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THE GEOGRAPHY OF FEEDGRAINS: PHILIPPINE SETTING

by

NELIA TEODORO-GONZALEZ[1]

Crop and animal production play a significant role in our economic development. Feedgrains is a major factor in both industries, in fact, a crucial contributor to the success of the animal industry. The excitement is further aggravated when one looks at the potential of feedgrains for export — meaning, contributing to our balance of payments.

The overview of the current food situation show a marked shortage in feedgrains, self-sufficiency in pork and poultry, very short in beef and dairy. All these point to the great need of setting a firm and well directed program for the feedgrains industry. Feedgrains in this article will basically mean corn (mostly yellow) and sorghum for poultry, hogs, cattle and other livestock. White corn, a staple food of 20 percent of our population, is planted in 1.6 million hectares. This is 16 percent of our cropped area. The total area devoted to yellow corn and other feedgrains is estimated to be about 2.3 million hectares. The national average yield for corn is .84 metric tons per hectare.

HYBRIDS

The technology on feedgrains production has been far advanced with the advent of hybrids and one cannot but appreciate the rapid growth anticipated as a result. The table below summarizes the impact of the of hybrids on the growth of the industry in the United States.

The U.S. model is thus a valuable and useful guide for our domestic program on feedgrains. The increased productivity of areas now devoted to feegrains can be achieved in much shorter periods.

The year 1933 in the U.S. points to a similar situation now existing in the Philippines. Our national average yield on corn indeed approxi-

[1] President, UP College of Agriculture Alumni Association, and President, Philippine Hi-Bred Inc. which introduced Pioneer hybrids for corn and sorghum in the Philippines.

TABLE 1. U.S.A. (actual)

Year	Planted with hybrid seed	Yield (MT/ha)
1933	0.1%	1.27
34	0.4	0.99
35	1.1	1.33
36	3.1	0.86
37	7.9	1.59
38	14.9	1.57
39	22.5	1.69
40	30.5	1.62
41	39.3	1.80
50	78.0	2.14
60	95.0	3.48
70	99.9	4.56
72	99.99	6.18

mates this take-off year when hybrids have been recognized and were being introduced to farmers. A close scrutiny of the table will show that it took 5 years to bring about 14.9 percent of farms to use the hybrids and a subsequent 5 years to get 95 percent of the total farms, nay, over a decade to attain a national average yield of 6.18 metric tons to a hectare when 99.99 percent of total corn areas in the country are planted to hybrid seeds.

Genetic improvements enable plants to more efficiently utilized soil nutrients and solar energy and toward off diseases and insects. The additional food production made possible through genetic improvement is almost pure gain, in that it requires little additional input of other kinds. It is not true, as many people believe, that hybrids require additional nutrients, water, or special care. Hybrids simply have the potential to efficiently utilized larger amounts of these inputs, if available.

The availability of this model and the government's sincere thrust on agricultural development strengthened by a characteristic political will serve for us who take pride in introducing hybrids for feedgrains in this country a great motivation to make our own contribution to the growth of Philippine economy. With greater efforts and dedication, the U.S. model on yield improvements maybe accelerated at shorter periods. This may also easily be attained considering that our areas devoted to feedgrains are relatively less.

The progressive targets to attain self-sufficiency and vie for the export trade following the model will mean for the Philippines a tremendous net increase in peso income with reasonable attainable arable areas devoted to hybrids. One such projection could be gleaned below:

TABLE 2. PHILIPPINES (PROJECTED)

Phase	Planted with hybrid seed %	Yield (MT/ha) Nat. Ave.	Net Increase through use of hybrids (1000 MT)	Net Income in Million Pesos
1	.5	.84	32	32
2	5.0	.94	330	330
3	10.0	1.05	660	660
4	30.0	1.49	1,944	1,944
5	70.0	2.34	4,530	4,530
6	100.0	3.0	6,510	6,510

The projected areas of production can easily be met considering that the following factors exist:

1. The introduction of high yielding varieties of rice continue to give higher and better yields, thereby, continued self-sufficiency is anticipated. A reduction in hectarage devoted to rice is forecasted for the year 2000 by 40 percent. These areas can be moved to feedgrains.

2. Increasing productivity of white corn for human consumption will enable us to shift some of these areas to feedgrains.

3. The Department of Agriculture has announced a goal of self-sufficiency for feedgrains within the next 5 years.

MARKET

The total consumption reported for corn in 1975 was 2,568,000 metric tons; about 25.7 percent of this went to animal feeds. Sorghum is an accepted substitute for corn. There is no reported production data for sorghum except in 1971 which simply stated 2,817 metric tons. The successful tests of sorghum hybrids in many areas of the country like the Visayas, Mindanao and Central Luzon have given the sorghum crop a new image to the farmers. The crop's easy and simple management plus adaptability under a wide variety of weather and soil conditions add to its popularity.

The farmer's greatest incentive to production is an established market. The feegrain requirement of the livestock industry is estimated to grow at a rate of 11-12 percent per annum. This does not consider a crash program to attain self-sufficiency in beef production which is about 52 percent short of the country's demand. Our milk and dairy products continue to be a large portion of our import bill.

The export of yellow corn and sorghum to Japan, Taiwan and Korea will be a boost to local production. Japan imports from various sources, approximately US$1 billion worth of yellow corn and US$460 million worth of sorghum in 1974.

OTHER INCENTIVES

The feedgrains industry can now look to continued growth. The 5-year self-sufficiency program is indeed an attainable goal as all forces which play important roles in its sucessful implementation have been recognized and are each doing its part. Agricultural credit has been expanded.

1. The small scale farms are able to get their financing thru the rural banks and the Philippine National Bank under a government food program without the usual real estate or chattel mortgage collateral.

2. Lending institutions by virtue of PD 717 should allocate at least 10 percent of loanable funds to the credit needs of the agrarian reform beneficiaries and 15 percent for agricultural credit in general.

3. The Development Bank of the Philippines is encouraging and assisting the sugar industry thru the conversion of 30 percent of the sugar areas to feedgrains and other crops.

4. The loan ceiling for supervised credit programs was determined by actual need and viability of the project to be financed and the capacity of the borrower to repay the loan at interest rates not exceeding 12 percent per annum excluding service fees and other charges. The management committee which sets the ceiling is composed of the National Food and Agricultural Council and the Bureau of Plant Industry.

5. The Countryside Development Program of DBP and the mobile bank concept of PNB available to the rural areas financing at faster pace.

6. DBP's financing programs include corn, sorghum, soybeans, grains processing and storage.

7. The Land Bank of the Philippines has launched massive programs for feedgrains and has allocated several millions for the purpose.

8. General Order No. 47 involved the organized private sector group in the national effort to increase cereal production and to tap

their managerial and financial resources. The National Grains Authority has included sorghum and feedgrains production in the program.

9. The Meat Production Programs of the government continue, aimed at increasing the adequacy of the animal sources of protein and at raising the level of protein intake of the population. Feedgrains is about 50 percent of total feed requirements.

PHILIPPINE HI-BRED'S COMMITMENT

The involvement of the officers of Philippine Hi-Bred in the animal industry for the last decade exposed us to the continued gnawing need to help establish the feedgrains industry. A thorough and detailed study of the industry in the United States pinpointed to the role the hybrids played in the dramatic yields achieved in the corn and sorghum belt.

Philippine Hi-Bred's introduction of Pioneer hybrids in the Philippines will continue. It will produce and market genetically improved seed stocks for farmers. The cost of using hybrid seed accounts for approximately 7 percent of a grower's total investment in raising a crop of corn or sorghum. Yet the Pioneer hybrid can easily increase yield by 100 to 500 percent over our average yield of .84 metric tons.

Our partners in this strife, the Pioneer Hi-Bred International of Iowa and the Eastern Hi-Bred Co., Ltd. of Japan are committed to invest in research and development of hybrids of the tropical varieties which will continue to sustain our market needs. This program has already been started in Mindanao.

We shall continue to train a group of dedicated men who will find working with farmers a fruitful life, having the ability to transfer high technology to the farmers' level without disruption of attitudes and working pleasantly to achieve a better life for the farmer and himself.

More efficient ways of food production for us Asians whose diet amounts to 80 percent of total spending should find top priority. This has given the developed countries a diet unparalleled in history and at relatively low cost.

Philippine Hi-Bred is determined to put its share in the politics of hunger which inevitably will touch us all — with world population growing at the rate of 75 million annually.

AN APPROACH TOWARDS PLACING GEOGRAPHY IN ACADEMIC WORLD IN TERMS OF SET THEORY[1]

by

R. L. SINGH and RANA P. B. SINGH[2]

Since geographic approaches (G) are lying in all the four sets of knowledge — group, i.e., Geo-sciences, Bio-sciences, Physical-sciences, and Humanities, it is defined as the proper subset which lies at the base. While technology is at the apex in the hierarchical system of the knowledge, and rest of the discipline lies within this system.

Recently geography has been recognized as the science dealing with the causal relationship among the spatial, biological, physical and human perspectives, thus it searches to explain the world of reality and tangibility (1). This growing thrust of scientific orientation leads everybody to feel himself "to be the geographer of his own space" (2). Such trends would provide a potential basis to geography for serving the society; as such the geographic achievements may be applied for the promotion of the quality of life on the one hand, and on the other towards the fullness of human life.

On taking these viewpoints into consideration, the first question which attacks ones mind is that "where does geography stand? Does it has any specific place in the scheme of the Sciences? If there is a distinct place for geography, then to what extent it is able to present the real structures, processes, and variations lying over the earth's surface within the perspective of human life chances?"

To answer such questions, the vocabulary and symbolism of set theory have been pressed into service. For this purpose, the total of theoretical human knowledge (A) as distinct from technology and know-how (A) has been divided into four groups, so called as sets — Geo-Sciences (A_1), Bio-Sciences (A_2), Physical Sciences (A_3), and Humanities (A_4), which contain many subsets, i.e., specific subjects, e.g., 11 — Geology, 21 — Biology, 31 — Physics, and 41 — Sociology. Thus

A may be denoted as $A = A_1 \cup A_2 \cup A_3 \cup A_4$

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[1] Paper presented in the Second All India Social Scientists Convention held on 20-23rd February 1977, Banaras Hindu University, Varanasi, India.

[2] Professor and Head, and U.G.C. Post-Doctoral Fellow, respectively, Department of Geography, Banaras Hindu University, Varanasi — 221005, India.

By overlapping ten multi-disciplinary fields of study can be demarcated at two levels: (i) the intersections of two sets, and (ii) the intersection of three sets. In the former case six groups may be identified as:

(i). $A_1 \cap A_2$ (e.g., a — Geo-Botany)
(ii). $A_1 \cap A_3$ (e.g., c — Geophysics)
(iii). $A_1 \cap A_4$ (Geo-human sciences)
(iv). $A_2 \cap A_3$ (Bio-Physical sciences)
(v). $A_2 \cap A_4$ (e.g., b — Bio-sociology)
(vi). $A_3 \cap A_4$ (e.g., d — Science of Civilization which is a recently introduced).

Similar in the latter case four groups came into existence:

(i). $A_2 \cap A_3 \cap A_4$ (i.e., f — Antropo-Bio-physics)
(ii). $A_1 \cap A_3 \cap A_4$ (i.e., g — Environmental Sciences)
(iii). $A_1 \cap A_2 \cap A_4$ (i.e., e — Ecological Sciences)
(iv). $A_1 \cap A_2 \cap A_3^c$ (i.e., h — Spatial-Bio-physics)

Geographic approaches (G) are lying in all the four sets (A_1, A_2, A_3, A_4) in different forms: Spatial analysis in the set of geo-sciences, physical geography in the set of physical sciences, bio-geography in the set of bio-sciences, and human geography in the set of humanities. Within these approaches four distinct themes have developed which attempt to cope with the phenomenological diversity arising from efforts to describe and account for the pattern created by man on the earth's surface, are - location — regional, structural, man-environmental and cultural. These themes joined together form the system of holistic concern, where 'the atoms (or elements) are seen as attributes which can be understood as parts of the whole (or set)' as opposed to 'understanding the whole (or set) as a thing which is built up from the parts (atoms).' Thus developed geographers' core concept of **socio-spatio-structural environmentalism**, which is everywhere in the field of human knowledge at different degrees and levels.

Therefore, geography (G) is placed in all the sets, so its intersecting paradigms can be clarified with the help of venn diagram (Fig. 1), which shows the core position of geography, i.e., $G = A_1 \cap A_2 \cap A_3 \cap A_4 = \bigcap_{i=1}^{4} A_i$

That's why the place of geography may be defined as $G = \{g : g (A_i \text{ for all } i's)\}$, which shows the position of geography as the proper subset, where $G \subseteq A$ but $G \neq A$. According to this definition every element

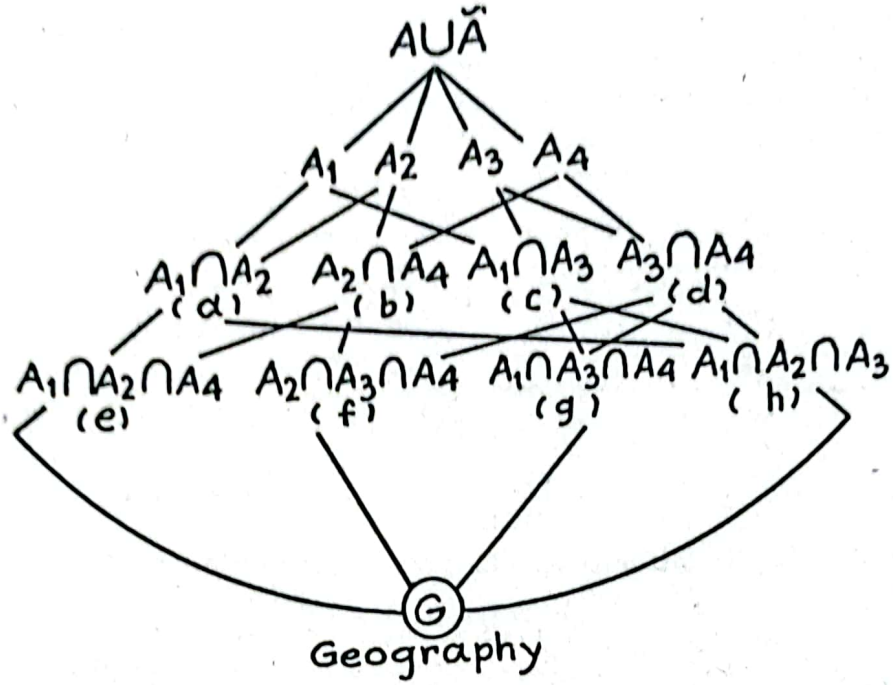

FIGURE 1. PLACE OF GEOGRAPHY.

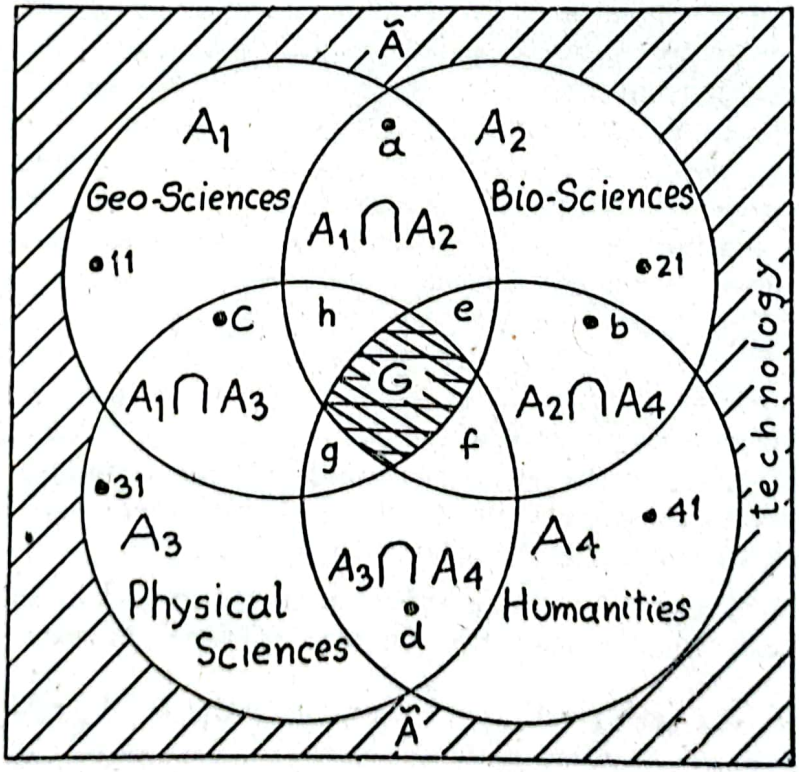

FIGURE 2. HIERARCHY OF GEO-TECHNOLOGICAL INTEGRATION.

of G is an element of A, and A contains at least one element which is not an element of G.

The foregoing discussion and the diagram clarify the fact that the geographical approach is limited within the boundaries of four scientific fields (i.e., e, f, g, h), which open new potential vistas for research and its application.

At present technological advancement is influencing and regulating all the human knowledge and thus originating a new horison of research. Moreover, technology is under stress to think towards action-oriented perspectives, as such the modern approach results both from changes in methodology as well as from the situation from which that methodology has been developed (3). This view accounts to consider Technology ($\bar{A}$) as the complement of set $\bigcup_{i=1}^{4}$ A, which is defined as every attribute contained in the universal set; it means that $A \cup \bar{A}$ is at the appex which is the union of all the theoretical and experimental knowledge thus defined as universal set, and geography (G) is at the base of the lattice diagram; and rests of the disciplines are lying within this. This system may be further elaborated within the hierarchy of geo-technological integration as represented in Figure 2.

It may be concluded that the main objective of this paper is to provoke scientific thinking towards the analysis of the integration of total knowledge, while defining and maintaining distinct role of individual disciplines, for the present purpose geographical science. This approach is bound to stimulate interdisciplinary collaboration in presenting the real world situation/s. The nature of geographic methodologies has changed now from its traditional bias, with a continuous process of revitalization of its dynamic approach, because the field is creating future knowledge along with the pull from the society for solution to future problems (4). To achieve this aim geography must be placed as the proper subset within all the sets of human knowledge.

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NOTES ON ARACHIS HYPOGAEA, L.

by

LARRY N. GARRETT & C. JOANE GARRETT

INTRODUCTION

Groundnuts, earthnuts, Guinea seeds, goobers and goober nuts, groundpeas, and peanuts are all generic misnomers for the **Arachis hypogaea L.** Actually, the "peanut" is not a "nut" at all, but is the seed of a leguminous plant. The peanut is an annual herbaceous plant belonging to the **Papilonaceae**, a suborder of the larger order **Leguminoseae.**[1] Peanuts are therefore not nuts but pulses, which are the seeds of the **leguminosa** family which includes the peas, beans, and lentils. The English word pulse is taken from the Latin **puls**, meaning pottage or thick pap.[2]

Woodroof[3] noted in 1966 that the peanut was known as early as 950 BC. There are now over 400 peanut products on the market. He continues that "food technologists and nutrionists on six continents are discovering that an agricultural commodity which has been relished by practically all forms of fowl and domestic animals, and which abundantly supplied protein, vitamins, minerals, and rare nutrients to pigs, cattle, poultry, turkeys, horses, and dogs, is a valuable source of food for humans." Woodroof concludes that "possibly no crop in the world has potentialities of being processed in as many ways and used in as many products as does peanuts."

There has been tremendous progress made in the production, processing, and utilization of peanuts in the last fifty years, and research continues unabated. The amount of data generated on such diverse topics as nutritive value and the control of insects in stored peanuts has been formidable. While this paper is limited in scope to a description of **Arachis hypogaea L.**, its origins and migrations, and to an examination of its uses and nutritive value, an Appendix is provided through which the reader may acquire data of a specific nature on such topics as nutritional requirements, beneficial soil organisms, weed control, insect pests, pest control, harvesting, grading, marketing, and economic guidelines for decision making.

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1 Woodroof (1966:113).
2 Davidson (1959:300).
3 Woodroof (1966:v).

NATURE OF THE PLANT, ORIGINS AND MIGRATIONS

Plant Nature. — The peanut is an annual ranging from a spreading or runner form (such as the Dixie and Bradford Runners[4]) .30-.46 m high with branches up to .61 m long that lie close to the soil to an erect or bunch form (like NC-2) .46-.61 m high with short branches. Stems and branches are sturdy and hairy while leaves are pinnately compound with two pairs of leaflets. (See Figure 1).

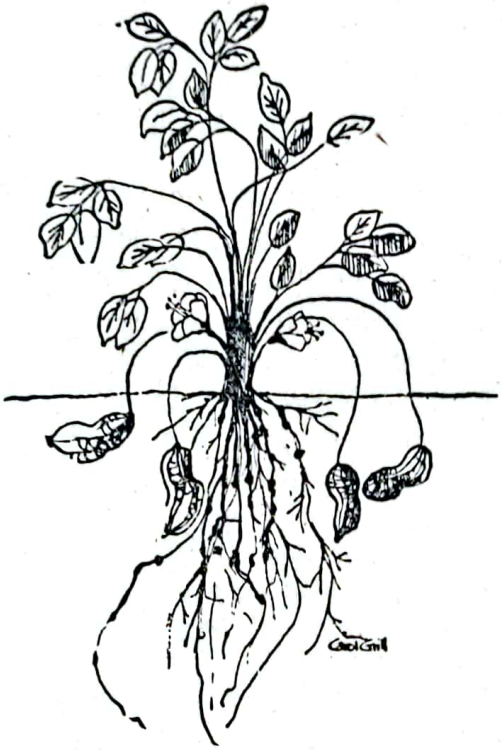

FIGURE 1
Artist: CAROL GRILL

NOTE: Figure 1 is a composite sketch of the various stages of *Arachis hypogaea L.* growth and development.

Flowers are borne in the axils of the leaves and what appears to be a flower stalk is actually a slender calyx tube up to 3.85 cms long. The yellow flowers are about one-half cm across. Verrill[5] writes that "a peanut plant in blossom appears much like a pea-vine with yellow flowers on long stems."

After pollination and the withering of the flower, ". . . the petals fall off, the stalks bend downward and push or burrow into the earth where the pods develop and ripen entirely out sight."[6] It is in the starlike peg that the fertilized ovules are carried downward on the stalk or peduncle. The pegs sometimes burrow several cms (7.62-9.16) before their tips develop fruit called pods, and the peg-structure functions as roots to some degree, absorbing minerals directly from the soil.

The pods are about 1.25-7.62 cms in length and roughly cylindrical.

> 'The shell of the pod comprises from 20 to 30% of the whole 'nut' and may easily be separated from the kernels. The kernel consists of two cotyledons (halves) and the germ (heart) en-

[4] See "Peanut Varieties" (1967): Circular 518, Cooperative Extension Service, University of Georgia College of Agriculture, Athens, Georgia 30602.
[5] Verrill (1937:95).
[6] Verrill (1937:95).

> veloped in a thin skin called the testa. Peanut kernels are composed of approximately equal weights of fatty and non-fatty constituents, the relative amounts of each depending upon variety and quality of the peanuts. Most of the fatty constituents are contained in the cotyledons, some are found in the germs or hearts, and small amounts are generally found in the testa or skins."[7]

> T.E. Boswell reports that the ideal soil for peanuts is ". . . well-drained, light-colored, loose, friable, sandy loam, well supplied with calcium and with a moderate amount of organic matter. Topsoil should be at least 1½ to 2 ins. (3.81-5.08 cms) deep with a friable sandy loam or clay loam subsoil with well-developed structure."[8]

Boswell continues that peanuts are normally grown on sandy soils ". . . not because they produce the highest yields, but because the crop is more easily harvested, as very little soil adheres to the pods."

Origins and Migrations. — Higgins[9] notes that ". . . the origin, history, introduction into various countries, and the affinities of the cultivated peanut are still hazy." Reid[10] reports that its origin has been credited to nearly every land where it is grown. Higgins reviews the literature and notes that:

> "the evidence is conclusive that neither Pliny nor Theophrastus saw or mentioned the plant now known as *Arachis hypogaea*. The Arachidna of the ancient Greeks was evidently applied to a species of *Lathyrus*, Arakos referred to *Lathyrus tuberosa*, the Oiggon mentioned by Theophrastus as occurring in Egypt was *Calocassia antiquorum*, and the Oetium of Pliny referred to *Cyperus esculentus*."[11]

Reid adds that ". . . De Candolle says if the plant was once cultivated (in Egypt) it would preferably still exist in that country."[12] He concludes that the peanut plant is not mentioned in Forskal's catalogue nor in Delile's flora.

Confusion arose over the plant's origin because the name Arachidna was used for the peanut by several naturalists and voyagers near the end of the seventeenth century.

Doubtless, the plant's origin is not Asiatic since its introduction there was fairly recent and was from the Philippines and other South Pacific Islands.

Today it is generally accepted by most authorities that *Arachis hypogaea* is indigenous to tropical America.[13] (See Map, Figure 2.)

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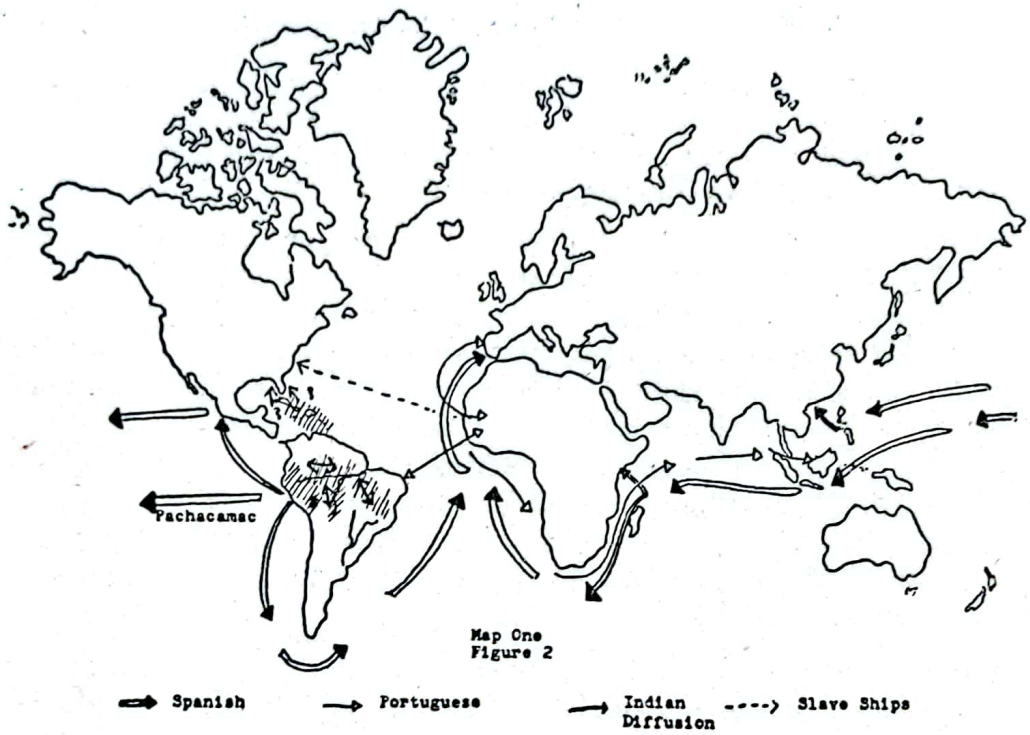
[7] Woodroof (1966:113).
[8] Boswell (1975:19).
[9] Higgins (1951:18).
[10] Reid (1931:3).
[11] Higgins (1951:18).
[12] Reid (1931:3).
[13] See for example Higgins (1951), Sigafus (undated:7), Verrill (1937), and Reid (1931:3).



Map drafted from Denoyer-Geppert Outline Map of the World #22009 (7009): Adapted by permission of the publisher, Denoyer-Geppert, Chicago, Ill.

NOTE: Map One is designed to be inclusive of all of the literature surveyed but not exclusive of additional thought and research on the plant's origins, diffusion, and migrations.

In fact, Higgins[14] writes that ". . . positive proof as to American origin came with the discovery of peanuts, similar in appearance to varieties now grown in Peru, in ancient graves at Ancon, Pachacamac (See Map, Figure 2.), and other points in the desert region along the coast of Peru, about 1875."

George E. Squier[15] served as United States Commissioner to Peru and in 1877 he described the Pachacamac site which is located about thirty-three kilometers south of Lima:

> "In ancient times, Pachacamac[16] was the Mecca of South America; and the worship of the Creator of the World, originally pure, invested the temple with such sanctity that pilgrims resorted to it from the most distant tribes, and were permitted to pass unmolested through the tribes with which they might happen to be at war. . . . But the desert has encroached on the old city, and buried a large part of it, with a portion of its walls, under the drifting sand."

Squier elaborates on his impressions of the cite:

> "Nothing can exceed the bare and desolate aspect of the ruins, which are as still and lifeless as those of Palmyra. No

[14] Higgins (1951:19).
[15] Squier (1877:72).
[16] For more information on Pachacamac see Uhle (1903) and Kosok (1965).

> living thing is to be seen, except, perhaps, a solitary condor circling above the crumbling temple; nor sound heard, except the pulsations of the great Pacific breaking at the foot of the eminence on which the temple stood."

Verrill[17] notes that "on the most ancient specimens of Peruvian pottery we find excellent figures of peanuts of several varieties . . .," and he continues that peanuts were often interred with the dead as food for the spirit on its journey to Hamack, Incan afterlife. Squier[18] sketched and described these Peruvian "mummies" or desiccated bodies of the ancient dead" and recorded that near the bodies were a number of utensils: jars, pans, and and various sized pots. "One was filled with groundnuts, familiar to us as pea-nuts; another with maize, etc., all except the latter in a carbonized condition." Higgins[19] concludes that dating of the Pachacamac graves is uncertain, but ". . . they are very ancient, certainly pre-Columbian."

N. Monardes lived in Peru about 1550 and briefly described the peanut without giving a name for the plant. He said it was grown along the Maranon River and was highly esteemed by both the Indians and Spaniards. Jose de Acosta[20] reported peanuts in Peru about 1571. Verrill[21] reports that the early Incas, Mayas, and Aztecs had many ways of preparing peanuts for human consumption. Today, the Indians eat nuts roasted, as an oily paste, as meal in cakes, and in confections.

While the nut was an important food of the Inca and its cultivation under way in Peru and probably Brazil before Columbus, it was not confined to those areas pre-Columbian. The Priest Las Casas lived in Haiti-Santo Domingo 1510-1530 and mentioned "mani" among the food plants being grown by a tribe of Indians on the islands. Oviedo, official historian of "New Spain" 1513-1524, reported that "mani" was an important food commonly grown by the Indians of "New Spain" and other West Indian islands.

Although Verrill[22] reports that "mani" is a Quechua (Incan) name for "ground seed," de la Vega (El Inca)[23] refutes the Quechuan derivation of the name when he writes: "There is another fruit that grows underground which the Indians (Peruvian) call *inchic* and the Spanish *mani* (peanuts) — all the names the Spanish apply to the fruits and vegetables of Peru are taken from the language of the Windward Islands (Lesser Antilles) and have now been adopted in Spanish, which is why we give them." Assuming the de la Vega data to be correct, the

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17 Verrill (1937:98).
18 Squier (1877:72).
19 Higgins (1951:20).
20 de Acosta (1967 Ed.).
21 Verrill (1937:99).
22 Verrill (1937:98).
23 De la Vega (Livermore, translator) (1966 Ed.: 501).

groups from whom the Spanish adopted the word "mani" were probably Arawak and Carib[24], and certainly not Quechua. This assumption is corroborated to some extent by Higgins[25] who notes that both "mani" and "cacahuate," a second Spanish name for peanut, are of "North American" origin.

While peanuts were an important food commodity to the Quechua, Arawak, Carib, and other Indian groups in the Windward Islands and Peru, wild species of *Arachis hypogaea L.* are reported in Brazil, Bolivia, Paraguay, and Argentina[26]. Wild species have been found abundantly from the Amazon River through Brazil, Bolivia, Paraguay, Uruguay, and northern Argentina to about 35° S. latitude.[27] (see Map, Figure 2.).

"The wild species of *Arachis* form an important part of the herbage for supporting the vast herds of cattle in this region."[28] Some species have even been adapted to grow and survive in hard clay soils and under conditions of close grazing.

Higgins[29] reports that "there is considerable evidence indicating that the cultivated forms of the peanut originated in the Grand Chaco area including the valleys of the Paraguay and Parana rivers, and were at an early date distributed throughout the tropical regions of both South and North America." One will recall that Pachacamac was an important religious center that attracted pilgrims from vast distances. One should also remember the complex Incan road network which would facilitate diffusion. Beals[30] reports that at Pachamanac the people ". . . built balsas (a type of wooden raft of two cylinders joined by a framework: especially useful for landing through surf) to carry them to the Galapagos or to take huge armed expeditions down the mighty Amazon tributaries into the jungle country." Higgins concludes that Indian tribes were not isolated, and Incan legend holds that they came to Peru from the South. It is probable that the Indains spread peanuts like they did corn, bean, pumpkin, cassava, sweet potato, and white potato.

After 1503 communication between the West coast of Africa and Brazil was frequent. Portuguese ships going to Brazil always touched the African coast to take on fresh water and food, and the return trip was made by the same route. With trading posts on both coasts (plus colonies), products of each continent were introduced to the other. For

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[24] See Map #5, "Indian Cultures," James (1942:14).
[25] Higgins (1951:20).
[26] Sigafus (undated:7).
[27] Higgins (1951:22).
[28] Higgins (1951:22).
[29] Higgins (1951:22).
[30] Beals (1973:18).

example, African *Voandzeia subterranea* was introduced to Brazil, and maize, cassava, tobacco, and peanuts introduced to Africa.[31]

In the early sixteenth century, the Spanish and Portuguese probably carried peanuts to the East Indies. Sigafus[32] writes that one type ". . . spread from Brazil to West Africa, while from Peru a somewhat different group of peanuts spread to the Pacific, East Africa, France, and Spain." (see Map One, Figure 2.).

The nuts were probably carried to the Philippines after Spanish colonization when the islands were governed from Mexico. A regular trade route existed at the time.

The peanut is supposed to have been introduced to North America by slave traders[33] who needed a food that was not bulky but high in food value and cheap in price. Theoretically the slavers loaded their ship holds with peanuts to feed their living cargoes. Reid[34] adds that this story is given additional credence by the fact that the Carolina and Virginia peanuts differ considerably; each, it is believed, comes from Africa but from different regions there.

This section concludes with an interesting fact raised by Higgins[35]. While proof of the pre-Columbian presence of peanuts in North America, either in Florida or the Texas-New Mexico regions, has not been found, "apparently the Indians of the Florida mainland had occasional contacts and in this way the Florida Indians probably obtained the peanut."

NUTRITIVE VALUE AND USES

Nutritive Value. — The peanut is a highly nutritious food, rich in proteins, minerals, B vitamins, and vitamin C. Peanuts contain about 25% highly digestible protein and 50% oil. This protein can be handled in many ways. It can be made into a low-fat peanut flour produced without heat or with wet heat; it can be developed into concentrates, into isolates, into hydrolized vegetable proteins, into blends with cereals, and into high-fat flours.[36] Because of increasing demand, there have been many new patents for peanut processing, from procedures for making flavorless food extenders to making meals.

The energy value of 457 grams of peanuts is equal to that of 400 grams of cooked round steak, to eight eggs, to about 457 grams of cheddar cheese, or to roughly 2.84 liters of milk.[37] Additionally, peanuts contain several important vitamins and minerals. (see Table 1.). The kernels are an excellent source of riboflavin, thiamine, and nico-

[31] Higgins (1951:23).
[32] Sigafus (undated:24).
[33] See for example Higgins (1951:24-5) and Reid (1931:3).
[34] Reid (1931:3).
[35] Higgins (1951:25).
[36] Reid (1931:10112).
[37] Sands (1974:3).

TABLE 1

COMPOSITION OF 100 GM. EDIBLE PEANUTS PRODUCTS

ITEM	RAW		ROASTED		PEANUT BUTTER ADDED FAT, SUGAR, AND SALT
	WITH SKINS	WITHOUT SKINS	WITH SKINS	WITHOUT SKINS	
Water, %	5.6	5.4	1.8	1.6	1.7
Calories	564	568	582	585	589
Protein, gm.	26.0	26.3	26.2	26.0	25.2
Fat, gm.	47.5	48.4	48.7	49.8	50.6
Carbohydrate, gm.	18.6	17.6	20.6	18.8	18.8
Fiber, gm.	2.4	1.9	2.7	2.4	1.8
Ash, gm.	2.3	2.3	2.7	3.8	3.7
Calcium, mg.	69	59	72	74	59
Phosphorus, mg.	401	409	407	401	380
Iron, mg.	2.1	2.0	2.2	2.1	1.9
Sodium, mg.	5	5	5	418	605
Potassium, mg.	674	674	701	674	627
Thiamin, mg.	1.14	.99	.32	.32	.12
Riboflavin, mg.	.13	.13	.13	.13	.12
Niacin, mg.	17.2	15.8	17.1	17.2	14.7

SOURCE: Adapted from Jasper G. Woodroof, *Peanuts Production Processing Products*, page 116.

TABLE 2
NUTRITIVE VALUE OF 457 GRAMS OF PRODUCT

ITEM	UNSHELLED ROASTED PEANUTS	PEANUT BUTTER	
Refuse, %	28	0	
Energy, cal.	1,961	2,808	Slightly higher than steak, smoked ham 200% higher than whole milk 400% higher than whole eggs
Fat, gm.	144.5	217	Equal to smoked ham 10% higher than steak 20% higher than fowl
Protein, gm.	88	118.5	Practically as high as ham 200% higher than whole milk or whole eggs
Carbohydrates	77.2	95.3	Higher than bananas Higher than white potatoes Almost as high as sweet potatoes
Calcium, mg.	242	336	Slightly higher than egg 300% higher than fowl 1200% higher than steak
Phosphorus, mg.	1,285	1,784	Slightly higher than whole milk 25% higher than ham 75% higher than steak
Iron, mg.	6.2	8.6	250% higher than whole milk
Riboflavin, mg.	.52	.72	About the same as egg yolk 300% higher than milk 100% higher than steak
Niacin, mg.	53.0	73.5	Slightly more than fresh liver 500% more than defatted wheat germs

SOURCE: Adapted from Jasper G. Woodroof, *Peanuts Products Processing*, page 117.

TABLE 3
A COMPARISON OF PEANUT COMPOSITION
WITH THAT OF POPULAR PROTEIN FOODS
USING 457 GRAMS AS PURCHASED

ITEM	Fat g.	Protein g.	Carbo-hydrate g.	Calories	Potas-sium mg.	Thiamin mg.	Calcium mg.	Niacin mg.	Ribo.
Peanuts, roasted & shelled	220.9	118.8	93.4	2640	3180	1450	327	77.6	610
Beef carcas, choice grade	97.1	67.3		1165	1370	290	39	16.2	600
T-Bone, good grade	133.4	61.7		1466	1370	270	36	14.9	550
Sirloin, good grade	94.9	74.7		1175	1370	320	42	17.9	660
Pork carcas, good grade, med. fat	185.2	36.3		1827		1770	21	9.4	420
Pork, lean cut, no bone or skin	121.1	71.2		1397	1295	3440	41	18.5	830

SOURCE: Table 3 is a composite table made from figures published in *Food Values of Portions Commonly Used* by Church and Church (1975).

tinic acid. Besides vitamins B and E obtained from the skins, peanuts are a good source of pathotenic acid, potassium, magnesium, phosphorus, and sulphur. Because of these nutritive values, the peanut compares favorably with many common foods as a source for body requirements. (see Tables 2 and 3).

Uses. — The nutritive value of pulses, of which the peanut is a variety, resembles whole grain cereals, but with important differences. They are much higher in protein than cereals and in suitable dietary mixtures with other vegetable proteins provide usable biological protein for human consumption. Additionally, they contain readily available B group vitamins which are not lost through processing or cooking.[38]

Although many pulses, such as soya, beans, and lentils, have achieved popularity as a garden food and as major crops, the popularity of the peanut lags. In Great Britain, peas and beans are favorite garden foods. In India, some pulses are favored for their resistance to drought. Other varieties of pulses are favored in the tropics because they require a plentiful water supply followed by hot, dry periods for ripening. However, because the variety of foods consumed provides sufficient protein without dependence on pulses, pulses are less important in America and in Western Europe, where cultivation of peanuts is often not intended for human food.[39]

Peanuts are chiefly favored in western cultures for their oil and for the "cake" left over after the expression of oil. The extracted oils are used as cooking oil, and the residual cake provides an excellent cattle food.[40] Peanut oil is valuable in deep frying because it has a high smoking point and resists odor absorption. Peanut meal, a byproduct of crushing peanuts for oil, is an important livestock feed. Peanut hulls, a byproduct of shelling, can be used as fuel, fertilizer, poultry litter, and livestock feed. Additionally, the hulls can be of industrial use, such as in abrasives, cleaning and sweeping compounds, and insulation.[41]

Peanut production has grown and improved immensely over the years. Processing today is a far cry from that of the sidewalk vendor who once sold nickle bags on street corners. The number of peanut products has increased from roughly a dozen to well over 400 products today.[42] Research has shown that protein fibers from the peanut could possibly be used in the manufacturing of synthetic fibers. Modern technology can (and must) provide us with innovative ways for making the

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[38] Davidson (1959:301).
[39] Davidson (1959-301-2).
[40] Davidson (1959:305).
[41] "In A Nutshell (1971): Circular 517, Cooperative Extension Service, University of Georgia College of Agriculture, Athens, Georgia 30602.
[42] Woodroof (1966:v).

peanut more palatable and more useful to mankind in overcoming world shortages.

The per capita consumption of high-protein foods is expected to rise even beyond present day needs. Today, there are many areas of the world where food caloric and protein content are woefully short. In many parts of Asia, Africa, Central America, South America, and the Caribbean, daily consumption of protein and fat consumption is less than one-third of the level consumed in diet-adequate countries.[43] As early as 1931, efforts were made to increase peanut production. Today, several new varieties are being cultivated, such as the Virginia Runner and the North Carolina, in the United States. Although its potential as a commercial crop and its nutritive value have not been fully realized world wide, many South and Central American countries have increased production and importation of peanuts. In Mexico, for example, the peanut has been cultivated to such an extent that it is an important commodity.[44]

CONCLUSION

The story of the peanut is a fascinating one. From ancient Pachacamac graves to laboratories on six continents; carried on balsas, along Incan highways, and in the holds of slavers, the story of the peanut has been a human saga.

Although the production and consumption of peanuts have been steadily increasing over the past decades and new varieties are being introduced, there has been insufficient promotion of peanuts as a staple food. Throughout most of the world, even where increased emphasis is found, peanuts are still considered a novelty crop. "Possibly no crop in the world has potentialities of being processed in as many ways and used in as many products as does peanuts."[45] When the nutritive value and potential use of the crop are truly realized, peanuts will gain a favored place in agricultural programs worldwide.

APPENDIX

This Appendix is provided so that the reader may acquire data of a specific nature on such topics as nutritional requirements, beneficial soil organisms, weed control, insect pests, marketing, and economic guidelines for decision making. Where possible, complete mailing addresses have been provided.

Cooperative Extension Service, College of Agriculture, University of Georgia, Athens, Georgia 30602.

The Cooperative Extension Service can provide literature on a variety of topics relating to peanut production.

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[43] Woodroof (1966:113-4).
[44] Reid (1931:10-12).
[45] Woodroof (1966:v).

Office of Administrator, United States Department of Agriculture, Agricultural Research Service, Washingon, D.C. 20250.

The Agricultural Research Service can provide both literature on peanuts and references to texts in which information on specific topics that one is seeking may be found.

National Peanut Council, Inc. 812 Citizens and Southern National Bank Building, Atlanta, Georgia 30303.

"Peanuts Culture and Uses," a symposium published by the American Research and Education Association Inc., Stone Printing Company, Roanoke, Virginia 24001.

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The Peanut Farmer. Joseph T. Sample, Editor. Specialized Agricultural Publications, Inc. Suite 600, Capital Club Building, Raleigh, North Carolina 27601.

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EXTRAPOLATION OF THE POPULATION OF SMALL TOWNS OF UTTAR PRADESH (INDIA)[1]

by

A. K. SINGH[2]

The paper presents the efficacy of extrapolation as a technique or estimating population size for future dates. Moreover, the trend of such growth has been mathematically extrapolated, within varying assumptions about the components of growth; generally the birth and death rates are considered for such extrapolation. The basis for assumptions about the future trend of these component variables is weak even at the national level. The only assumption is that the components of population change is reflected in the curve describing the past trend of change in the size of population. Period of 1941 to 1961 has been considered for the extrapolation of population for seven selected towns of Uttar Pradesh, i.e., Colonganj (Gonda), Etmadpur and Tundla (Agra), Jaswantnagar (Etwah), Bindki (Fatehpur), Anupshahar (Bulandshahar) and Biswan (Sitapur).

APPROACHES

Two methods, i.e., Gompertz law (1) and Newtons interpolation backward law (2) have been tested, in the present study.

1. **Compertz Law.** — In this method the curve of population shows trend in which the growth increments of the logarithms are declining by constant percentage. Thus, trend of equation values should show a declining ratio of increase but the ratio does not decrease by either constant amount or contant percentage. The equation of this law is:

$$\gamma t = C\ a^{b^t}$$

or,

$$\text{Log}\ \gamma t = \text{Log}\ C + b^t\ \text{Log}\ a$$

In this method, the basic equations are as follows:

$$b = \frac{\Sigma_3\ \text{Log}\ \gamma - \Sigma_2\ \text{Log}\ \gamma}{\Sigma_2\ \text{Log}\ \gamma - \Sigma_1\ \text{Log}\ \gamma}$$

$$\text{Log}\ \hat{a} = (\Sigma_2\ \text{Log}\ \gamma - \Sigma_1\ \text{Log}\ \gamma)\ \frac{b-1}{(b^n-1)^2};\quad n = 1$$

$$\text{Log}\ c = 1/n\ (\Sigma\ \text{Log}\ \gamma - \text{Log}\ \hat{a})$$

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[1] Paper presented in the Second All India Social Scientists Convention held on 20-23rd February 1977, Banaras Hindu University, Varanasi, India.

[2] Professor, Department of Geography, Banaras Hindu University, Varanasi, India.

here,

$$\Sigma_1 \text{ Log } \gamma = \text{Log } P_1$$
$$\Sigma_2 \text{ Log } \gamma = \text{Log } P_2$$
$$\Sigma_3 \text{ Log } \gamma = \text{Log } P_3$$

The results of this method are coming very near to real situation with rare exception, like Jaswantnagar, having 11.79% error (Table 1). Such error is due to the haphazard growth in population. However, if we assume that the future growth of population will be regular, then the method will give satisfactory estimates.

2. **Newton's Method.** — Here for the extrapolation, Newton's backward interpolation formula has been considered, which is denoted as

$$\gamma = \gamma k + u\triangle\gamma k - 1 + \frac{u(u+1)}{2!}\triangle^2 \gamma k - 2$$
$$+ \frac{u(u+1)(u+2)}{3!}\triangle^3 \gamma k - 3 + \text{---------}$$

In this method the results are more accurate than the Gompertz Law; it is clear from Table 1.

The discussion reveals that for short period the Newton's law of interpolation for extrapolation is well suited, while for long period Gompertz law is suitable, although both have their own merits and demerits.

Since these methods give greater accuracy for the population forecast at different levels, these can be applied for planning postulates, for different time span.

TABLE 1

Name of Towns	Population of 1971	PP_G of 1971	PE_G	PP_N of 1971	PE_N
Colonganj	11743	12563	4.42	11540	1.72
Etmadpur	8430	8927	5.89	8653	2.64
Tundla	18804	19100	1.57	19507	2.73
Jaswantnagar	11295	9963	11.79	10718	5.10
Bindki	17243	16522	4.18	16571	3.89
Anupshahar	12253	11169	8.84	11495	6.18
Biswan	19336	18743	3.07	18472	4.46

PP_G = Population projection by Gompertz Law
PP_N = Population projection by Newton's Law
PE_G = Percentage error in Gompertz Law
PE_N = Percentage error in Newton's Law

NOTE: The efficacy of these estimates have been tested against the actual census population of 1971.

ACKNOWLEDGEMENT

I must not fail to express my gratitude to my supervisor, Dr. R. L. Singh, M.A., Ph D. (London), Professor and Head of the Department of Geography, Banaras Hindu University who spared no pains in going through the manuscript and offering valuable suggestions.

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5. ALICIA D. TAN	21 Sapocoy Manresa, Q.C.	Manila Central University
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9. WALTER I. RATA	900-0 Rizal Ave. Manila	Holy Family Clinic & Hospital

(Continued on page 92)

A SEMANTIC PROBLEM IN ETHNOGRAPHIC RESEARCH

by

J. A. K. KANDAWIRE[1]

We use words to describe and explain reality. But words do not portray a total picture of reality. They only express our points of view about, and may give different meanings to, the same reality. This may not be so with social scientists who have been taught to think in the same theoretical way. It may also not be so with many people living in a community and sharing a common system of values. But it is so with social scientists who use different theoretical approaches to explain social events and analyze social structures. And it is so with ordinary people living in different communities and using different frames of reference when explaining social events.

The difference also exists between the way social scientists use words from the way ordinary people use them. That is to say, the former use words to describe social reality in a way that differs from ordinary usage. For example, in social anthropology certain words have been used to isolate from the whole reality what has been rationalised as social structure in Malawi. Words like **'mudzi'** and **'mfumu'** have have tended to assume different meanings in different social contexts, even though their everyday meanings in English are broad. **'Mudzi'**, for instance, has been translated into English as 'village' while **'mfumu'** as 'chief'[2]. But in its different social contexts **'mudzi'** may refer to a group of people settled in a rural area and deliberately organized into a tax unit by bureaucrats[3]. It may refer to a group of kinsmen living in the same hamlet or thorp[4]. It may mean a group of agemates living in the same cluster of huts[5]. It may mean an economic unity in the agricultural sense[6]. And the word **'mfumu'** is also used to refer to different categories of leadership. Traditional leaders through whom the central government administers rural communities

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[1] Department of Human Behavior, University of Malawi, Chancellor College, Zomba, Malawi.

[2] Scott, D. C., *Dictionary of the Nyanja Language*, Lutterworth Press, London, 1965, pp. 347 & 295.

[3] See Kandawire, J. A. K., *Local Leadership and Socio-economic changes in Chingale Area of Zomba District in Malawi*, Unpublished Ph.D. Thesis, Edinburgh, 1972, Chapter 4.

[4] Mitchell, J. C., "The Yao of Southern Nyasaland", in Colson, E. & Gluckman, M. (Eds.), *Seven Tribes of British Central Africa*, M.U.P. 1959, p. 13.

[5] Wilson, M., *Good Company*, Boston, Beacon Press, 1963, Chapter 2.

[6] Pike, J. G. & Rimmington, G. T., *Malawi: A Geographic Study*, O.U.P. 1965.

are all **mafumu**[7] irrespective of their specific places in the administrative hierarchy. There are also those traditional leaders who do not wield any administrative authority but are also called **mafumu.** All this diversity poses a semantic problem to one who does ethnographic research and seeks to describe reality as it exists on the ground.

In this paper I seek to explain the problem as I faced it in Chingale area of western Zomba in 1970. The problem arose from the fact that reality depicted a unified but contradictory structure which combined traditional and modern elements. J. C. Mitchell recognized the co-existence of these two elements when he was studying the Yao village. But he devoted his entire analysis to the traditional or 'kinship village', and neglected the 'administrative village.'[8] This abstraction of the one from the other was, I think, unfortunate because even in 1946 when Mitchell first started his ethnographic research among the Ayao, reality could only be approached from the administrative perspective. This is so because all ethnographic research during the colonial days was done with the co-operation of colonial administrators. And since the kinship or age-village was, in those days, either part of the administrative village or constituted an administrative village in its own right, one was bound to come face-to-face with it even if one approached it from the administrative angle.

I also went to Chingale with the model of a traditional society. But it was not long when I started my research that I wondered why I was not looking into the relationship between the traditional and modern structures. However, this self-interrogation started after I had already been confronted with the problem of ambiguity of social reality. It all started like this. To establish rapport with people in the area I chose to begin my research by taking a census of agricultural and other produce which were being sold at local market places in the area. At that time I had already had information that there were two hundred square miles which sustained a population of about thirty-four thousand people.[9]

I conducted interviews in Chichewa and one of the questions I asked respondents was aimed at eliciting an answer about villages where sellers of produce came from. To my surprise, I was told by some respondents names which had no bearing on the information I had already gathered from the census report. For example, respondents from Mkasala village would say they were from Chinseu, Mdawali or Boyd Chimpeni. Again, those from Mitumbili would claim that they had come from Namphula, Bamusi, and Ntangaleya.[10]

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[7] Prefix 'ma' connotes a plurality of things.
[8] Mitchell, J. C., *The Yao Village*, M.U.P., 1966, Chapter 1, passim.
[9] *Zomba Village Population*, Government Printer, Zomba, 1966.
[10] By the time of the of the interview these had not yet become administrative headmen.

The problem became complex when I eventually learnt that people like Chinseu and Mkasala, or Mitumbili and Bamusi, did not belong to the same ethnic, let alone kinship group. Hence, even if kinship can be said to be the defining structural framework in Chingale, the concept of **Mudzi** must imply some structural diversity behind the apparent traditional village unity.

Respondents from Chingale were ready to resolve the apparent paradox associated with the concept of **mudzi.** They reserved it for a kinship village while the administrative village was designated as **chitaganya.** The literal meaning of **chitaganya** is 'mixture'; and when it is applied to social organization in Chingale, it means a consolidation of kinship villages coming under an Administrative Village Headman.

The structural implication of the conceptual distinction between **mudzi** and **chitaganya** becomes meaningful when related to the structure of leadership in the area, it is easy to identify two aspects of this structure, and these aspects are traditional and modern political party leadership. The concept of **mudzi** is associated with traditional leadership.

The semantic problem arising from the analysis of traditional leadership centred around the ambiguity of Chichewa words **mfumu** and **mtsogoleri** to begin with **mfumu.** This Chichewa word means leader of a group of people living in a kinship village or **mudzi.** Yet, this title is also used to designate an Administrative Village Headman, a Group Village Headman, and a Chief.[11] We have already seen that the English equivalent of the word is chief. It was common experience to hear English speaking people in Chingale say 'chief' when they referred to a Village Headman or Group Village Headman or even the Traditional Authority.

This variable application of the term to incumbents occupying ranked positions created a semantic problem whose analysis showed that the concept **mfumu** had more than one structural implication. One implication is that the stratified system of village leadership was a new phenomenon and that the people organized by this new framework had not yet conceptually come to terms with it. The other implication is the opposite of the first one. It assumes an existence of a ranked system of leadership in which only some leaders are known by the term **mfumu.** The first implication seems to apply to the way the concept was used in Chingale.

The ambiguity of the word **mfumu** suggests that some process of social change has taken place unaccompanied by change in people's con-

[11] Cf. Wishlade, R. W., "Two Kinds of Headmanship in a Rural Area", in the Southern Province of Nyasaland", in Apthorpe, (ed), *From Tribal Rule to Modern*, R. L. I., 1966, p. 150.

cepts. The process of change was generated by the British Protectorate Government. In this venture the Protectorate Government reduced an erstwhile atomistic system of leadership to a clearly defined scale of command in which traditional leaders were also ranked in different positions. The result was a system which had no meaning to Africans but which meant something to colonists.[12]

In 1970 the new system had been in operation for fifty-eight years, and yet there was no corresponding change in Chichewa to fit into the three categories of Village Headman, Group Village Headman, and Traditional Authority. The term **mfumu** was still used to apply to all these categories. By doing so the people who used the term variably were unconsciously reducing all these administrative categories to the same plane, thereby postulating a system of equal status for every leader. They even went to the extent of using the term **mfumu** to designate the non-administrative wardens of sorority groups, and in this way, again unconsciously, placed them in the same category with their administrative superiors.

It was only when this ambiguity was revealed to them that some of the respondents began to re-define the system by distinguishing **mfumu ya chitaganya** from **mfumu ya mudzi**, and **mfumu ya chitaganya** from **mwini dziko.**[13] But this rationalization should not blur the significance of the ambiguous system designated by the term **mfumu** in its pre-administrative sense. Its significance lies in the fact that the pre-administrative system of leadership was not as static as it is sometimes portrayed. One only needs to remember that the early history of Malawi is full of accounts about the formation and disintegration of the Malawi Empire.[14] Implied in this process is the multiplication of leaders. The 19th century history shows that through immigration the number of ethnic groups in Malawi increased, and this re-inforced the process of atomization in the structure of leadership.

The ambiguity of the term **mfumu** in its modern usage arises from the fact that the rise and fall of traditional leaders due to external factors of change, like invasion and colonization of the Shire valley and highlands in the nineteenth century, did not destroy the atomistic and undifferentiated leadership system which prevailed then.

On the other hand, whereas the term **mfumu** implies an unstratified pre-colonial system of leadership, its place in the twentieth century

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[12] *Cf.* Leach, E. R., *Political Systems of Highland Burma*, G. Bell, & Sons Ltd., London, 1964, p. 103.

[13] The term 'mwini dziko' literally means 'owner of the land'; but it should be noted that the chief does not have exclusive proprietary rights in land.

[14] See Langworthy, H. W., "Conflict Among Rulers in the History of Undi's Chewa Kingdom", in *Transafrica Journal of History*, 1.1. January, 1971, p. 1, and Alpers, E., "The Mutapa and Malawi", In T. O. Ranger (ed). *Aspects of Central African History*, Heinemann, 1968, p. 18.

political system of Malawi should also be seen in relation to the modern political party aspect of leadership. The presence or combination of the two aspects of leadership complicates the degree of ambiguity associated with the term **mfumu**. This is so because in the presence of political party leadership, **mfumu** ceases to be the sole leader. In this new system the term **mfumu** assumes the function of differentiating the Village Headman from the political party leaders.

In Chingale, the term which was reserved for the party leader was **mtsogoleri**. In English this Chichewa word means 'leader'. But it has also been stated above that **mfumu** means a 'leader' of a group of people living in a village'. In this way the term **mtsogoleri** does not differentiate between the two types of leadership. This ambiguity was, however, rationalized by reserving the term **mtsogoleri** for a political party leader only.

The exclusion of **mfumu** from the category of **mtsogoleri** is also historically significant. Its significance lies in the fact that the emergence of the political party leadership took place against the background of a favourable response of traditional leaders to the colonial situation in its formative stages.[15] This response was in the form of assistance which chiefs offered the Colonial Administration in return for a stipend.[16] Having thus accepted to collaborate with a regime which did not seek to work for the development of the African citizens, chiefs lost the confidence of articulate members of their society. The latter then started organizing themselves into District-based pressure groups which, in 1944, became the foundation of the Nyasaland African Congress.[17]

It was from the difference in the roles of the two types of leadership in the colonial situation that the party leader earned his monopoly of the title **mtsogoleri** and denied its application to **mfumu**. In this way, the term **mtsogoleri** means more than its English equivalent 'leader'. It can be said to mean he who championed the cause of African emancipation from colonial rule.

I may now conclude by saying that reality is multi-faceted and cannot be understood without analyzing it. But analysis should also be done on the understanding that conceptual tools of analysis should be defined in a way that they lead to alternative explanations of social life. In this paper I have depicted a unified model which encompasses traditional and modern aspects of social structure. Such a model helps to portray a diachromic picture of social structure. It is not necessary

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[15] Tangri, R., "Inter-war Native Associations and the Formation of the Nyasaland Congress", in *Transafrican Journal of History*, 1, 1, January, 1971, p. 86.

[16] For a description of the relationship between Traditional and Modern leaders, see Van Velsen, J., "Some Early Pressure Groups in Malawi" in Stokes and Brown (eds), *The Zambesian Past*, M.U.P., 1969, pp. 376-411.

[17] Tangri, R., op. cit.

that the dynamics of a structure should be consciously perceived by members of the society being studied. The people that I interviewed did not seem to be bothered with the contradictions of reality. It was only when I drew their attention to them that they attempted to re-define their social system in order to resolve these contradictions, and come to grips with realities of the new situation. Structural ambiguity then arises from the increasing number of principles of organization in society, confronting people with choice between these principles. The increasing number of principles of organization is an aspect of social change, and it is the study of this change which may enable one to account for semantic problems in ethnographic research. This is what I have attempted to do in this paper.

ACKNOWLEDGEMENT

I am grateful to the University of Malawi who financed my field research in Chingale in 1970.

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PGS, 1977 New Members . . . (*Continued from page* 86)

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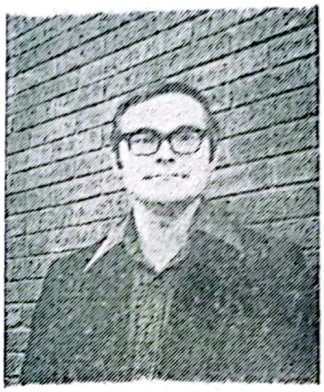

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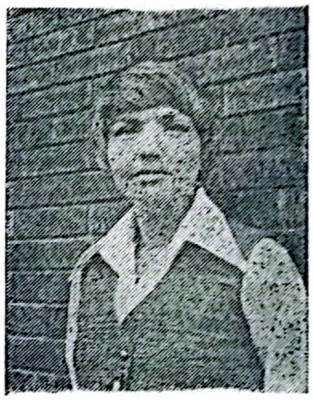

J. GARRETT

Mr. Larry Garrett and Mrs. C. Joanne Garrett's first contribution to Philippine Geographical Journal is an article entitled, "Musa Sapientum and Musa Paradisica", depicturing the variability of a banana with its interesting history. Another interesting research regarding peanut, entitled "Arachis Hypogaea L." was conducted, a beautiful subject on Agricultural History and Historical Geography. Both are involved in the private and public educations for the past six years, as well as authors in the number of newspaper articles and professional articles for the past three years. Mrs. Garrett studied at the University of Georgia as "Ford Fellow in Spanish", while Mr. Garrett holds Med and BS degrees from University of Georgia in Geographic Education. Presently, Mr. Garrett is enrolled in a program of Doctoral Study at George Peabody College while Mrs. Garrett will continue her teaching on a full-time basis and study on a part-time basis.

NELIA T. GONZALEZ

Mrs. Nelia Teodoro-Gonzalez (1924-), G.S.A., Plant Pathology, University of the Philippines; University of the Philippines Scholar, 1960; she was voted one of the six "Most Outstanding Women in Marketing," for 1968 by the Philippine Marketing Association; First Alumnus to receive University of the Philippines College of Agriculture "Distinguished Alumni Award," for 1968; Member, Presidential Panel of Judges for Philippine Inventors Week 1976, under the sponsorship of the Philippine Inventors Association, National Science Development Board. Presently, President and General Manager of the Insight Realty Corp., Cattle Country Corp., Top Business World Management Corp.; President, Philippine Hi-Bred, Inc., Sea Tours, Inc., Sea Gems Fishing, Inc., Philippine Seed Industry Association; President and Director, University of the Philippines College of Agriculture Alumni Associa-

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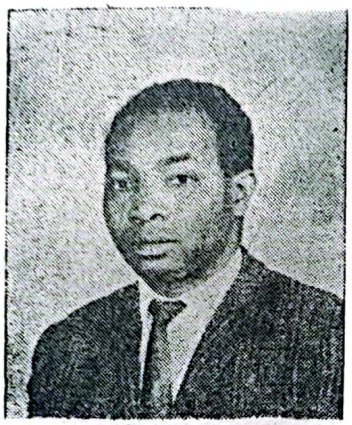

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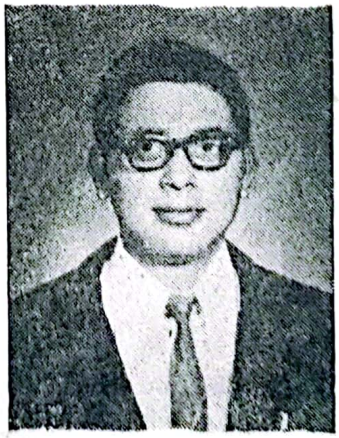

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A. K. Singh (1953-), M.A., is Research Fellow in Geography, Banaras Hindu University, Varanasi, India. Currently, he is carrying diploma in statistical techniques.

A. K. SINGH

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