfect for submitting to *American Chronicle* manuscripts as if they were formatted in Word.

He now has his dream digital camera, a Canon PowerShot A540 (a birthday gift from Techie, Toto, Sam, Jinny, Daphne); he now illustrates many of his online essays such as those in this book with his own photos. He taught himself photography by studying the masters (painters), asking questions from the masters (photographers).

He was one of the editors of the International Center for Living Aquatic Resources Management (ICLARM, now WorldFish), where he remembers reading on *optimum sustained yield* (OSY) of fisheries. That was in 1981; sometimes he doesn't forget. Which reminds him: Why aren't they talking OSY in agriculture, forestry, etc?

He is currently Editor in Chief of the *Philippine Journal of Crop Science*, a publication of the Crop Science Society of the Philippines. He transformed this virtually dead journal (typewriter-typesetter publishing, 2 years late) to a vibrant publication (up-to-date) using Microsoft Word 2003, using his experience, using his head.

He is a high school teacher by profession (he passed the Teacher's Exam, 80.6%), graduating from the University of the Philippines College of Agriculture with a BSA major in Ag Ed. In December 1985, he introduced himself to the personal computer; they have been inseparable ever since. He's at home most of the time now, and mostly in front of the PC. He doesn't get tired working at the keyboard for hours; you will get tired waiting for him to get off the keyboard. When he's not at home and you want to see him, try the nearest Internet café in town. If you have a project, anywhere, he waits for your book to come to him because it could not take off the ground, or it was already very late.

When he is not in front of the PC, he is in front of the TV watching *CSI Miami*, a Korean or a Taiwanese telenovela, a Filipino fantasy series. Or reading a new second-hand book, or re-reading an old copy. Other times, he is watching James Bond (Sean Connery, Pierce Brosnan), or Jackie Chan, or *The Incredibles* or *Toy Story* on a CD/DVD player at home in the Philippines.

He is 67, and you wonder how he works wonders with the PC or, that which is the same, how the PC works wonders with him. He is a model of the saying, which of course he has revised:

You can't teach old dogs new tricks, fat chance!

You have to give the old dogs the chance to change.

Why not buy them a new black Core 2 Duo PC

with 1 GB memory, 320 GB hard disk,

along with a black 17" LCD LG monitor,

not to forget an Epson Stylus cx2900 color printer,

an HP LaserJet 1020 printer?

That way, you encourage the old dogs to teach themselves!



About ICRISAT®



The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a nonprofit, non-political organization that does innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. ICRISAT's mission is to help empower 600 million poor people to overcome hunger, poverty and a degraded environment in the dry tropics through better agriculture. ICRISAT belongs to the Alliance of Centers of the Consultative Group on International Agricultural Research (CGIAR).

Contact Information

ICRISAT-Patancheru (Headquarters)

Patancheru 502 324
Andhra Pradesh, India
Tel +91 40 30713071
Fax +91 40 30713074
icrisat@cgiar.org

Liaison Office

CG Centers Block
NASC Complex
Dev Prakash Shastri Marg
New Delhi 110 012, India
Tel +91 11 32472306 to 08
Fax +91 11 25841294

ICRISAT-Nairobi (Regional hub ESA)

PO Box 39063, Nairobi, Kenya
Tel +254 20 7224550
Fax +254 20 7224001
icrisat-nairobi@cgiar.org

ICRISAT-Niamey (Regional hub WCA)

BP 12404
Niamey, Niger (Via Paris)
Tel +227 20 722626, 20 722529
Fax +227 20 734329
icrisatnc@cgiar.org

ICRISAT-Bamako

BP 320
Bamako, Mali
Tel +223 2223375
Fax +223 2228683
icrisat-w-mali@cgiar.org

ICRISAT-Bulawayo

Matopos Research Station
PO Box 776,
Bulawayo, Zimbabwe
Tel +263 83 8311 to 15
Fax +263 83 8253/8307
icrisatw@cgiar.org

ICRISAT-Lilongwe

Chitedze Agricultural Research Station
PO Box 1096
Lilongwe, Malawi
Tel +265 1 707297/071/067/057
Fax +265 1 707298
icrisat-malawi@cgiar.org

ICRISAT-Maputo

c/o IIAM, Av. das FPLM No 2698
Caixa Postal 1906
Maputo, Mozambique
Tel +258 21 461657
Fax +258 21 461581
icrisatmoz@panintra.com

Visit us at www.icrisat.org