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EDITORIAL

TOWARDS A RESOLUTION OF THE SABAH ISSUE

The Philippine territorial claim on Sabah (North Borneo) has been a long-standing irritant in the relations between the Philippines and Malaysia ever since the former, under the administration of President Diosdado Macapagal, filed on June 22, 1962 an official claim of sovereignty, jurisdiction and proprietary ownership over the territory as successor-in-interest of the Sultan of Sulu. Even now, the ill will generated by the claim appears to have ramified into intermittent testy confrontations between the two countries, such as those on common boundaries, fishing rights and "illegal workers" and "refugees" in Sabah. The claim also threatens the cohesion of the Association of Southeast Asian Nations (ASEAN) to which the two states belong and whose goal is to foster close political, economic and cultural relations among the racially (Malay) and culturally related countries in the shatterbelt that is Southeast Asia.

From the legal and historical angle, the Philippine claim appears to rest on solid footing. It seems more scholars are of the opinion that the word *padjak* in the Deed of 1878 which was written in Arabic script and in the Malay language means *lease* rather than *cede*, as the Malaysians (and the British) would want to interpret the term. The Philippines maintains that on January 22, 1878, the Sultan of Sulu, Mohammed Jamalul Alam, *leased* North Borneo to two European adventurers, Overback and Dent, for the sum of $5,000 to be paid yearly. Sabah was ceded by the Sultan of Brunei to the Sultan of Sulu in 1704 as a reward for the latter's help in suppressing a rebellion in the area.

Even after Alfred Dent's application for a Royal Charter for the British North Borneo Company was awarded in 1881, the British Foreign Minister Lord Earl Granville categorically stated that "sovereignty remains vested in the Sultan (of Sulu)." Another proof of the Sultan of Sulu's sovereignty over Sabah were the affirmations by the British Foreign Office and Parliament of this position, as consistently clarified in Parliament debates in 1885, 1889 and 1892. Also, even when the Sultan of Sulu's rights of temporal sovereignty over Sulu was terminated during the American Occupation through the Bates Treaty (1899) and the Carpenter Agreement (1915), the Sultan's continued sovereignty over Sabah was acknowledged by the Americans and the British as well. The clearest proof of the Sultan of Sulu's temporal sovereignty is the fact that the Malaysian government still pays the heirs of the Sultan

Malaysian $5,300 annually and has, therefore, shown its recognition of the heirs' proprietary rights. Together with the 1878 document, this could also be the Philippines' strongest proof of the validity of her claim as successor-in-interest of the Sultan of Sulu.

But strangely, just six days after the United States restored Philippine independence on July 4, 1946, the British surreptitiously annexed North Borneo through the North Borneo Cession Order of 1946 without due notice to the Sultan of Sulu whom they had heretofore repeatedly acknowledged as the rightful owner of the territory. There were, of course, nongovernment protests from former American Governor-General Francis Burton Harrison as Foreign Affairs adviser to President Manuel Roxas and from the heirs of the Sultan of Sulu. Amidst the excitement over her newly restored independence and the problems posed by post-war reconstruction, the Philippine government failed to lodge an immediate protest. It was only on June 22, 1962 when President Macapagal made a formal claim over Sabah after an agreement was forged earlier in the year with the Sultan of Sulu transferring sovereignty over the territory to the Philippine government.

Herein lies, it appears, the weakness of the Philippines' claim, in that she was not the original or direct owner and that she only made the claim *ex post facto*, i.e., 16 years after the British Cession Order of 1946. In fact, the Philippines should have already included Sabah in the Treaty of Paris signed on December 10, 1898 when the present International Treaty Limits were drawn, or in subsequent treaties when the Cagayan Sulu and Sibutu island groups (U.S.-Spain Treaty of November 7, 1900) as well as the Mangsee and Turtle island groups (U.S.-Britain Treaty of January 2, 1930) were being annexed to Philippine territory. As it is, a belated claim connotes a weak claim and a claim by a national may be considered basically a private claim.

But the question of sovereignty should be seen further in the light of *realpolitik*, i.e., politics anchored on practical and material considerations rather than on theoretical and moral objectives. Compared to her legal-historical claim, the Philippines has to accept the stark reality that Malaysia's claim stands on firmer ground, being based on *prescription*, i.e., on occupance and effective control of the territory for a long period of time. Malaysia's claim may also be categorized as a *cultural claim*, which is an emotion-laden one involving a feeling of loyalty to a particular country. This was shown by the Sabahans' preference to be under Malaysia when a referendum was conducted by the United Nations in April, 1962 among them as a way of allowing them to exercise their right of self-determination. Thus, even if Malaysia were to cede Sabah, the Philippines may expect to have another debilitating secessionist movement in its hands, in addition to that of the on-going Moro National Liberation Front in Mindanao.

So there is now an impasse. Malaysia would be foolish to merely hand over Sabah to the Philippines, after occupying and effectively controlling the oil- and timber-rich territory for a long time. Neither would it risk bringing the issue for adjudication to the International Court of Justice (ICJ), knowing the following aggravating factors: the stealthy manner by which her British patron took possession of Sabah; the possibility that the 1878 contract can be interpreted by the ICJ in the Philippines' favor; and Malaysia's continuous yearly payment of Malaysian $5,300 to the Sultan of Sulu's heirs, which is a strong proof of the recognition of the proprietary rights of the Sultan's heirs (and of the Philippines as successor-in-interest). As one option, the Philippines can go to war to force the issue and make the UN or ICJ take notice of its claim. But what force can she muster, saddled as she is by a growing communist insurgency and an intractable MNLF secessionist movement, not to mention the United States' reluctance to come to her aid despite the Mutual Defense Treaty signed by them on August 30, 1951? Malaysia, on the other hand, has a stronger navy and can count on the full support of the British in the event of war.

Ruling out the option of using force, there are other avenues that the Philippines can pursue. One is along the peaceful lines of negotiation and conciliation and that is to drop the claim but with a firm Malaysian assurance of just compensation for the proprietary rights of the heirs of the Sultan of Sulu. The second is to keep the Sabah issue indeterminate, neither renouncing the claim nor pressing it, and wait for a few generations when Filipino immigrants shall have become the majority in Sabah. But this is assuming, of course, that the native Sabahans themselves do not multiply and that the allegiance of the descendants of the traditionally anti-Manila Muslim migrants will still be with the Philippines. A third and related option would be to wait for the Philippines to become militarily and economically strong and then launch a war to "retake" Sabah. But again, this is assuming that Malaysia will become militarily (and economically) inferior by then and the British will remain neutral — all unlikely possibilities. A fourth option, which is a face-saving one, would be to support the present stirrings of an indigenous movement for an independent Sabah. Although this is feasible considering the successful secessions of Brunei and Singapore in 1962 and 1965, respectively, this is difficult to encourage presently under Malaysia's tight security laws that penalize with imprisonment talk or advocacy of independence.

The Philippines as successor-in-interest of the Sultan of Sulu cannot just effect a simple withdrawal of the Sabah claim without a *quid pro quo* arrangement since questions of national honor are involved and since

Malaysia already recognizes the proprietary rights of the Sultan's heirs in word and in deed, i.e., in media pronouncements and through the yearly payment of Malaysian $5,300 to the heirs. The most realistic option would be for the Philippines to drop the claim but with the precondition of a firm guarantee from Malaysia of a much greater compensation (proportionate to Sabah s natural resources) for the heirs' proprietary rights. And while this is being done, the Philippines might as well include two other preconditions which have been proposed by the Philippine Senate, i.e., the signing of a treaty on amity, commerce and labor and the drawing up of an agreement for a joint border patrol scheme. However, to facilitate quick agreement, these can be dispensed with and addressed to later.

If Malaysia is really reasonable and committed to the principle of fairness and the maintenance of regional peace, it should not be hard for her to accede to the above reasonable option (even just the matter of just compensation to the Sultan s heirs which is already a *compromise* move on the part of the Philippines). But considerable ill will has been sown by recent incidents and both sides view each other with distrust. Malaysia wants the Philippines to officially drop (by law) her claim first before talks on other issues can start. On the other hand, the Philippine Senate wants Malaysia to make a firm commitment first with regard to settling the proprietary rights of the Sultan of Sulu s heirs and to stop the harassment of Filipino expatriates in Sabah and of Filipino fishermen near the Philippine-Malaysian border. What complicates matters for the Philippines is the executive branch s decision to drop the claim outright, which appears to be a defeatist attitude. A further complicating matter is the existence of three claimants to the Sultanate of Sulu, one of whom nullified, through his Ruma Bechara or advisory council on February 12, 1989, the 1962 agreement entered into by the Sultan of Sulu and the Philippine government providing for the transfer of sovereignty over Sabah to the latter. What can be done is for the Philippines to reconcile the contending parties and to consolidate her stand first and this should be towards formally dropping (by law) the claim and at the same time making the Malaysians commit a reasonable monetary settlement (also by law) for the proprietary rights of the Sultan s heirs. What should follow is for both countries to continue their recently aborted talks in a *sincere* manner with regard to the procedure for effecting the recommended option. This procedure should particularly include the *simultaneous enactment* of the respective preconditions demanded by each side, i.e., the Philippines officially dropping her claim and Malaysia officially committing a reasonable compensation for the proprietary rights of the Sultan's heirs. All these should be done in the spirit of the Manila Accord of August 5, 1963 which provided for bilateral means of resolving the claim.

After the simultaneous legislation of the preconditions demanded by each state, both can proceed toward settling their border, resource exploitation and expatriate problems and ultimately collaborating on matters of common interest in the economic, socio-cultural, scientific and administrative fields. The other options mentioned in this brief are unrealistic and would serve only to fan the flames of conflict between the two countries. The option recommended here takes cognizance of the fact that the bias of existing international law is toward *conservatism* in territorial claims, i.e., towards the status quo, the present effective possession and stability.

Meliton B. Juanico

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ARTICLES

MANAGING DENUDED WATERSHEDS: PROVEN APPROACHES, STRATEGIES AND TECHNIQUES FOR COMMUNITY-BASED RESOURCE MANAGEMENT IN THE PHILIPPINE TIMBERLANDS

John B. Dalton*

ABSTRACT. Philippine uplands and watersheds are suffering today from rapid and pervasive denudation, resulting in alarming environmental degradation and acute rural poverty. This denudation may be attributed mainly to faulty kaingin *practices and the government's lowland-biased policies. But uplands abound with timber and crop production potential and this can be tapped by motivating private sector entrepreneurship to participate in managing particularly denuded micro-watershed systems. In managing such natural systems and community economies, certain basic principles have to be observed with regard to water management, soil fertility, diversification, and farm management. An effective implementing strategy for what may be therefore called community-based resource management should involve motivation, demonstration, community organizing, participatory planning and service centers.*

INTRODUCTION

Tropical forests are front page news. Their wholesale destruction has reached proportions threatening the very atmospheric conditions that sustain life on earth. Concurrently, the obliteration of these "global lungs" means exterminating plant and animal species of untold worth for future medical, pharmaceutical and genetic engineering applications, often before these species are even recorded or described.

Wet tropical forests (rainforests) are the most productive natural environments on earth. It is dark on the rainforest floor because most of the incident solar radiation is being utilized by the hundreds of different intervening plant species that crowd into every hectare. Much of the destructive energy in tropical cyclones is absorbed by the forest canopy, while the majority of the rainfall is absorbed by the mass of vegetation, protecting the underlying leaf litter and topsoil — the source of nutrients that support the thriving biomass.

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The Problem

As elsewhere in the tropical world, the Philippines has experienced rapid deforestation over recent decades, the national patrimony being allocated by the State at ridiculously low cost to a very select minority,[1] while the burgeoning population followed the logging trails into the mountains to gain access to land resources for subsistence cropping after clearing by slash-and-burn (*kaingin*) techniques.

The original tribal minorities who had traditionally husbanded the forests, while living by hunting and gathering and low-intensity swidden agriculture, have largely been overrun by the invading loggers, settlers and miners — their unique cultures and accrued resource management wisdom succumbing to the irresistible combination of acquisitive pressures and civilization's attractions.

Although some 16 million hectares (52 percent) of the Philippines' territory is above 18 percent slope and officially classified as timberlands under PD 705 (1973), less than 7 million hectares are still forested, and less than 15 percent of this is primal tropical forest. However, local variation is extreme. Palawan can still boast 70 percent forest cover, Cebu less than 1 percent.

There are now about 7 million hectares of completely denuded "timberlands" in the Philippines, of which at least 4 million hectares are being actively farmed by smallholders, mostly to low-intensity subsistence crops of upland rice, corn and cassava. The remaining 3 million hectares is predominantly open cogonal grasslands, sometimes utilized as rangeland for extensive, low-production ranching.

The production techniques utilized by small upland farmers are basically lowland in origin. These were mostly derived from technologies imported from the West, both old (the plow, corn and coconuts) and new (high-input monocrops). They are singularly unsuited to the fragile, destabilized environment typical of the deforested tropical uplands.

As 90 percent of the nutrients in rainforest systems are contained in the biomass, once the forest cover and leaf litter are removed by clearing, burning and erosion, the residual fertilities of upland soils are almost invariably low. However, rates of rainfall runoff and soil erosion are usually high due to the bare land surface and the steepness of slopes.

Both low soil fertility and high rainfall runoff are severely aggravated by the clearing, cultivation and weeding practices involved in staple food crop production and by the dry season wildfires that run uncontrolled through the open grasslands on regular five- or three-year cycles. Regular

[1] Government records show less than 150 concessionaires were given control over 6.4 million hectares of tropical forests for economic rents about 3 to 4 percent of real value.

burning effectively prevents woody vegetation from re-establishing, and perpetuates the climax vegetation of fire-tolerant grasses, mostly coarse and fibrous *Imperata* and *Andropogon* species (e.g., *cogon* and *talahib*).

Despite the massive deforestation that has accompanied the Philippine government's stewardship of the nation's forest resources, its Department of Environment and Natural Resources still lays claim to ownership of these denuded "timberlands" and small farm areas. By controlling more than half the total land area of the Philippines, the government has limited the planning horizon of resident uplanders. effectively constraining these *de facto* resource managers from adopting more appropriate perennial land uses.

Furthermore, years of largely ineffective forest protection have conditioned the relationship between government and uplanders. Upland communities are generally suspicious of government agencies and live in perpetual fear of their farms being taken over by the forest department or by influential lowlanders, including absentee "pseudo-landlords" who hold illegal claims over the public lands involved. These claims usually take the form of local government tax receipts ("tax declarations"). Uplander distrust of government finds expression in various forms of aversion, including a strong reluctance to plant trees, particularly forest species, in the belief that this would predispose their farms to reclamation by the forestry bureau.

Uplanders, therefore, tend to manage their resources simply to secure their day-to-day subsistence, giving little thought to long-term resource productivity or the profitability potential of more appropriate perennial land uses such as perennial crops, fruit and forest trees.

As a result, most upland farm families are among the nation's poorest. Their annual crop yields and farm productivities often fail to meet even subsistence food requirements, and are declining as the resource base continues to deteriorate into upland desertification due to unabated rainfall runoff and soil erosion.

Upland communities have other good reasons to feel alienated. They are usually totally unserviced by government. Few have even dry season access roads or developed village water supplies. Schools and health services are almost invariably absent. Often living in isolated hamlets (sitios) or single houses scattered throughout the hills, uplanders remain particularly vulnerable to brigands and other lawless elements, and susceptible to influence by insurgents. Caught in the crossfire, they frequently suffer the brunt of human rights abuses associated with the military's anti-insurgency campaigns.

Potentials

From the majority lowlanders' point of view, the uplands are bad lands. They are the source of many of the nation's most severe problems.

The destructive flash floods that damage lowland crops and infrastructure such as roads, bridges and irrigation systems and the siltation that reduces the effectivity of streams, ports, coral reefs and whole river systems — continually aggravating the flooding problem — all originate in the denuded uplands. The peace and order problems that threaten entire communities and weaken whole provincial and regional economies are rooted in the resource mismanagement, poverty and injustice endemic to upland areas.

But from a development viewpoint, the *uplands abound with untapped potential.* They still receive the same natural inputs of sunlight and rainfall as when they flourished with nature's splendid rainforests. The key to their development lies in returning them towards their former state.

By working in close collaboration with the resident upland resource managers, and assisting them to acquire security of tenure and to apply principles and techniques involving wise use of natural resources, it is both possible and feasible to completely reverse this spiral of upland resource destruction and mismanagement, re-creating instead the natural wealth of diversity and productivity that once typified the original forest ecology.

The government, too, is now actively promoting policy, program and technical change. Under the Integrated Social Forestry (ISF) Program, uplanders who are resident tillers of denuded forest lands since before 1982 can be awarded a 50-year lease over areas up to 7 hectares and are encouraged to practice runoff control and perennial land uses. In some pilot areas (e.g., Zamboanga del Sur), the ISF program is being combined with the Comprehensive Agrarian Reform Program (CARP) to actively distribute denuded timberlands for smallholder reforestation and development.

Similarly, the ADB's recent $120 million National Reforestation Program loan coursed through the DENR is purposefully targetting the private sector, including upland families, communities and local corporations, to undertake contract reforestation, with the benefits mostly accruing to the reforesters themselves.

It is in support of this policy shift towards providing the opportunity for greatly expanded upland productivity and environmental regeneration by harnessing the motivation of private sector entrepreneurship at various levels that this paper was compiled. It outlines the commercial viability and net benefits that are likely to accrue to smallholder resource managers and their communities when upland development and contract reforestation activities are integrated with community organizing and infrastructure development at the barangay level.

Various forms of corporate participation can be envisaged, including technical extension and overall project management. In fact, if these approaches were to be combined with sizable areas of corporate reforestation (e.g., under the terms and conditions already pertaining to Industrial Tree Plantations), the funding and management of rural development in entire upland barangays could become commercially viable.

In the Philippines, when "good development" becomes synonymous with "good business," an era of spontaneous rural development will have begun.

BASIC PRINCIPLES

Building on base principles established over years of objective action research into rural development theory and practice, it is apparent that the renewal of the natural environment including the proper functioning of natural systems, and the establishment of strong rural-based communities and economies can be assured by pursuing the following base principles:

Water Management

The primary role of water in all living systems is well established. Water is particularly important in plant production and human survival. The productivity of the uplands is frequently limited by inadequate water due to the fact that the majority of incident rainfall is often lost as runoff.

The key to maximizing productivity in the rainfed uplands is to maximize the use of incident rainwater by wise water management. This means preventing rainfall runoff, and controlling it whenever it occurs, including diverting water from concave gullies where it accumulates erosive power onto convex ridgelines where it is dispersed, spreading it across side slopes to improve its absorption, and collecting and storing it for later use, wherever possible.

By utilizing these base principles of water management, groups of small farmers can be assisted to undertake "microwatershed" development. This watershed management by resident smallholders involves their planning, layout and construction of "diversion" and "collector" canals and small gully checks and dams at strategic locations in every small zero-order watershed. (Figs. 1 and 2)

Once the natural function of the watershed system is restored at the micro level, each small farmer within it can then be assisted to plan his own farm development so that each proposed land use is compatible with each of the various land classes on his farm (Fig. 3). Farm planning is done with a view to further controlling runoff and soil erosion at the farm and field level, and to rebuilding and maintaining soil fertility while maximizing sustainable farm productivity by crop diversification and perennial land uses.

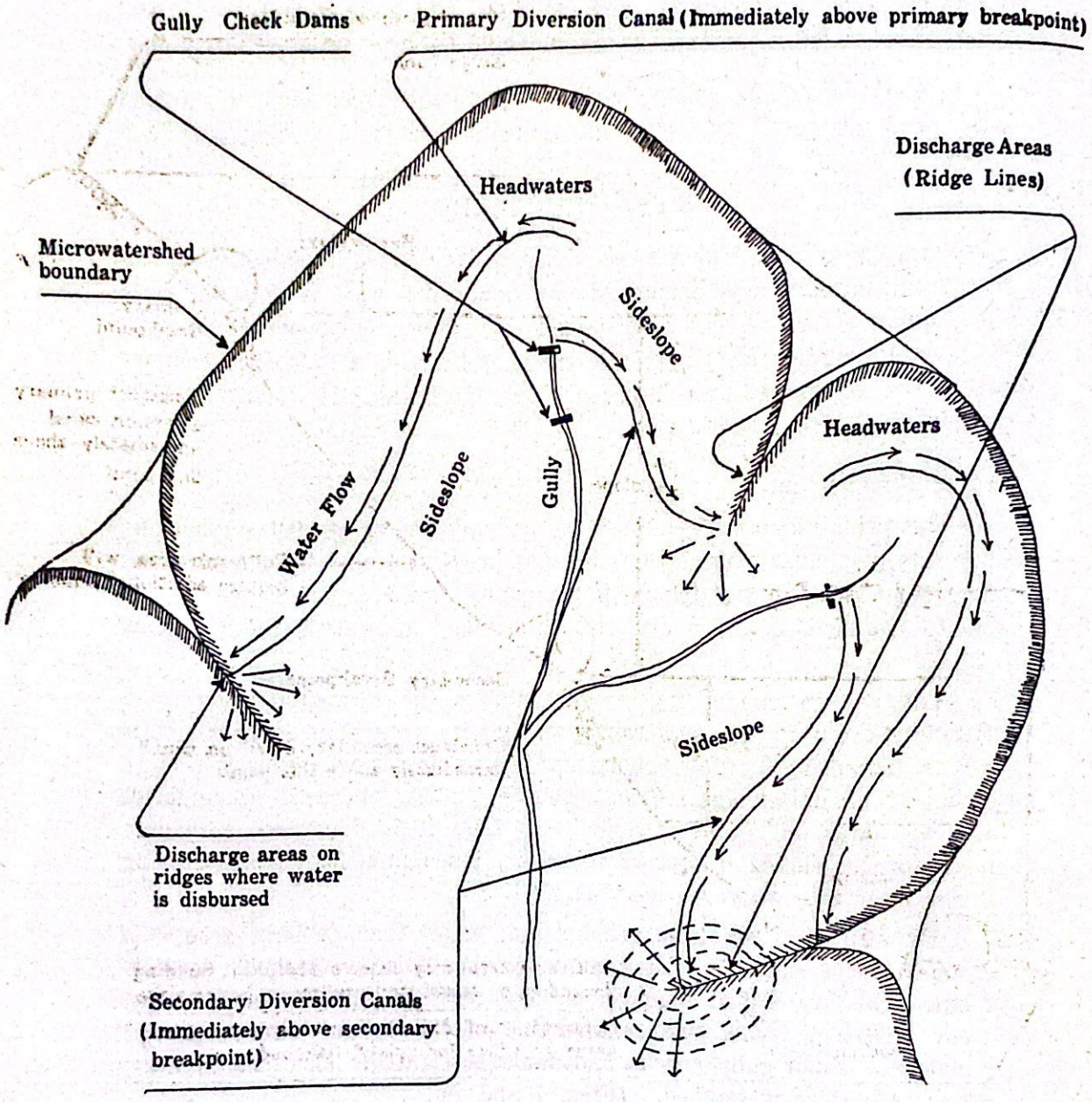

FIG. 1. POSSIBLE LAYOUT OF DIVERSION CANALS IN TWO SECTIONS OF A MICROWATERSHED

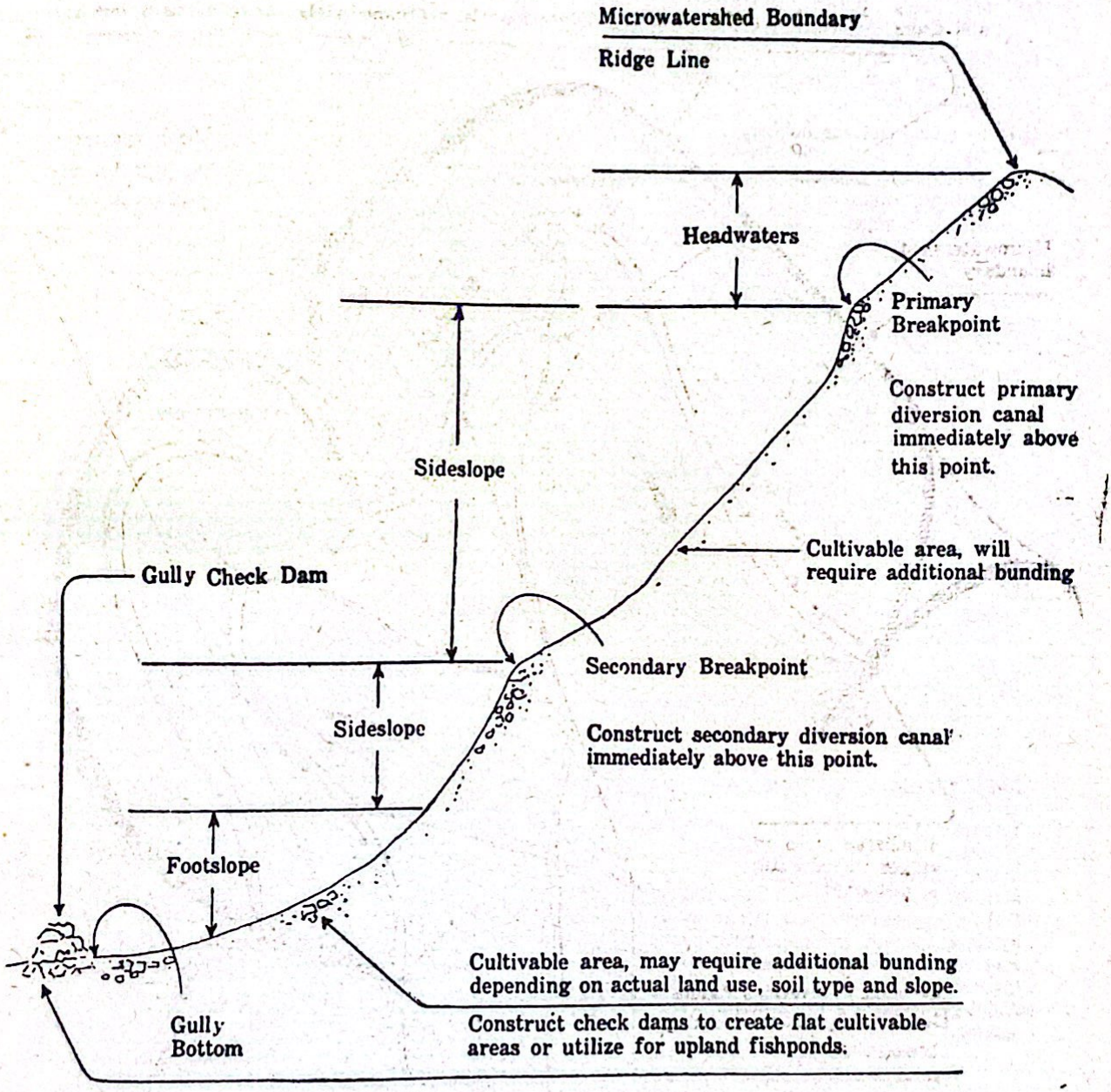

FIG. 2. CROSS SECTIONAL VIEW OF COMPOSITION OF ONE SECTION OF A MICROWATERSHED

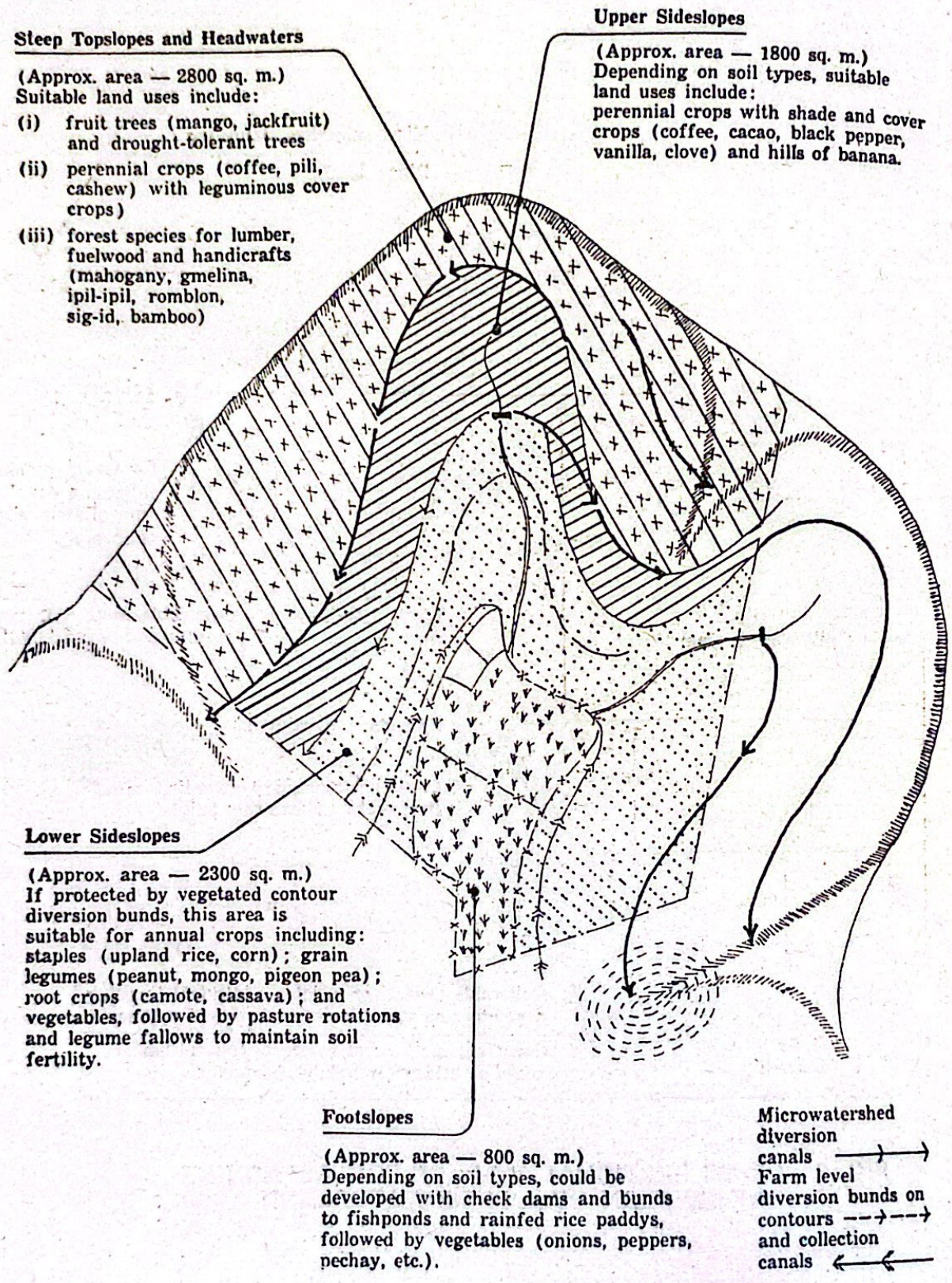

FIG. 3. A SAMPLE FARM PLAN SHOWING POSSIBLE LAND USES AND OTHER DEVELOPMENT DETAILS ON A MICROWATERSHED

Actual small-farm development then involves the farmer-manager in strategic planting of vegetative contour strips (e.g., using glericidea, leucaena or vetiver grass) and alternative land uses in the inter-spaces including perennial crops, fruits and forest trees as well as leguminous pastures and livestock and various high-value annual crops (e.g., flowers, vegetables, condiments and spices) and plants producing handicraft materials (e.g., *romblon*, buri, *sigid*, rattan).[2]

Soil Fertility

Since cultivated and eroded upland soils are relatively infertile, once soil water availability is maximized by minimizing rainfall runoff through microwatershed and farm planning, the next factor most frequently limiting plant production is soil fertility.

The first step in maintaining or improving soil fertility is to minimize tillage or cultivation of the soil. The plow is a tool of the temperate zone, aerating the soil and releasing nutrients. In the wet tropics total cultivation involving inversion of the surface soils, particularly on erosion-prone sloping fields, invariably leads to hastened oxidation of organic matter and accelerated removal of nutrient-rich topsoil. This general deterioration in soil fertility includes a reduction in both the soil structure and its ability to absorb and hold rainwater and other plant nutrients.

Maintaining ground cover and rebuilding organic matter are the primary objectives here, initially through judicious use of leguminous pastures and then by promoting a layered canopy of short and medium annuals, taller perennial crops, and fruit and forest trees, featuring both diversity and a significant legume component.

Legumes provide the basic nitrogen input required to build plant and animal proteins essential for their growth and productivity. Deep-rooted plants act as "nutrient pumps," continually pulling up basic nutrients from deeper soil horizons and depositing them on the surface as leaf litter and organic mulch, contributing to soil fertility its water holding capacity and the overall soil micro flora and fauna necessary for complex, stable and productive biological systems.

Diversification

The foundation of stability is diversity. The tropical uplands are typically heterogeneous. This is in direct contrast to the relatively

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[2] The author has prepared hypothetical microwatershed and farm development plans for two situations: (1) a relatively accessible upland barangay with large farm sizes, moderate-good resource base, available markets; and (2) an isolated, distant, upland barangay with small farm sizes, poor resource base, moderate markets. The plans contain: assumptions; projected investments for barangay and farm development; development program outline for three years; projected farm development and returns; and financial analysis. The reader interested in these plans can write the author for copies at these addresses: Door 2, HVG Arcade, Subangdaku, Mandaue City 6433; P.O. Box 295, Cebu City 6000, Philippines.

homogeneous lowlands in which most agricultural research and development has proceeded during recent decades. Little wonder then that established agricultural development approaches and techniques often fail when applied to the rainfed uplands.

The following aspects of variability in tropical uplands have to be considered, too: upland soils can vary every few meters down the slope; slopes often vary significantly within one small field; rainfall varies in volume, intensity and timing, and between seasons and locations; aspect varies continuously from one hillside field to another; and the history of actual deforestation, land uses and abuses vary between fields and between farms. In fact, in the uplands, variability is the only constant.

At first glance, this extreme heterogeneity of upland primary resources may seem a major development constraint, but considering the extensive diversity that characterizes the climax ecosystem in its most productive state (300 species/ha. of tropical forest), then such a heterogeneous environment provices a wide range of "ecological niches' in which different suitable economic plants can be established so as to create diverse, productive and stable farming systems.

Management

Obviously, establishing and operating such diverse farming systems will require a high intensity of management, and this is exactly the situation that prevails in smallholder agriculture in the rainfed tropical uplands. With a farmer and his family intensively managing every 1-5 ha. of small upland farm, the establishment of diverse, productive and stable farming systems becomes entirely feasible.

Diverse farming systems are also economically and physically stable. They spread labor demands and cash flows, they reduce the impact of any one negative climate or market event on overall farm profitability, and they provide opportunity for long-term capital accumulation in the form of high-value fruit and forest trees.

IMPLEMENTATION STRATEGY

Individual and private sector motivation must be combined with a heightened sense of "community," an increased environmental awareness, and an improved understanding of basic ecology to provide the milieu necessary for effective implementation of community-based resource management (CBRM), the foundation of real countryside development. This basic strategy involves the following:

Motivation

The individual smallholder resource manager can be motivated to lift his planning horizon by providing him security of land tenure and

guaranteeing him that the longer-term benefits that will flow from his improved resource management and expanded farm productivity will largely accrue to himself and his family.

Some legal instrument must be available to the small farmer that effectively secures his ongoing access to the land resource he manages and his long-term ownership of its production so that he and his family will be motivated to consider, decide and implement appropriate farm development activities.

The Certificate of Stewardship Contract (CSC) appears to be a scurce access instrument suitable to smallholders, though its implementation and administration require significant improvement. The Woodlot Lease Agreement (giving community control over their contract reforested areas) and the Industrial Tree Plantation lease (giving corporate control over their commercial reforested areas) are other existing suitable instruments that need to be welded together with the CSC into a commercially viable community-based resource management strategy. Under this strategy the three elements of the private sector (individual, community and corporation) are combined to provide the motivational force for integrated resource management and countryside development.

Demonstration

Providing local and direct demonstrations of appropriate technologies for controlling rainfall runoff, for improving soil fertility, for diversifying annual and perennial crop production, and for integrating livestock into upland farming systems is a priority activity in upland development.

These demonstrations must convincingly illustrate a significant impact on overall net farm incomes. Establishing microwatershed and key farmer pilots of all relevant technologies is a proven technique for extending new approaches and technologies into upland communities.

These key farmer/pilot group activities should involve indigenous self-help groups (called *alayons* in Cebu) as they soon become the nucleus for local-level extension of microwatershed and farm planning techniques, and of the many individual farm technologies required to suit the variety of situations that prevail in the rainfed uplands.

Cross visits to meet and discuss with other upland farmers and communities who are already applying these approaches and technologies is a proven demonstration method.

Community Organizing

Catalyzing and motivating the community and its various sub-groups to participate in joint activities so as to reap the mutual benefits accruing from joint action in pursuit of a common vision is a fundamental prerequisite to all (rural) development.

Numerous development activities are either best done or can only be done by concerted community action, e.g., water management by micro-watershed planning and development is best done by the small group of farmers in a particular microwatershed. Local level input production (e.g., nurserying of planting materials for perennial crops, fruit and forest trees) is best done by hamlet (sitio) or village (barangay) groups, while labor-intensive road and trail construction and maintenance and village water systems improvement and maintenance are best done communally.

Fielding of development catalyzers who live with the community is a proven community development technique. They generate vision and action consensus within special-interest groups and the community at large, and they train local leaders to assume and maintain their community organizing and leadership functions.

Depending on the extent of existing community solidarity and local physical conditions (including the distribution of sitios, existence of roads, trails, etc.), a development catalyzer may need to be active in a community well ahead of actual implementation (e.g., 6 months).

Participatory Planning

Participatory planning of an overall barangay development program compatible with certain local priorities is central to the growth of a self-sufficient development administration capability at farm, group and village level.

The four-stage development process (planning, implementing, monitoring and evaluating) is a continuous learning cycle and must be increasingly managed by the community themselves if they are to become self-sufficient and capable of appropriately adapting to future changes and challenges.

Such self-propelled development provides the mechanism for local participation in all development activities, including implementation of local infrastructure construction, credit delivery, commodity aggregation and group marketing, livestock procurement and husbandry scheduling, planting materials production and other essential support service activities.

Service Centers

Establishment of multi-purpose service centers at key barangays is usually necessary. These centers provide input and offtake functions and act as a focal point for the delivery of other key services (e.g., extension, credit) that is close to the primary producers and other end users (children, mothers, youth). In siting these service centers, account must be taken of local culture and traditions, existing market flows and planned new access roads.

Multi-purpose service centers provide input-delivery services such as annual and perennial crop, fruit and forest tree seeds, feed concentrates, veterinary drugs, pesticides and chemical and organic fertilizers as well as farm and household requirements (tools, utensils, clothes, etc.). They should also facilitate the initial steps in the marketing system, including commodity aggregation, as well as provide facilities for receiving, weighing and storing produce and bulking it up for on-selling.

A primary health clinic as well as postal, cooperative credit/banking facilities and extension services for family planning, agricultural and veterinary matters should also be made available at these multi-purpose centers.

Service centers are best established and initially operated by the development agents, but as local community capability develops in response to community organizing and development, it should assume increasing responsibility and eventual ownership and control, either as a corporation or as a cooperative. Such representative community entities can then enter into contractual arrangements with processors and traders for the supply of various agricultural and forest products, handicrafts, etc., and can undertake local level processing wherever feasible.

The community corporation or cooperative should also undertake procurement and merchandising of major commodities required by the local community and generally manage and maintain their service center. They should begin operating credit cooperatives or revolving funds as necessary to capture and accumulate locally produced wealth by retaining group profits and individual savings for financing further investment in on-farm development, village level processing and other local enterprises.

As the Japanese, Taiwanese and South Korean experiences clearly illustrate, such widespread creation of wealth from primary resources and its retention to fund further local development and consumption in the countryside is the basis of subsequent national industrialization and technical development.

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THE ROLE OF METROPOLIZATION FOR THE DEVELOPMENT PROCESS IN INDIA AND CHINA BASED ON DEMOGRAPHIC AND FUNCTIONAL DIMENSIONS: A COMPARATIVE ANALYSIS

Dirk Bronger*

ABSTRACT. Compared to the West, the process of urbanization in the Third World has transpired in the form of metropolization. This phenomenon is characterized by four features — demographic, functional, historical and development policy. The study attempts to make a comparative analysis between India and China on the demographic and functional dimensions of metropolization. Demographically and on a regional level, there is an increasing number of regions in both countries with pronounced metropolitan quotas of three or more times the national average. The metropolization/urbanization quotas are also quite similar for both countries, just as for both there is a pronounced heterogeneous fabric of metropolitan growth, except that this growth is slower in China. Functionally, a lopsided overconcentration of main functions or primary indices occurs in Indian and Chinese metropolises — much more outstanding than in the metropolises of industrialized countries. There appears to be a positive correlation between the size of the metropolises and the extent of spatial development disparities as indicated by the data.

"METROPOLIZATION" AS A DEVELOPMENT PROBLEM OF THIRD WORLD COUNTRIES

The Definition of the Concept

With good reason, the urbanization of the earth has been named as one of the most fundamental global processes of change in the history of mankind. Unlike in the "Industrial Countries" (IC),[1] this radical change covering all spheres of life has taken an entirely different course in the Developing Countries (DC), such that instead of urbanization we should speak more truly of *"metropolization."* This statement stretches the necessity of a definition of the concept. The phenomenon of metropolization can be characterized by the following four major features (Bronger, 1985:71ff):

1. The demographic dimension: The concentration process of the population as a whole as well as urban population in the metropolitan cities has to be viewed as the specific characteristic of the striking population increase in the past four decades (1940-1980) in the DCs. Whereas the metropolitan population (places > 1 million)[2] of the ICs

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[1] North America, Europe, Soviet Union Japan, Australia and New Zealand.

[2] The arbitrary quality of each delimitation is unquestionable. There is also no readily apparent reason for our decision of >1 million except that 1,000,000 is a convenient round number.

rose to 3.4 times within this 40-year period, it was 15 times more in respect of the DCs, a demographic process hitherto unknown over such a short historical period. In 1940, the ratio of the metropolitan population was still 75:25 in favor of the industrialized nations while in the short period covered by the next four decades this ratio reached already 40:60 and by the end of this century it will be completely reversed to 25:75. In the year 1940, just about each fiftieth inhabitant of the DCs lived in a metropolis, in 1980 it was already each tenth and in the year 2000 almost each fifth person will reside in a metropolitan city located in the Third World. Finally, as far as the urban-metropolitan population ratio is concerned, while in 1940 one-eighth (16.3%) of the urban population (20,000 and over) stayed in metropolitan cities, in 1980 this proportion rose to an incredible 46.4% (IC — 36.3%), i.e., nearly every second urban dweller already lived in a metropolitan city (Table 1).

TABLE 1. THE METROPOLIZATION PROCESS, 1940-1960-1980, DC:IC

No.		1940		1960		1980	
		DC	IC	DC	IC	DC	IC
I	Metropolitan Growth (absolute figures — in millions)	23.1	69.4	110.9	146.9	351.9	235.7
II	Metropolitan: Urban Population Ratio (figures in %)	16.3	24.3	35.4	33.4	46.4	36.3
III	Growth of Metropolitan Population (1940 = 100)	100	100	480	212	1.526	339

Sources: Bronger, 1982:151, note 6; Gilbert/Gugler 1982:5 (extrapolations by the author).

To sum up, the actual population "explosion" has taken place in the metropolises. And these figures already prove that metropolization is an entirely independent problem within the context of the global process of urbanization.

2. The historical context: In the industrialized nations, especially in Western Europe as well as in North America, metropolization has taken place as a continuous process which began as early as the second half of the past century and must be considered to be causally linked with the preceding industrialization and its creation of jobs. In contrast, metropolization in the DCs occurs in an almost reversed situation: only in the last 30-40 years *prior* to their economic development have those countries been, as it were, steamrolled by its dynamics because the connected problems suddenly facing the developing countries arose in addition to those which the industrialized nations had mainly overcome

before metropolization began: political stability, independence, relative economic stability, a satisfactory standard of living and a sound but flexible structure (Lilienthal, 1962:5; Breese, 1966:7).

3. The functional dimension: The definitely much more essential component of the phenomenon of metropolization compared to the already high percentage of population is to be seen in the concentration not of the political and administrative functions but also of the economic, social and cultural activities upon the capital region — in short, the *functional primacy* of the metropolis. Apart from the four sub-continental states of China, India, Indonesia and Brazil, all vital functions are concentrated mostly in the sole metropolitan region (including the larger capitals) and when related to the strong and disproportionate growth of part of the population[3] *(demographic primacy)*, this becomes even more pronounced. Furthermore, the administrative headquarters of most of the national groups in the secondary and tertiary sectors — the multinationals, organizations, companies, etc. seem to be concentrated almost entirely in the metropolis(es) *(international primacy)*.

4. The development-policy dimension: This overconcentration of all the major functions of life was already established in the colonial period which often lasted for several centuries; but it has undergone considerable further development during the short period of political independence. From the point of view of development policy, the real explosive effect of the demographic as well as functional primacy, together with its strong dynamics, produces extremely serious consequences with which the administrations of these cities (and the central governments too) have been and continue to be overwhelmed — especially with regard to their financial constraints.[4] The consequences *internal* to the metropolis are represented especially by the marginalization of the constantly expanding population strata of the metropolises, accompanied by widening income disparities with regard to a numerically small upper class which controls economy as well as politics. A serious aspect is the steadily increasing percentage of slum and squatter areas (of much higher dynamics than the overall demographic "explosion") within these cities which inhabit already 20-50% (and more) of the population. *Externally*, a serious matter is the causal connection between the dynamization of the metropolitan primacy and that of the regional development incline as also between metropolization and the development of other regional centers. In concrete terms, this means the stagnation of almost all the other regions forming the dynamization of the regional development incline between center (metropolis) and periphery. This stagnation includes also the vast majority of the higher-ranking regional centers. These often-neglected regional centers cannot

[3] For China and India, see Tables 4 and 5.

[4] The budget of the central Indian government is only slightly higher than the budget of North-Rhine-Westfalia, a state within West Germany.

even properly perform their essential functions, i.e., ensuring that the rural population is supplied with its basic needs, quite apart from providing development stimuli for "their" region.

The dynamics of metropolization and the regional disparities in the relevant country's development which are directly and causally linked with those dynamics have become a major feature of spatial structure while their consequences have become a serious development problem for Third World nations. Thus, the reduction of the primacy (demographic and functional) together with that of the regional incline presents itself nowadays as the most important task of regionally oriented development policy and planning in Third World countries. The target of this study is the attempt of a comparative analysis between China and India regarding the demographic and functional dimensions of the phenomenon of metropolization.[5]

THE DEMOGRAPHIC DIMENSION

Basic Constraints

In the beginning, we have to make evident that a comparative regional analysis[6] of the demographic aspect of the phenomenon of "metropolization" reveals already a number of basic constraints which make such an intercultural comparison quite difficult — and a worldwide comparison, as undertaken in a large number of urbanization studies, hardly sensible. In concrete terms these constraints refer to:[7]

1. The data-basis in general: In India we have the census conducted regularly within a 10-year period since 1881, providing reasonably accurate and detailed information. In contrast to this, there are no complete records of the population of Chinese cities and towns of any period before the first census ever taken, i.e., the 1953 Census and again up to the year 1982.[8] All other figures are admittedly estimates.

2. What makes the distinction of the metropolitan population in China and accordingly a comparative analysis still more difficult is the fact that the delimitation of the metropolitan *area* is quite problematic. In this connection, a specific feature has been overlooked in most cases: The population figures do not only refer to a more or less limited "urban area" like in India but normally incorporate one or several countries *(xian)* — according to population size comparable to 3-4

[5] The aspect of planning has to be reserved for a special study. Regarding the example of Bombay, see Bronger, 1986:48-95.

[6] Regarding the concept of "comparative regional research," see Bronger, 1977: 146-175.

[7] For a detailed discussion of these constraints, see Bronger, 1985a:71-79; Bronger, 1985b:94-110.

[8] Except for the three cities of provincial status (Beijing, Tianjin, Shanghai), the city-wise population figures of the 1964 Census have never been published (see AIRD, 1978).

Indian *talukas*[9] — i.e., an often considerable agricultural upland. In the recently (1985) published "urban statistics" in China, two different area levels have to be distinguished: "city proper" *(shiqu)* and "city proper and counties" *(quanshi)*. However, even the "city proper" area in almost all cases is considerably larger than the one of the "urban agglomeration" in India.[10]

3. In addition to this, the area on which the computation of the population is based (and thus, of course, the population density) varies quite considerably from metropolis to metropolis. This is true especially with respect to China: Shanghai's 6.9 Mio inhabitants are squeezed in 340 sq km while the 5.3 Mio of Tianjin refer to 4.276 sq km, resulting in a density ratio of 16:1!

4. Growth and distinction of the metropolitan population will be all the more problematic if we take a fourth component into consideration — the frequent and sometimes extensive *changes* in urban area. These significant extensions of the municipal boundaries refer to almost all of the Chinese metropolitan cities, owing to the communist regime's attempt to make the large cities virtually self-sufficient economic and administrative units "to promote mutual support between industry and agriculture and to facilitate the assignment of manpower" (Chang, 1965: 319).[11] In contrast to the Chinese metropolis, the territorial extensions of the Indian metropolitan cities, even in the case of U.A. areas, were relatively limited in the past 30 years.

5. A fifth category of constraints — and now the whole problem of comparability becomes a real puzzle — has to do with the disagreement about the term "urban." More precisely, it is not merely the fact that the demarcation on what is "urban" differs between the two countries. Unlike in India, the rural population within the municipal boundaries is counted separately. To make the confusion almost complete, in recent times the Chinese sources distinguish not only between "total" and "urban" but additionally between "agricultural" and "non-agricultural" population. However, because of the often huge area of the Chinese metropolitan cities, the following figures are more relevant, i.e., even within the *shiqu*-area the majority (11 out of 19) of the metropolises have a percentage of "agricultural population" of 20-40%, whereas out of the 12 in India 3.2% is the highest.

What to Compare? Main Results

We can make certain conclusions. First, our discussion and the

[9] In 1981, we number 2,127 *xian* (including 57 "banners") compared to 412 districts and approximately 4,500 *talukas* in India. On statistical average, nearly 500,000 are allotted to one *xian* compared to 150,000 for each *tahsil*.

[10] The term "urban agglomeration," is also vaguely defined in the *Census of India, 1981*, Series 1, India, Paper 2 of 1981, p. 23.

[11] These extensive territorial enlargements occurred mainly in 1958 and 1959.

computations of the metropolitan cities' population reveal the incontestable necessity to take always the concerned area into account on which a population figure is based. Second, even a somewhat accurate computation of the present Chinese metropolitan population, comparable to those of the Indian metropolises, is to be considered as highly problematic mainly because of pronounced differences in respect of the metropolitan *area*. Third, we cannot compare right away the Indian figures, based on urban agglomeration, and the Chinese data on "city proper and counties" as this is done somewhat officially in the United Nations Demographic Yearbook, the world's most frequently used source (without giving the pertinent area!). The confrontation of the two capitals' — Beijing's and Delhi's — relevant areas directly disclose the impracticability of a comparison at this level.

Taking all these limitations into consideration, the question must be: What can be compared? As far as the *present* situation is concerned based on four different population figures, because of the even overbounded (Davis, 1959) city area *(shiqu)* of the majority of Chinese metropolises (main exception: Shanghai), the non-agricultural "city proper" population[12] and the Indian urban agglomeration figures could be compared best. Regarding China's past, we have to use the total population *shiqu-figures* because no comparable "non-agricultural" data for the previous years are available. Additionally, the "city proper" area corresponds mostly to the 1953 municipal area or is at least comparable to the latter. As matters stand, the results derived from the available data can be summarized below.

Metropolization quota. On a *national* level, India (6.2%) and particularly China (4.3%) still rank at the lower end within the Asian scene (Bronger, 1982:154). The data on a *regional* level presents quite a different picture: in general, there is quite a pronounced heterogeneous fabric regarding the level of metropolization. Almost exactly half of the states' respective provinces — 13 out of the 26 provinces[13] in China and 8 out of the 17 major states in India[14] — are still without any metropolitan city, and some are even far from developing one. In particular, we can state a number of regions, though still limited, with an already comparatively pronounced metropolization quota of close to or even above three times the national average: Maharashtra (17.9%) and West Bengal (16.8%) in India [Haryana/Delhi (32.5%) is to be considered as a special case] and Liaoning (18.3%), Hebei (12.6%)[15] and Jiangsu (11.7%)[16] in China. Thus, the data interpretation on a regional basis (Fig. 1) discloses a number of concurrences.

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[12] This figure is also adopted as city population.
[13] This excludes the three provincial cities. (See note 8.)
[14] That is, those with more than 50,000 sq km and 25 million inhabitants.
[15] This includes Beijing and Tianjin, both entirely surrounded by Hebei province.
[16] This includes Shanghai which formerly belonged to Jingsu province.

But what is more relevant is that the causes for these regional imbalances coincide largely. The latter regions correspond to the comparatively industrialized parts of both countries, and, coincidently, the industrialization started in conjunction with the colonial, i.e., the economic interests of foreign countries mainly along the coastal areas and their hinterlands: Calcutta and Bombay in India, the "treaty ports," and

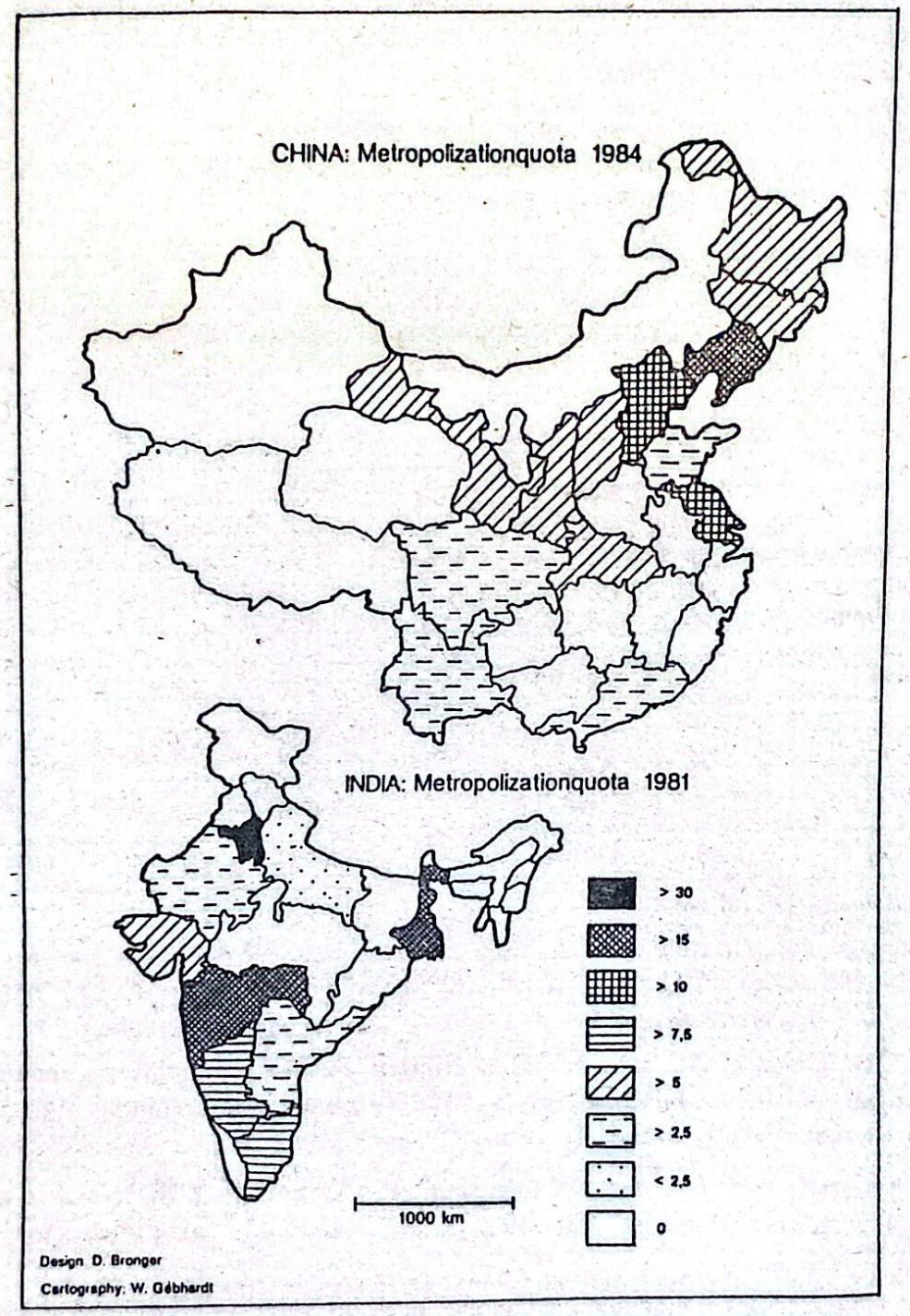

FIG. 1. METROPOLIZATION QUOTAS IN CHINA AND INDIA

later the exploitation of former Manchuria in China.[17] On the other hand, the fact that the regions lacking metropolitan cities are more or less peripherally located does not necessarily coincide with a generally low level of development (Kerala, Punjab!). In China, a pronounced regional east-west incline is still existing mainly as a result of the historical events in combination with the natural constraints and despite a strong counterbalancing governmental policy. In India, on the other hand, due to the different natural preconditions, such a clear-cut regional structure is not that apparent.

Metropolization:urbanization ratio. Regarding the *present* picture, the number and population of cities and urban agglomerations/towns according to size class are as follows:.

TABLE 2. METROPOLIZATION/URBANIZATION QUOTA IN CHINA (1984)[18] AND INDIA (1981) (MQ = METROPOLIZATION QUOTA; UQ = URBANIZATION QUOTA)

	China			India		
Size class	No.	Population* (000)	M/UQ %	No.	Population (000)	M/UQ %
>1 Million	20	44,470	4.3	11	42,612	6.2
>500,000	30	22,130	2.1	30	19,829	2.9
>100,000	176	39,120	3.8	175	31,852	4.6
Total	226	105,720	10.2	216	94,293	13.7
>50,000				270	18,192**	2.8
>20,000	69	4,650	0.5	739	22,414**	3.4
<20,000				2,020	21,290**	3.2
Total	295	111,370	10.7	3,245	156,189	23.7

* Non-agricultural population
** Excludes Jammu and Kashmir, and Assam
Sources: India: *Census of India, 1981*, Series 1
Centre for Monitoring Indian Economy, *Profiles for Districts* (Bombay, 1984)
China: *Statistical Yearbook 1985*, p. 189 (author's calculations).

In general, the data reveal a similar picture, although the metropolitan and urban quota is (of > 100,000 inhabitants) almost 50% and 27%, respectively, higher in India.

Detailed data of the urbanization process with regard to size class of towns, valid for a long-duration period, exists only for India.

[17] See the instructive survey of China's space policy in Whitney, 1970:26-72.
[18] For Chinese urban figures of earlier times, see Chen, 1973 and Skinner, 1978. For a critical assessment of the 1953 urban figures, see further Orleans, 1972:57ff.

TABLE 3. URBANIZATION RATIO 1901-1981: INDIA — PER CENT DISTRIBUTION OF TOTAL URBAN POPULATION BY SIZE CLASS OF TOWNS

Size Class	Percentage of Total Urban Population				
	1901	1921	1941	1961	1981
> 1 million	5.8	11.2	12.1	23.0	27.3
>100,000	19.9	18.2	25.8	27.8	33.1
> 50,000	11.3	10.4	11.4	11.0	11.6
> 20,000	15.8	16.1	16.6	17.4	14.4
< 20,000	47.2	44.1	34.1	20.8	13.6
Total	100.0	100.0	100.0	100.0	100.0

Source: *Census of India, 1901-1981* (author's calculations).

The compiled data (Table 3)[19] demonstrate the rapid increase of the metropolitan population's share of the urban population as a whole. In comparison with the pyramid of 1901, the composition of 1981 shows an almost reversed proportion. Taking into account only the population living in communities of 20,000 and more as "urban" (as this seems more sensible), the metropolitan share would increase even to 31.6%.

Growth of metropolitan cities. Since one has to be very cautious with regard to the population figures of the Chinese metropolises before 1953, in our brief analysis we will concentrate on the development of the last three decades. To begin with, from the compiled data (Tables 4 and 5) we can again gather a number of common characteristics. First of all, there is a pronounced heterogeneous fabric of metropolitan growth in both countries. On one side we find several cities with a comparatively low growth rate (Calcutta, Lucknow, Shenyang, Dalian, Fushun, etc.). In China, additionally, three metropolises are even below the national average, topped by Shanghai.[20]

With a few exceptions, this seems unique in the Third World, at least if one excludes the temporary dwellers in the metropolises. On the other side, various metropolises show a decided dynamics even in comparison to the fast-growing metropolitan cities of: Bangkok, Djakarta, Manila and Seoul in the Far East;[21] Delhi, Bangalore and Jaipur in India; and the interior capitals of Xian, Chengdu and Lanzhou in China.

All in all, however, the differences predominate. First of all, the growth of the larger metropolises is considerably slower in China, especially with regard to the metropolises along the coastal areas. Surpri-

[19] Figures exclude Assam, and Jammu and Kashmir.

[20] A major reason for this surprising result, however, is that the population figures of Shanghai from 1930-1953 relate to 893 sq km, for 1958 to 1,756 sq km, 1970 to 223 sq km and 1984 to 340 sq km. (For details, see Bronger, 1985b, Table 2.)

[21] As counted in Tables 4 and 5, the growth rates are: Djakarta (1961-1980) — 143; Bangkok (1947-1980) — 156; Manila (1948-1980) — 152; and Seoul (1960-1980) — 228.

TABLE 4. POPULATION GROWTH OF METROPOLITAN CITIES IN CHINA, 1900-1984

No.	Metropolis	1900	1920	1930	1938	1948	1953	1958	1970	1984	Growth 1953-1984 China = 100
1	Shanghai	950	1.539	3.122	3.595	5.020	6.204	6.977	5.802	6.881	43
2	Beijing	728[1]	1.181	1.369[5]	1.574	1.672[11]	2.768	4.148	5.000	5.755	142
3	Tianjin	100	839	1.392	1.223	1.708[11]	2.694	3.278	3.600	5.312	128
4	Shenyang	—	250[2]	527[6]	772	1.121	2.300	2.423	2.800	4.135	105
5	Wuhan	—	750[2]	1.584[7]	1.242	1.062	1.427	2.226	2.560	3.338	176
6	Guangzhou	—	—	830[5]	1.022	1.413	1.599	1.867	2.500	3.222	134
7	Chongqing	—	351[3]	298[8]	528	1.003[11]	1.773	2.165	2.400	2.734	71
8	Harbin	—	200[2]	320[5]	468	760[12]	1.163	1.595	1.670	2.592	162
9	Chengdu	—	423[3]	441[8]	458	727	857	1.135	1.250	2.540	258
10	Xi'an	—	—	188[9]	218	503	787	1.368	1.600	2.277	249
11	Nanjing	—	300[2]	522[5]	440	1.137	1.092	1.455	1.750	2.208	134
12	Taiyuan	—	80[2]	139[8]	177	252[11]	721	1.053	1.350	1.838	204
13	Changchun	—	70[2]	—	360	630	855	988	1.200	1.809	147
14	Dalian	—	237[4]	586[6]	504	723[11]	892	1.590	1.650	1.588	103
15	Lanzhou	—	110[2]	103[8]	122	204	397	732	1.450	1.455	351
16	Jinan	—	300[2]	437[9]	472	591[11]	680	882	1.100	1.395	138
17	Kunming	—	—	170[5]	184	300	699	900	1.100	1.355	124
18	Anshan	—	—	—	120	166	549	833	1.050	1.259	170
19	Qingdao	—	131	318[10]	592	788	917	1.144	1.300	1.230	45
20	Fushun	—	181	118[6]	215	513	679	1.019	1.080	1.220	105

— no figure available

1) 1913; 2) 1922; 3) "Xian administrative area; 4) 1926: Dairen only; 5) 1929; 6) 1936; 7) 1927; 8) 1934; 9) 1935; 10) 1928; 11) 1946; 12) 1947

Sources: 1900: Murphey, 1953 (Shanghai); Chang, 1965 (Beijing)
1920: *Chinese Yearbook, 1923;* Trewartha, 1951
1930: *Chinese Yearbook, 1943;* Trewartha, 1951
1938: Ullman, 1961
1948: Ullman, 1961; Trewartha, 1951
1953: Shiger, 1953
1958: Ullman, 1961; Chen, 1966
1970: Chen, 1973
1984: *Statistical Yearbook of China, 1985*

TABLE 5. POPULATION GROWTH OF METROPOLITAN CITIES IN INDIA, 1901-1981

No. Metropolis	1901	1911	1921	1931	1941	1951	1961	1971	1981	Growth 1901-81 India = 100	Growth 1951-81 India = 100
1 Calcutta[1]	1.488	1.718	1.851	2.106	3.578	4.589	5.737	7.031	9.194	276	111
2 Bombay[2]	928	1.139	1.380	1.398	1.801	2.994	4.152	5.971	8.243	421	195
3 Delhi[3]	406	414	488	636	918	1.744	2.659	4.066	6.220	764	285
4 Madras[1]	594	604	628	775	930	1.542	1.945	3.170	4.289	332	198
5 Bangalore[1]	159	189	237	306	407	779	1.200	1.654	2.922	927	349
6 Ahmadabad[1]	186	217	274	314	595	877	1.206	1.742	2.548	678	212
7 Hyderabad[1]	448	502	406	467	739	1.128	1.249	1.796	2.546	250	140
8 Pune[1]	164	173	199	250	324	606	791	1.135	1.686	495	198
9 Kanpur[1]	203	179	216	244	487	705	971	1.275	1.639	377	147
10 Nagpur[1]	167	119	165	242	329	485	690	930	1.302	363	187
11 Jaipur[1]	160	137	120	144	176	291	410	637	1.015	285	277
12 Lucknow[1]	256	252	241	275	387	497	656	826	1.008	157	114

1) Urban Agglomeration; 2) Greater Bombay; 3) Union Territory
Source: *Census of India, 1901-1981*

singly, even the capital of Beijing shows a more moderate growth.[22] As indicated by a number of authors,[23] this fact manifests that the rapid growth of the metropolitan cities all over China, due mainly to heavy immigration up to 1958, has considerably slowed down in the majority of cities. That means that the official policy appeared successful in its efforts to contain the growth of the very largest cities (Shanghai, Beijing, Tianjin, Shenyang, Guanzhou, Chongqing) substantially and "to redirect the main focus on urban development to newer cities of the interior" (Ma, 1981:112). This unquestionable success of "urban (metropolitan) decentralization" (Buck, 1981:116; Kuchler, 1976:140) should not be overinterpreted because to some extent it seems double-edged. A more detailed view reveals, firstly, that more than half the number of Chinese metropolises show a still noticeable increase of 30% and more above national average. Secondly, quite some coastal metropolises manifest a recovering metropolitan growth since the second half of the seventies. We can take Shanghai as an example because the most detailed, though not indisputed[24] (Murphy, 1980:48) figures, are available here. After an impetous growth up to 1960, the city's growth rates have not only been reduced drastically since 1960 but decreased by almost one million from 1965 to 1977 (Zukang, 1982:3). However, it increased again by 1.4 million from 1977 to 1984 (from 5.470 to 6.881 million), mainly caused by a net annual average immigration of 138,200 for the period 1978-1980 (Zukang, 1982:5). Thirdly, this spatial redirection had to be paid for, maybe even dearly, by a pronounced primacy of the rapidly growing metropolitan capitals of the interior like Lanzhou, etc., causing a remarkable metropolitan-rural development incline within these provinces. To sum up, despite some success in limiting the metropolitan growth especially in China, this struggle still remains a major challenge for both countries.

THE FUNCTIONAL DIMENSION

The Primacy: Main Characteristics

In our introductory chapter we stressed the functional primacy or, in short, the *primacy* as the vital component of our concept of metropolization. Primacy itself is characterized by two main features (Bronger, 1985:87ff):

1. over-centralization or, more correctly, over-concentration of the main functions — here defined as *primacy indices* — in almost every sphere of life; and, what is of specific importance,

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[22] This is in contrast to Chang, 1974:1.

[23] In particular: Tien, 1973; further: Chen, 1973:66ff; Kuchler, 1976:140ff; Chang, 1976:401ff; Pannell, 1981:3ff; 101ff; Buck, 1981:116ff; Kwok, 1981:145ff; and Fung; 1981:112.

[24] For Shanghai, see the detailed compilation in Bannister, 1977:259-263 using more than 50 different sources for the period 1941-1975!

2. the concentration of population, which is already particularly high (metropolization quota = MQ) and is by far surpassed by the figures of the indices for every other sector, i.e., the economic (except, of course, the primary sector), social, cultural, political and administrative sectors. We shall call this relationship between the pertinent primacy index (PI) and the demographic primacy index (MQ) the *Primacy Ratio* (PR); so PR = PI/MQ. In other words, the axiom PI > MQ or PR > 1 must be considered the crucial attribute of metropolitan primacy.

To determine the phenomenon of "metropolization as a development problem," it is of essential importance from the development-policy aspect that the over-concentration of every major function of life has again occurred, in their vast-majority, principally in the metropolises (including the capitals) of Third World countries with strictly centralist governments, as in the case of the majority of the European nations up to the 20th century and in the communist bloc up to the present day.

In this connection, an opinion must be given on a line of argumentation which is often stressed into this discussion: the often-quoted argument that a substantial number of metropolises within the Western world (e.g., Paris, London) showing the same pronounced primacy is true essentially only regarding the demographic aspect, at best to some of the cited functions but never[25] to this extent and totality.

In the literature concerned, "primacy" is simply treated as equal to the so-called "primacy index" as defined by Jefferson (1938:226ff.). The "primacy index" is arrived at by computing the ratio of the population of the largest city with the next ranking or, in a system, with the combined population of a specified number of cities next in rank below the largest city.

Regarding China, we can refer to Chang (1976:402ff), Pannell (1981), etc.; for India, Bhattacharya (1976) and Raza, *et al.* (1981) can be named in this context. In short, the whole spectrum of the term "primacy" is reduced to one particular demographic aspect.[26]

Metropolitan Primacy in China and India: Basic Results

As far as the "real" primacy of the metropolitan cities in *China* is concerned, comparatively detailed information on all cities is included in the data recently released by the Chinese government,[27] Together with

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[25] This statement is valid only for the metropolitan cities of the industrialized countries of Western and Northern Europe as well as North America. (See Scholler, 1975:97.)

[26] Unfortunately, even up to the present "primacy" is used solely in the same purely demographic meaning. (See *inter alia* Lloyd/Dicken, 1978:77ff and Haggett, 1975:360.)

[27] See *Statistical Yearbook of China* (Hong Kong: State Statistical Bureau, PRC, 1985); *China Urban Statistics, 1985* (Hong Kong: State Statistical Bureau, 1985).

the data published yearly in the "Statistical Yearbook," we get the most comprehensive data set in comparison not only with regard to India but to all countries of the Third World. Although not complete, this data set contains information on almost all important dimensions: population, agriculture, industry, services, transport and communication, education and health, investment, and public finance. All in all, these 8 dimensions are subdivided into 22 single indicators, most of them separated according to the *shiqu* and *quanshi* figures. The data are proportionately computed according to the *national* level. Their interpretation is summarized below (Bronger, 1984:45).

1. First and foremost, the eminent primacy ratio with respect to the three large metropolises in particular (Shanghai - Beijing - Tianjin) and less but still pronounced regarding the remaining 17 metropolises, reveals an up-to-the-present strong primacy of these metropolitan cities.

2. The primacy is particularly pronounced, as could be expected, in the secondary sector, even outstanding in certain single industrial branches. This is especially relevant for important consumer goods regarding our three major metropolitan cities as indicated in Table 6.

TABLE 6. PROPORTION OF OUTPUT OF MAJOR INDUSTRIAL PRODUCTS OF METROPOLITAN CITIES* IN CHINA, 1984

Product	Shanghai	Beijing	Tianjin	Primacy Index	Primary Ratio
Sewing machines	31.5	4.8	10.0	46.3	16.3
Bicycles	19.6	0.2	18.3	38.1	13.4
Wrist watches	29.0	3.6	9.8	42.4	14.9
Chemical fibers	24.0	5.8	7.1	36.9	13.0
Cloth	11.1	2.0	3.3	16.4	5.8
Woolen piece goods	18.9	7.9	6.0	32.8	11.5
Leather shoes	9.7	4.7	6.7	21.1	7.4
Washing machines	10.6	8.9	1.8	21.3	7.5
Radio sets	24.2	3.5	1.7	29.4	10.4
TV sets	22.2	5.9	6.1	34.2	12.0
Cameras	35.2	4.2	7.4	46.8	16.5
Motor vehicles	2.9	11.3	3.2	17.4	6.1
Tractors**	21.7	—	20.6	42.3	14.9

* Provincial level
** 20 horsepower and over
Source: *Statistical Yearbook of China*, 1935, p. 350ff. (author's calculations)

Compared with this, a more surprising feature is the still high concentration in the educational sector particularly with regard to the university and/or college level, i.e., more than 50% of the country's total enrollment, resulting in a primacy ratio of almost 10%!

3. The historically grown core regions including the North-Eastern Region (former Manchuria) — out of our 20 only 3 relatively minor

ones (Taiyuan, Lanzhou and Kunming) — still show a heavy *regional* concentration of metropolitan primacy. This reveals that the governmental policy of deconcentration is to be viewed as only partly successful.

4. This seemingly far-reaching statement is supported by the up to now outstanding primacy of *Shanghai* compared to all other metropolitan cities.It exceeds the next ranking metropolis, the capital city of Beijing, in 40 out of the 46 single indicators (Table 6). In 9 cases the primacy index amounts to more than double, in 5 more than triple and in even 9 indicators it surpasses the capital city by more than five times! All in all, Shanghai has to be considered as the absolute economic center of the subcontinent: its GNP/capita (of Shanghai province!) exceeds the national average by 6 times (ESCAP. 1982:113) in 1980, and according to our calculations by 5.2 times in 1984 — a high factor when compared to Manila (3:1), Bangkok (3:1) and Seoul (2:1)[28] — the three most outstanding primate cities in the Far East! (Bronger, 1985: Table 3).

In most aspects these statements find their confirmation when compared to the large Indian metropolitan cities (Table 7).[29] Like in China, we can find a functional partitioning here, too. Analogous to Shanghai, Bombay represents the outstanding economic center of the subcontinent whereas Delhi's role as the capital is illustrated *inter alia* by the fast-growing number of high-standard hotels.

Based on the per capita income as an important or at least a widely used indicator of economic development, China and India show an almost equal extent of *regional* variation of development: India with a ratio of 3.14:1 (Punjab:Bihar), China with an even higher 3.38:1 ratio (Liaoning:Guizhou). It should be noted that this variation is already quite high when compared to the industrialized nations. In the USA, this ratio amounts to 1.9:1 and in West Germany even only to 1.3:1[30] — apart from the fact that the level of economic development is far higher in these countries.

These results, however, veil significantly the urban-rural development incline, especially between the larger metropolitan cities and the remaining predominantly rural and thus agriculturally structured regions. This aspect leads us to the second spatial component of the phenomenon of "metropolization." So far the metropolization and the primacy of the metropolitan cities in China and India have been discussed within the *national* context. Such reflections, however, overlook the fact that India and China are each not only a country and a state politically but also a continent with 16% and 22%, respectively, of the world's population, i.e., more than the next ranking four (USSR, USA, Indonesia, Brazil) and even more with four (Japan, Bangla Desh, Pakistan) other states added.

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[28] 1980 figures are approximate.

[29] Since the coverage of some primary indices does in some respects vary considerab'y from country to country, e.g., inconsistency of the term "industry," etc., such a comparative confrontation between metropolises of different countries is by no means unproblematic.

[30] This excludes the city-states of Hamburg, Bremen and Berlin.

TABLE 7. PRIMACY OF LARGE METROPOLITAN CITIES (> 5 MILLION — INDIA:CHINA

Indicator	year	Bombay	Delhi	Calcutta	year	Shanghai	Beijing	Tianjin
I Area & Population								
1 Area (Sq km)	1981	603	1.483	852	1984	340	2.733	4.276
2 Population ('000)	1981	8.243	6.220	9.194	1984	6.881[1]	5.755[1]	5.312[1]
3 Metropolitan Quota (% of total)	1981	1.20	0.91	1.34	1984	0.65[2]	0.43[2]	0.40[2]
II Education & Health								
4 Literacy Rate (%)	1981	68.2	62.7	65.5	1982	91.5	92.6	91.5
5 University & College Students: No. ('000)	1981	134	73	139	1984	81	101	40
: % of total	1981	4.88	2.65	5.05	1984	5.78	7.21[3]	2.84[3]
6 Hospital Beds : No. ('000)	1984	27.2	13.1	37.7	1984	35.1	30.9	20.3
	1984	5.41	2.60	7.49	1984	1.62	1.43	0.94
III Industry								
7 No. of Workers: % of total	1982	7.34[4]	1.64[4]	7.24[4]	1981	5.2	2.9	2.6
8 Value of Output: —.—	1982	10.82[4]	1.97[4]	5.51[4]	1985	7.97	3.75	3.49
IV Transportation & Communication								
9 Cargo Handled by Ports: Export (%)[5]	1981	9.0	—		1981	17.31	—	
: Import (%)[5]	1981	30.0	—			6)	—	
: Total (%)[5]	1981	21.0	—			6)	—	
—.— Total Trade : Total (Million t)					1984	100.66	—	16.11
10 International Airport Traffic — Passengers handled: No. ('000)	1985	7.597	4.867	1.859	1984	620[7]	1.070[7]	10[7]
% of total	1985	47.83	30.67	11.72	1984	10.40[7]	18.29[7]	0.17[7]
11 No. of Telephones: No. ('000)	1985	605	337	284	1984	130	123	49
: % of total	1985	16.3	10.4	7.6	1984	4.7	4.4	1.8
V Tourism								
12 Bed capacities of 3, 4- & 5 star hotels: No.	1983	7.575	9.311	2.112	1985	5.659		
— luxury hotels (5-star) only : No.	1983	3.924	4.403	717	1985	1.241		
VI Economy: General								
13 Income Tax (%)	1984	25.63	8.37	9.55				
Revenue (%)					1984	9.85	3.39	2.41

1) total shigu. 2) relates to "non agricultural population", 3) students enrolled in "institutions of higher learning", 4) large- and medium-scale industry only; approximate figures for Calcutta, 5) foreign trade only, 6) see explanations in Handke, 1896:17f., 7) including domestic airport traffic

Sources: INDIA — *Census of India, 1981*, Series 1 (Delhi, 1983); Tata Services Limited, *Statistical Outline of India, 1986-87* (Bombay, 1986); Government of India, Ministry of Information and Broadcasting, *India: A Reference Manual 1982* (New Delhi, 1982); Government of India, Ministry of Planning, *Annual Survey of Industries, 1981-82* (New Delhi, 1985); ESCAP, *et al., City Monographs: Bombay* (Yokohama, 1982); *Hotel and Restaurant Guide, India, 1983* (New Delhi, 1983); Central Board of Direct Taxes, Unpublished Records (New Delhi, 1986).
CHINA — State Statistical Bureau, PRC, *China: Urban Statistics, 1985 — Hong Kong 1985, Shanghai Tongji Nianjian 1986, Shanghai 1986;* Handke, W., *Shanghai* (Hamburg: Eine Weitstadt Offnet sich, 1986).

As the primacy of London or Paris and Bangkok or Manila is never discussed in relation to Europe and Southeast Asia, respectively, we have to examine the primacy of the Chinese and Indian metropolitan cities also within their *regional* context which corresponds demographically already to the largest states. The federal state of Uttar Pradesh in India would rank equal to Japan on 7th place and the province of Sichuan on 8th rank among all countries of the world. Five Chinese[31] and three Indian[32] provinces/states would exceed all European as well as Southeast Asian states.

A number of relevant primacy indices for Chinese metropolises are therefore computed according to the provincial level (Table 8). The analysis reveals at least two kinds of results. Firstly, the primacy of the Chinese metropolitan cities within their province is to be considered as highly pronounced with almost no exception. In computing the primacy ratio, it even comes close to the primacy indices of the three aforementioned outstanding primate cities in respect of most of the sectors — a certainly surprising result despite the limitation and also superficiality of such a brief comparison. Secondly, particularly the fact that we find a specific clear-cut primacy (Lanzhou!) in the newly developed "interior" regions (Shanxi, Shaanxi, Yunnan and especially Gansu) discloses at the same time a pronounced metropolitan-rural development incline *within* the regions of China.

Although such detailed data are not available for India, we can observe the same phenomenon for Indian metropolitan cities, too. Based on approximate per capita income figures,[33] the following compilation gives at least an idea of the striking difference regarding the economic development between the larger metropolitan cities and "their" surrounding region — in comparison with the metropolitan cities of the United States (cf. Table 8).

As far as India is concerned, the theorem of a positive correlation between the size of the metropolis and the extent of the (economic) development disparities apparently seems to be valid. The ratio between Bombay and the district with the lowest index value amounts to 24:1. The respective ratios for Calcutta, Madras, Hyderabad and Lucknow are 22:1, 19:1, 14:1 and 8:1, respectively. As far as China is concerned, comparable complete figures are so far available only for two provinces — Jiangsu and Liaoning — both on top of the level of development.

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[31] They are Jiangsu, Shandong, Hebei, Guangdong and Sichuan.

[32] These include Uttar Pradesh, Bihar and Maharashtra.

[33] As overall economic data like NDP or per capita income does not exist on a district (India) or *Xian* level, we have to use an index which gives at least an approximate indicator to characterize the overall level of economic development. In India, the Centre for Monitoring Indian Economy in Bombay has used nine indicators. For China, only two appropriate indicators — gross output value of agriculture and gross output value of industry — are available on city (*quanshi*) level. (See Machetzki, 1982:652ff.)

TABLE 8. FUNCTIONAL PRIMACY OF METROPOLITAN CITIES IN CHINA II: PROVINCIAL LEVEL

No.	Province/Metropolis (shi)	Population (000)	M.Q.[1]	Gross Agricultural Output Value	Gross Industrial Output Value	Total Value of Retail Sales	Students enr. in Inst. of Higher Education	Hospital Beds	Total Doctors	Investment in Capital Construction
1	2	3	4	5	6	7	8	9	10	11
1	Jiangsu	73.760	11.65	0.71	45.49	30.78	70.10	24.79	40.17	58.16
	— Snanghai	6.726	9.12	—	39.36	25.33	43.43	19.63	31.76	46.95
	— Nanjing	1.855	2.53	0.71	6.13	5.45	26.67	5.16	8.41	11.21
2	Hebei	72.330	12.59	8.67	61.83	38.76	73.03	32.42	43.15	62.88
	— Beijing	4.983	6.89	3.41	32.03	24.43	52.41	19.56	27.26	36.94
	— Tianjin	4.124	5.70	5.26	29.80	14.33	20.62	12.86	15.89	25.94
3	Liaoning	36.550	18.26	14.54	54.61	38.08	82.81	31.47	41.56	46.04
	— Shenyang	3.173	8.68	9.33	22.67	19.12	43.81	14.68	20.58	20.82
	— Dalian	1.334	3.65	3.24	12.21	8.61	32.76	6.08	8.86	14.23
	— Anshan	1.089	2.98	1.13	10.77	5.43	3.21	5.52	7.24	4.82
	— Fushun	1.077	2.95	0.84	8.96	4.92	3.03	5.19	4.88	6.17
4	Jilin	22.840	6.24	3.14	26.17	16.50	69.74	13.24	22.63	31.33
	— Changchun	1.425	6.24	3.14	26.17	16.50	69.74	13.24	22.63	31.33
5	Heilongjiang	32.950	6.73	2.02	21.37	18.01	59.22	16.64	21.31	14.61
	— Harbin	2.217	6.73	2.02	21.37	18.01	59.22	16.64	21.31	14.61
6	Shanxi	26.000	5.22	4.13	31.29	15.65	65.99	18.77	19.59	25.69
	— Taiyuan	1.356	5.22	4.13	31.29	15.65	65.99	18.77	19.59	25.69
7	Shandong	76.370	2.95	1.09	26.14	11.28	49.41	12.38	20.06	14.47
	— Jinan	1.111	1.45	0.59	11.08	5.83	36.56	7.40	11.81	8.08
	— Qingdao	1.140	1.50	0.50	15.06	5.42	12.85	4.98	8.25	6.39
8	Hubei	48.760	5.95	2.32	35.99	19.07	80.69	16.68	21.68	26.97
	— Wuhan	2.899	5.95	2.32	35.99	19.07	80.69	16.68	21.68	26.97
9	Guangdong	61.660	4.03	3.19	32.41	16.99	72.42	13.20	22.44	26.62
	— Guangzhou	2.486	4.03	3.19	32.41	16.99	72.42	13.20	22.44	26.62
10	Sichuan	101.120	3.51	3.15	37.37	17.17	65.01	14.28	18.05	34.16
	— Chongqing	2.031	2.01	1.27	20.33	8.94	31.46	7.44	8.59	16.30
	— Chengdu	1.523	1.50	1.88	17.04	8.23	33.55	6.84	9.46	17.86
11	Shaanxi	29.660	5.68	4.66	40.94	25.64	78.41	20.41	24.07	36.31
	— Xi'an	1.686	5.68	4.66	40.94	25.64	78.41	20.41	24.07	36.31
12	Gansu	20.160	5.68	3.59	50.73	27.87	84.20	25.42	25.35	36.87
	— Lanzhou	1.145	5.68	3.59	50.73	27.87	84.20	25.42	25.35	36.87
13	Yunnan	33.620	3.21	2.90	36.03	17.49	84.26	15.88	20.31	25.51
	— Kunming	1.080	3.21	2.90	36.03	17.49	84.26	15.88	20.31	25.51

1) shiqu: non-agricultural population; col. 4-11: Figures in %

At least the four[34] cited metropolitan cities similarly show a far above national as well as provincial economic development level, topped by the largest metropolis Shanghai. In contrast to our Indian and Chinese metropolitan cities, those of the USA present a completely different picture, with an almost equal level of development especially regarding their concerned states. It seems we can deduce from these results another theorem, i.e., a causal connection between the level of development of a certain country and the dimension of the primacy of the concerned metropolis(es).

REFLECTIONS FOR FUTURE RESEARCH

Our results manifest that the economic primacy of the metropolises of our two subcontinental states, India and China, continues to be outstanding and unbroken up to the present — especially in comparison with the metropolises of the industrialized nations of the Western world. It seems that the efforts of both governments towards the reduction of the regional disparities cannot be considered as successful yet.

This conclusion, however, is linked directly with the decisive question which in the last analysis has remained unsolved: What role does the metropolis play in a country's overall development process? In what way does it impede or encourage the development of the other regions of the country? Is Hoselitz' paradigm of "generative" versus "parasitic" cities, i.e., of the development-promoting effect of the cities in the industrialized nations as compared with their parasitical nature in the Third World countries, fully valid? We may explain this by means of a concrete example. On the one hand, the brain drain not only from the surrounding areas but, as far as the large metropolises are concerned, from vast parts of the entire country undoubtedly deprives these regions of an important resource of development, with the parallel of a threatening socioeconomic polarization between the metropolitan and the rural scene. On the other hand, the share of income tax of Bombay as the number one economic center amounts to more than 25%, and together with Calcutta and Delhi, to almost 45% of entire India (Table 7), i.e., the development budget of the different governmental levels for the regions lagging behind is financed to a large degree by the funds produced by the metropolitan cities. From this point of view, the surrounding backward regions are of parasitical nature and not the metropolitan cities (Nissel, 1977:2). This means that the investigation of tax systems (including the legislation concerned) plus the investment policy should be a major objective of metropolitan reesarch and thus of developing-country research in the future.

Finally, these reflections lead us to the question of whether the

[34] Because of their comparatively large area of >1,000 sq km (Dalian) or even >8,400 sq km (Shenyang), these metropolises have not been considered in this context.

emergence of a metropolis with its pronounced primacy is an inevitable but passing stadium in the process of development and, accordingly, depends upon the level of development so far achieved by a country. Was it possible for only one dominant city or metropolis — and accordingly a few in the subcontinental states — to evolve at that early stage of development (London, Paris and subsequently Berlin up to 1945 can be cited as historical parallels) and is this burden lessened only *after* a higher standard of development has been achieved?

REFERENCES

Aird, J.S. "Recent Provincial Population Figures," *The China Quarterly*, Vol. 73 (1978), pp. 1-44.

Aird, J.S. "The Preliminary Results of China's 1982 Census," *The China Quarterly*, Vol. 96 (1983), pp. 613-640.

Bannister, J. "Mortality, Fertility and Contraceptive Use in Shanghai," *The China Quarterly*, Vol. 70 (1977), pp. 255-295.

Bhattacharya, M. "Urbanization and Policy Intervention in India," in: Social Science Research Institute (ed.), *Asia Urbanizing*. Tokyo: 1976, pp. 88-117.

Breese, G. *Urbanization in Newly Developing Countries*. Englewood Cliffs, New Jersey: 1966.

Bronger, D. "The Concept of 'Comparative Regional Research,' A Methodological Contribution for Empirical Developing-Country Research," *Urban and Rural Planning Thought*, Vol. 20 (1977), New Delhi, pp. 146-175.

Bronger, D. "Metropolization as a Problem of Development in Countries of the Third World — The Far Eastern Scene (Metropolitan and Regional Development Planning I)," *Philippine Geographical Journal*, Vol. 26, No. 4 (1982), pp. 149-159.

Bronger, D. "Metropolization in China," *Geo Journal*, Vol. 8, No. 2 (1984), pp. 137-146.

Bronger, D. "Metropolization as a Development Problem of Third World Countries: A Contribution towards a Definition of the Concept," *Applied Geography and Development*, Vol. 26 (1985), pp. 71-97.

Bronger, D. "How Big are the Metropolitan Cities? Metropolization in the Far East: The Demographic Dimension I" *Asien*, No. 14 (1985), pp. 71-79 [Bronger (1985a)].

Bronger, D. "How Big Were the Metropolitan Cities? Metropolization Process in the Far East: The Demographic Dimension II," *Asien*, No. 15 (1985), pp. 94-110 [Bronger (1985b)].

Bronger, D. "Die 'metropolitane Revolution' als Entwicklungsproblem in den Landern Sud-, Sudost- und Ostasiens. Entstehung — Dynamik — Planung — Ergebnisse. Das Beispiel Bombay," IFA (ed.), Umwelt, Kultur and Entwicklung in der Dritten Welt. Zum Problem des Umwelterhalts und der Umweitzerstorung in Afrika, Asien und Latein-amerika. 7.Tubinger Gesprach zu Entwicklungsfragen. Stuttgart 1986, pp. 48-95 (= Materialien zum Internationalen Kulturaustauch, Nr. 27).

Buck, D.D. "Policies Favoring the Growth of Smaller Urban Places in the People's Republic of China, 1949-1979," in Ma, L.J.C. and Hanten, E.W. (eds.), *Urban Development in Modern China.* Boulder, Col.: 1981, pp. 114-146.

Chang, S.-D. "Peking: The Growing Metropolis of Communist China," *The Geographical Review,* Vol. 55 (1965), pp. 313-327.

Chang, S.-D. "Paking," *Encyclopedia Britannica, Macropaedia,* Vol. 14, 1974, pp. 1-14.

Chang, S.-D. "The Changing System of Chinese Cities. *Annals of the Association of American Geographers,* Vol. 66 (1976), pp. 398-415.

Chen, N.-R. *Chinese Economic Statistics: A Handbook for Mainland China.* Edinburgh: 1966.

Chen, C.-S. "Population Growth and Urbanization in China, 1953-1970," *The Geographical Review,* Vol. 63 (1973), pp. 55-72.

Davis, K. *et al. The World's Metropolitan Areas.* Berkeley, Los Angeles: International Urban Research Institute of International Studies, University of California, Berkeley, 1959.

Fung, K.I. "Urban Sprawl in China: Some Causative Factors," in Ma, L.J.C. and Hanten, E.W. (eds.). *Urban Development in Modern China.* Boulder, Col.: 1981, pp. 194-221.

Haggett, P. *Geography: A Modern Synthesis.* New York: 1975.

Handke, W. *Shanghai. Eine Weltstadt offnet sich.* Hamburg: Mitteilungen des Instituts fur Asienkunde Hamburg, 154, 1986.

Jefferson, M. "The Law of the Primate City,"*Geographical Review,* Vol. 29 (1939), pp. 226-232.

Kuchler, J. "Stadterneuerung in der VR China," in Kuchler, J., Muller, M. and Tommel, I. *Stadtentwicklungsprozeß — Stadtentwicklungschancen: Planung in Berlin, Bologna und in der VR China.* Gottingen: Geographische Hochschulmanuskripte, 3, 1976, pp. 137-218.

Kwok, R.Y.-W. "Trends in Urban Planning and Development," in Ma, L.J.C. and Hanten, E.W. (eds.). *Urban Development in Modern China.* Boulder, Col.: 1981, pp. 147-193.

Lloyd, P.E. and Dicken, P. *Location in Space. A Theoretical Approach to Economic Geography,* 2nd ed. London: 1978.

Ma, L.J.C. and Hanten, E.W. (eds.). *Urban Development in Modern China.* Boulder, Col.: 1981, pp. 1-18.

Machetzki, R. "Naturlicher Wirtschaftsraum und Regionalwirtschaften in der VR China," *China aktuell* (1982), pp. 642-653.

Misra, B. "Delhi: Shaping a Metropolitan Capital — Legacy and Future," in Honjo, M. (ed.). *Urbanization and Regional Development.* Nagoya: 1981, pp. 227-256.

Murphey, R. *Shanghai: Key to Modern China.* Cambridge, Mass.: 1953.

Murphey, R. *The Fading of the Maoist Vision: City and Country in China's Development.* New York, London, Toronto: 1980.

Nissel, H. *Bombay: Untersuchungen zur Struktur und Dynamik einer indischen Metropole.* Berlin: Berliner Geographische Studien, 1, 1977.

Orleans, L.A. *Every Fifth Child: The Population of China.* London: 1972.

Orleans, L.A. and Burnham, L. "The Enigma of China's Urban Population," *Asian Review* (1984), pp. 788-804.

Pannell, CL.W. "Recent Growth and Change in China's Urban System," in Ma, L.J.C. and Hanten, E.W. (eds.). *Urban Development in Modern China.* Boulder, Col.: 1981, pp. 91-113.

Raza, M., Habib, A., Kundu, A. and Aggarwal, Y. "India: Urbanization and National Development," in Honjo, M. *Urbanization and Regional Development.* Nagoya: 1981, pp. 71-96.

Scholler, P. "Tokyo: Entwicklung und Probleme wachsender Hauptstadt-Konzentrationen," in Leopold, W. and Rutz, W. (eds.). *Der Staat und sein Territorium. Beitrage zur raumwirksamen Tatigkeit des Staates.* Wiesbaden: 1976, pp. 86-105.

Shiger, A.G. *Administrativno — territorial noe delenie zarubeshnuikh stran: sprachovnik. Vtoroe, ispravlennoe izdanie (The Administrative-Territorial Divisions of Foreign Countries. 2nd rev. ed.).* Moskva: 1957.

Skinner, G.W. "Vegetable Supply and Marketing in Chinese Cities," in *The China Quarterly,* Vol. 76 (1978), pp. 733-793.

Tien, H. Yuan. *China's Population Struggle. Demographic Decisions of the People's Republic, 1949-1969.* Columbus: 1973.

Trewartha, G.T. "Chinese Cities: Number and Distribution," *Annals of the Association of American Geographers,* Vol. 41 (1951), pp. 331-347.

Ullman, M.B. *Cities of Mainland China: 1953-1958.* Washington, D.C.: 1961, (International Population Reports, Series P-95, No. 59). Partly reprinted in Breese, G. (ed.). *The City in Newly Developing Countries: Readings on Urbanism and Urbanization.* Englewood Cliffs, N.J.: 1969, pp. 81-103.

Whitney, J.B.R. "China: Area, Administration and Nation Building." Chicago: 1970 (University of Chicago, Department of Geography, Research Paper 123).

Zukang, Zhao. "Local Authorities and Human Settlements Development in Shanghai: An Outline of the Development of Shanghai Human Settlements." Shanghai: 1982. (mimeogr.).

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THE DICHOTOMY OF RURAL POVERTY: A RESOURCE-FOCUS SITUATIONER FOR HILLYLAND RESOURCE UTILIZATION

Rogelio N. Concepcion*

ABSTRACT. Rural poverty in a typical Philippine hillyland resource area is an outcome of an unbalanced dichotomous man-environment interaction brought about by socioeconomic, politico-institutional and technological constraints. Faulty human perception of natural resources brought about by population pressure has led to political structures biased against resource conservation and to communities lacking in political will and development direction. The negative political climate has led to lack of economic access among the poor whose prevalence in turn has led to inefficiency in resource use. Socioeconomic and politico-institutional constraints create technological constraints/failures as lowlanders use inappropriate technology upon moving to the uplands. The complementarity of the three elements of rural poverty calls for a total approach in the development of hillyland resources.

The Overview of Resource Utilization

The state of the physical resources is directly dependent on the degree of coherence between human perception on the use of the land and the degree of stability of the environmental systems in and around the land being exploited. The simple lack of congruence between human perception and ecological stability results in the imbalance between the rate and manner of exploitation and the resources' natural capability for renewal in order to provide food, shelter and other basic needs for the growing biological populations.

The dichotomy of rural poverty in a hillyland resource use project area, as presented in Figure 1, presents the critical interactive pathways of an iterative human-environmental cyclic system. It further amplifies the complementary relationships of the various development constraints (socioeconomic, politico-institutional and technological constraints) with their respective individual and collective effects on human decisions, environmental decay, and the eventual perpetuation of rural poverty.

On Human Perceptions

As population reaches critical limits, the orchestration of human actions on the use of the land becomes a single requirement for the attainment of the desired productivity and concurrent sustainability of livable environments for prolonged periods.

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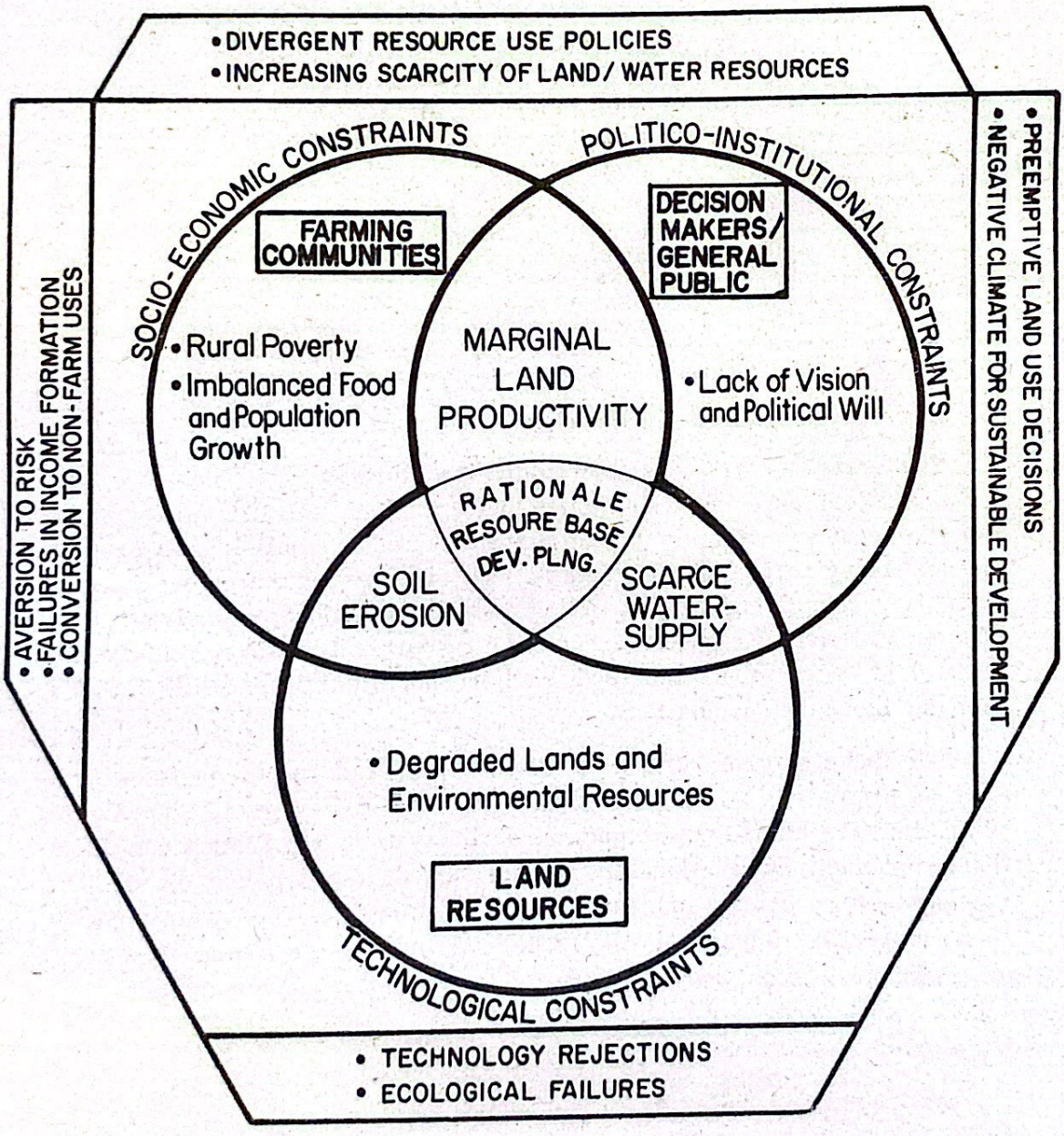

FIG. 1. THE SUSTAINABLE RESOURCE USE AND POLICY SYSTEM RATIONALE

When put into motion, the processes of guiding development will allow the evolution of the politico-institutional mechanisms composed of leaders and institutions whose visions of development will finally dictate the state of productivity of the physical and ecological resources.

The ambivalence of the current resource utilization is brought about by the economic systems (which tend to be resource-exploitative), human greed and unconcerned communities which remain complacent or choose to be ignorant about the basics of sustainable resource exploitation. This situation has created a perpetual chain of events, viz.:

1. Evolution of political structures that tend to be complex and could remain biased against resource conservation;
2. Creation of community of peoples who lack the political will to promote unified actions that are consistent with the tenets of judicious resource utilization; and
3. Development of community of peoples who have divergent views on the manner of resource use and are unable to create a coherent, objective policy scenario that shall endow future generations with livable environments and productive resources.

On Social and Economic Constraints

The concomittant implications of the above negative politico-institutional climate are the inequitable resource endowments and the general tendency for the poorer segments of the population to have lesser access to economic tools that are otherwise made available to the general public.

The resource-access gaps become much more obvious as population growth reaches critical levels. The twin phenomena of resource access-gaps and unmanageable population growth further make the requirements for unified/orchestrated community actions even more urgent and indispensable.

The orchestrated community actions provide the bridging mechanisms that will eventually result in the realignment of the development spectra in favor of judicious exploitation and sustainable development, where every economic action is coupled with resource renewal efforts.

The prevalence of poverty groups exert severe negative effects on the efficiency of resource uses and the wholesomeness of the environment. This social ineptitude likewise brings in more requirements vis-a-vis the social, economic and institutional services which have created more pressures on the land resources vis-a-vis the increase in emphasis on high inputs to force improvements in productivity (vertical development dimensions) in the absence of additional lands (horizontal development dimensions) to satisfy in turn the basic needs of growing biological populations.

On Technology Promotions and Failures

The interactions of socioeconomic and politico-institutional constraints have created the third dimension of declining agricultural productivity — the technology failures which are the results of their rejections by the rural communities.

As population increases under an unfavorable politico-institutional climate, the poverty groups dominate, and they form the majority of lowland dwellers who have moved into the uplands in search of food sources. Because of lack of capital and a reasonable perception of a good, sustainable environment, their tendency is to adopt the submarginal production systems and to reject production and other land use technologies, thus, triggering off the rapid process of irreversible land degradation. Their lowland technologies eventually become the centerpiece upland production systems which are one of the reasons why so much of our uplands are severely degraded. This situation is made worse by the prevailing development policies and extension systems which are definitely biased against the full development of the uplands.

The immediate result of the dominance of lowland dwellers in the upland ecological systems is their inability to change their production technology to suit the fragile upland conditions. So that it is common to find upland farmers trying in vain to clear the sloping lands, with such efforts resulting in the removal of the effective surface cover of the land and the start, in turn, of soil erosion and reduction of soil moisture supply.

Soil erosion and scarce moisture supply thus become a major problem of agricultural productivity. With food production being the major task in the farm, degradation of the land resources and the ultimate decline of productivity become the key features of typical Philippine hillyland resources.

The Collective Effects of the Various Dimensions of Rural Poverty

Public apathy on the welfare of the land resources creates the negative climate for high productivity and deters the forward movement of various agricultural programs.

As the negative climate of development persists, public policies on resource use become so divergent and, in fact, so preemptive in development decisions, such that the small farmers who cannot move closer to the tools of productivity become averse to changes — much more so if it deals with cost-related technologies.

As technology fails to provide the needed arguments to change and hardly able to wean away the rural residents from persistent errors in land use, rural poverty continues to plague a wider segment of the farming

community and this results in the prevalence of abuse and misuse of farm resources.

Economically related phenomena such as the conversion of agricultural lands into non-agricultural uses and the emphasis on chemical inputs are some of the key features in rural communities where economic returns from farming become less attractive. Ironically, these phenomena happen very rapidly in the prime agricultural lands, thus, leaving behind lands that are less productive and require more infrastructures and effective extension systems to be able to replace the losses incurred from prime land conversion.

As the human and land resource requirements increase with time, the socio-political institutions become so immersed in defining priorities (the environment? or development?) but will ultimately realize that the complementations of development with environmental protection are more significant than the economic elements of the package of development.

The fourth dimension provided by the complementarities of the three major elements of rural poverty actually calls for a total development framework approach where projects and their respective activities are identified on the basis of their continual relationships in the chartering of development for hillyland project areas.

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BOOK REVIEWS

Arraudeau, M.A. and Vergara, B.S. *A Farmer's Primer on Growing Upland Rice.* Los Baños, Laguna, Philippines: International Rice Research Institute and French Institute for Tropical Food Crops Research (IRAT), 1988. 284 pp., diagrams, paper, ISBN 971-104-170-7.

The most underprivileged rice farmers produce under adverse and risky conditions an average of only 1 ton per hectare. But by using improved varieties, adopting better cropping practices and following an economical and less risky cropping system, the world's 40 million upland rice farmers 90 percent of whom grow rice for their own food can now harvest 2 tons per hectare.

This is essentially what the book intends to do — to serve as part of the global strategy to train extension workers who will guide upland rice farmers to use their existing cultural practices more efficiently, minimize their cash inputs and maximize their returns in producing rice not only for their own but also other people's consumption.

This highly illustrated book has been patterned after *A Farmer's Primer on Growing Rice,* which was written likewise by Dr. Vergara and currently published in 35 languages in 22 countries since its first release in 1979. The publication of the new primer on upland rice growing is timely, considering that the increasing scarcity of resources in developing countries is forcing burgeoning populations to migrate not only to urban centers but also to the marginal uplands.

The contents of the book include such major topics as upland rice plant types, seeds and seedling growth and parts, fertilizers and soil problems, water, land conservation and crop management, weeds, rice diseases, rice pests, and cropping systems. There are two major strong points in the book's presentation of these topics. The first is its readability which is achieved by the use of sparse and simple language. Interestingness and clarity as aspects of readability are enhanced through the liberal use of illustrative line drawings. Thus, it is not only easily understood by agriculturists and extension workers but also by students and upland farmers who have a minimal background in agriculture. Another strong point lies in the book's approach of explaining the principles behind the steps or procedures in upland rice culture so as to give the farmer flexibility in decision-making. In fact, this is enhanced by the book's avoidance of doctrinaire recommendations and its provision only of choices for action, given certain conditions.

The book may be commended for its inclusion of a topic on land conservation and crop management which shows the reader how to prevent erosion, what to do with the forests, and how to plow, harrow and sow in a sloping terrain. This is extremely important, considering the severity of erosion in Philippine and Third World uplands brought about by forest denudation and slash-and-burn agriculture.

Although latitude is given for farming choices through acquaintance with agricultural principles, the farmer or user of the book somehow yearns for a more systematic and specific guide for actual cultivation of the plant. And although the presentation of the topics follows generally the sequence of rice cultivation from seed selection to post-harvest activities, some topics are not well-sequenced. For instance, the topic on land conservation and crop management which includes plowing, harrowing and sowing comes only after a discussion of fertilizers. Also, some topics are not grouped together, as in the case of soil problems towards the end which should have been lumped with the discussion of fertilizers.

The practitioner also looks for more specificity particularly with regard to a step-by-step guide that he can follow easily sans intervening and therefore distracting explanations. Perhaps what should be included further is a concise section on actual planting steps or procedures for certain rice varieties under varying conditions. The reader further looks for specificity in certain portions of the book. For example, despite its highlighting of intercropping on the cover picture, only six pages are devoted to the topic and it does not show how maize, beans, mung bean, peanuts, cowpea, chicken pea, mustard, finger millet, cassava and cotton could improve production and income, how much space in a given hectare should be planted to rice and peanuts, etc., and how much fertilizer is required. It is conceded that the book is only a primer and one should not expect the kind of detail and sophistication that a full-blown rice production manual provides. Still, the book can be made more usable by introducing a little bit more specificity and better topical grouping and sequencing.

As with lowland high-yielding varieties, the issue always comes up with regard to high input requirements of the improved variety recommended by the authors. Although on page 115 they only recommend a medium amount of fertilizer to achieve a high return, the cost for weedicides, herbicides and pesticides whose liberal use the book implies could drastically lower the return. The relatively long discussion of limiting factors and the use of agro-chemicals suggests to the farmer the need to use these costly inputs. Considering the limited resources of the upland farmer, the book should include more discussion on the use of organic fertilizer, the incorporation of sound traditional practices that include substitutes for agro-chemicals and the use of biological pest

control methods, and a discussion on how to conserve scarce upland water through, for instance, the ridgeline technique in water management. Water and soil conservation should be emphasized in the book, considering that scarce moisture supply and soil erosion are the two major natural constraints to agricultural productivity in the uplands.

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Quezon City, Philippines

Steve Z. Aseniero

International Rice Research Institute. *World Rice Statistics 1987.* Los Baños, Laguna, Philippines: 1988. 257 pp., tables, paper, ISBN 971-104-204-5.

The book, which was prepared by the Department of Agricultural Economics Staff of the International Rice Research Institute (IRRI), is a useful reference piece for analysts and decision-makers in the agricultural sector particularly of developing countries. Quite a prodigious effort appears to have been expended in gathering, interpreting, selecting, reconciling, reformatting and presenting the statistics on rice, which are grouped into: rice production, area and yield; imports and exports; consumption and stocks, modern rice varieties; land use, irrigation and farm size; fertilizer use and prices; population and labor force; wages; domestic prices; international prices and tariff and nontariff measures; and food aid.

The reader appreciates the meticulous footnotes that clarify the data presented. So with the convenient appendix tables that help in analyzing information. The tabular presentation format is easily read and understandable. The editing and printing particulars bespeak a professional work, which IRRI is, of course, able to afford with its ample financial resources. A lot of data are revealing and interesting, such as those on: rough rice yield, exports of milled rice, rice calorie supply as percentage of total calorie supply, rice supply/utilization balances, area planted to modern rice varieties, land use, irrigated rice area as percentage of total rice area, number of farms by size and distribution, total consumption of fertilizer, total and agricultural population, farm wage rates, government support/procurement price, farm harvest price, export prices of rice, wheat and corn, tariff and nontariff measures on rice importing countries, and rice food aid.

A type of table which the book should have included is an abridged one on cost and return analysis for rice production per hectare, which would include labor, material and fixed costs, yield per hectare, gross revenue, net income, and return on investment. Although the effort

needed to prepare this would be quite considerable, it will nevertheless reveal which countries suffer most from what production costs — facts that could be correlated with poverty or income levels. As it is, only piecemeal and non-exhaustive data on fertilizer use and prices, wage rates and harvest prices are included.

The book does not also tell us the guideline or method followed in the inclusion of countries. For general tables, is it based on: only those countries which produce rice, random selection, unbiased representation of both developed and developing countries, or simply availability of data? Provision of this explanation in the Foreword would answer queries from countries which have been excluded.

Ateneo de Manila University **Manuel J. Navarro**
Quezon City, Philippines

SOCIETY NEWS

In its two meetings held last June 23 and July 31, 1989 at the Department of Geography, University of the Philippines, the Board of Directors of the Philippine Geographical Society (PGS) decided on certain matters pertaining to the structure and activities of the Society. Some important items included in the agenda were: (1) the structure of the PGS and the decision on whether or not to register it with the Securities and Exchange Commission (SEC); the role of the PGS in the preparation of the Philippine Social Science Council (PSSC) encyclopedia; (3) the status of the Philippine Geographical Journal (PGJ); and (4) projected activities.

With regard to the first item listed above, the Board considered it unnecessary to change the structure of the PGS in order to receive aid from funding agencies. According to Dr. Salita, PGS President, there is no need to register the PGS as a foundation with the SEC that would exempt it from certain requirements and fees and that would qualify it as a funding-eligible nongovernment organization (NGO). According to him, all that is needed for the PGS to qualify as a foundation is to amend the present PGS constitution by identifying the Society as an academic and scientific institution. Dr. Salita volunteered to draft the amendments to the PGS constitution which afterwards were submitted to the SEC for approval and subsequent registration of the PGS.

Concerning the second item, Dr. Salita informed the Board that UNESCO is prepared to fund the publication of a Philippine social science encyclopedia through the coordination of the PSSC. It was

agreed that the PGS should participate in the project and handle the geography portion of the publication. Noted writers and geographers in the PGS will be tapped as contributors. Dr. Luna, PGS Director, is presently preparing the list of entries for the geography section of the encyclopedia.

As to the third item, Prof. Juanico, PGJ editor, reported that foreign and local subscriptions to the Journal have increased this year after the subscription solicitation drive he has started. He cited the following friends of the Society and the Journal as having been very helpful with their services and advice towards improving the Journal and its financial status: Dr. Richard Ulack of the University of Kentucky, Dr. David L. Clawson of the University of New Orleans, Mr. John B. Dalton of the Associacion ng mga Consultants na Independente (Philippines) or ACIPHIL, Dr. Dirk Bronger of the University of Bochum and Dr. Rogelio N. Concepcion of the Bureau of Soils and Water Management, Department of Agriculture.

The last item taken up was the proposed one-week seminar-workshop to be held in the summer of 1990. The main objective is to provide secondary school social studies teachers with new knowledge and skills in the teaching of geography, considering that the Department of Education, Culture and Sports and the Congress of the Philippines have acknowledged the importance of geography in Philippine socio-economic development. Another objective of the undertaking is to raise funds for the PGS in order to support future activities such as the publication of geography textbooks and the holding of information, education, communication and motivation (IECM) campaigns against environmental pollution and degradation in the country.

OBITUARY

ANTONIO VARIAS
1918-1989

Once in a while we are amazed to see a man rise in our midst showing boundless energy and interest for so many things in life. Such a man was Col. Antonio Varias, whose checkered life spanned the seemingly disparate fields of business, the military and academe. When he died last March while tending his Paradise Farms in San Jose del Monte, Bulacan, the country lost a man who had dedicated his life with strict professionalism to his profession — the real estate business for which he wrote books and whose organizations he helped form.

He was the founder and one-time president of the Philippine Association of Realtors Boards (PAREB) and distinguished himself as holder of License No. 1 as real estate broker, appraiser and consultant in the Philippines.

He has to his credit many well-planned and well-developed housing projects around the country which have profited from his professional dictum of giving primary consideration to work quality and client satisfaction, with material compensation being only incidental. "I could have made millions," he once said, i.e., had he been less sincere and less professional in his business dealings. In fact, before he died he was active with the working committee for the passage of the bill creating the Real Estate Commission (Senate Bill No. 773) whose purpose is to instill order, system, discipline and professionalism in the real estate industry. For all these, he earned the right to the title "Father of Realtorism in the Philippines."

When he died in his Paradise Farms, he was trying to show city businessmen and residents of the need to go back to the soil which has nurtured them and in the process derive therapy, peace of mind as well as profit. He was also busy then with his "Balik Bukid" project which encouraged businessmen to go to the countryside and develop it and in the process help improve the lot of the rural people who constitute the bulk of the country's poor.

As a soldier, he survived the infamous "Death March" in World War II, after which he still became active in the military, reaching the rank of full colonel upon his retirement. His interest in history led him to conduct a research project which would correct inaccuracies in the historical accounts of the last war and stress the Filipino soldiers' share in the war against the Japanese. He was able to set the record straight for certain "facts" of the war as contained in books authored by both Filipinos and foreigners.

The academe was no strange place, too, to Col. Varias who was involved as an officer with the organizations of the University of the Philippines (U.P.) College of Business Administration, his *alma mater*. He participated actively in the establishment of the U.P. School of Urban and Regional Planning and helped nurture it to its present prestigious position. He served as the first president of the school's research arm, the Planning and Development Research Foundation, Inc. (PLANADES).

It seemed natural that after all his wide-ranging experiences in life Col. Varias' mind should turn towards the geographic discipline — a holistic discipline that tries to integrate the physical and cultural dimensions of human knowledge. Before his demise he became hyperactive in the Philippine Geographical Society as a Board director. He designed a

beautiful logo for the Society and was in the midst of planning a large conference as a way of strengthening the Society. Like the geographers and explorers of old, he was not fazed by seemingly insurmountable tasks when he proposed to revolutionize our reckoning of time on earth with his plan for logical changes in the world's longitude and time designations. Indeed, one wonders where Col. Varias drew his energy from. For he was both a man of thought and a man of action — particularly loving to organize as well as to be organized, having been either an officer or member of twenty or so organizations. Despite his death that caught us by surprise, his leavings are enough to inspire us who have been left behind.

Philippine Geographical Society,
Quezon City, Philippines

Paterno R. Santos

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