A Comparative Study of Ethnobotanical Taxonomies: Swahili and Digo

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This paper explores how members of two East African language groups, with similar languages and cultures, classify the plant world. Differences primarily concern which parameters (e.g., size, uses, and longevity) determine how plant species are categorized. I show how linguistically similar classifications can obscure significant differences in folk botanical taxonomies.

Introduction

The early classic studies from which the present paper has developed began with the seminal ethnoscience work of the cognitive anthropologists Harold Conklin (1954, 1962), Charles Frake (1969), and Ward Goodenough (1957). Later influential ethnobiological taxonomic studies were done by Cecil Brown (1977, 1979), Terence Hays (1976), and especially by Brent Berlin and his co-authors (e.g., Berlin, Breedlove and Raven 1968, 1969, 1973, etc.) and peaking with Berlin's magnum opus (1992). Early methodologies for eliciting ethnobotanical folk taxonomies, now used as a standard, are found in Black (1969) and in Werner and Fenton's "card sorting" (1973); both methods were used in the present study. Later critics refined the endeavor of folk botanical classification as they encountered problems in "intra-cultural variability" among neighbors in the same speech community (e.g., Gal 1973, Pelto and Pelto 1975, Gardner 1976, Headland 1981, 1983, and several other papers in a special 1975 issue of *American Ethnologist* vol. 2, no. 1, titled "Intra-cultural Variability"). The present author found some of these problems of disagreements between informants as well.

This brief study looks at the way plants are classified by speakers of two Northeast Coast Bantu languages, Swahili and Digo. The Swahili (also written KiSwahili) data is taken from Heine and Legère (1995)

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and covers dialects spoken in mainland Tanzania near the town of Tanga, and in the Tanzanian islands of Unguja (Zanzibar) and Pemba. Although Swahili is the language of wider communication in Tanzania and much of Kenya, it is also the mother tongue of a number of people living along the Kenyan and Tanzanian coast and nearby islands. Heine and Legère collected their mainland Tanzania Swahili data from informants in Mchukuuni (near Tanga) and Moa (50 kilometers north of Tanga), both of which are located near the coast (H&L 1995:13). They state that these informants were "rural coast inhabitants" who were mother tongue speakers of "Standard-Swahili" (1995:38). These people were probably in contact with mother tongue speakers of Digo, and may also speak Digo themselves.

Digo (ChiDigo) is spoken in an area along the Kenyan and Tanzanian coast between Mombasa (Kenya) in the north and Tanga (Tanzania) in the south. The data presented in this study were obtained in Chigato village, Matuga location, approximately fifteen kilometers south of Mombasa.

The motivation for this research arose through the development of a Digo ethnobotany.[1] The forthcoming ethnobotany will consist of information in Digo concerning about fifty plants, most of which are used for medicinal purposes by local healers. An appendix will be included listing the botanical and Digo names of approximately 300 plants (See also Maundu et al. 1999). In planning the format of the ethnobotany, one consideration was whether it should be subdivided according to botanical taxa, such as TREE, SHRUB and GRASS. For this subdivision, it was necessary to determine how speakers of Digo classified botanical taxa, that is, to identify a Digo botanical folk taxonomy (this term is used interchangeably with 'ethnobotanical taxonomy'). The idea of subdividing the ethnobotany along taxonomic lines was not pursued, as most of the featured plants were categorized together. However, the differences between Digo and Swahili taxonomies warranted further investigation. This article presents some preliminary findings.

In the following sections I will first summarize Heine and Legère's observations on botanical folk taxonomies, using their data obtained from Swahili speakers, before describing my research methodology and findings for Digo.

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[1]As well as promoting the use of Digo in education, community development, and church activities, the Digo Language and Literacy Project saw the benefit of recording traditional knowledge of local plants as this is a threatened domain of language use. According to a recent United Nations Environmental Programme report, languages, and in particular minority languages, are valuable repositories of ecological information. For information on the relation between linguistic diversity and biodiversity, Internet users can refer to www.terralingua.org. See Maffi 2001.

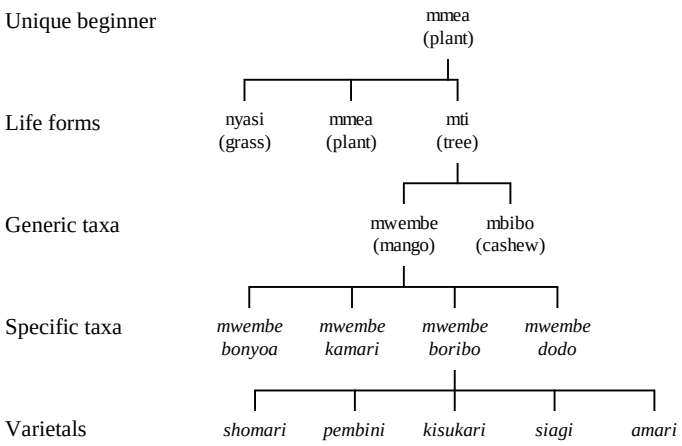
Swahili ethnobotanical taxonomies

A taxonomy consists of groupings of objects (in the case of an ethnobotanical taxonomy, primarily or exclusively plants) arranged in a hierarchical structure. Different folk taxonomies will be reflected to varying degrees in the languages of different groups, such that linguistic relations between lexemes in a language, such as 'superordinate' and 'subordinate', will correlate to a greater or lesser extent with the folk taxonomic hierarchical structure of the language users. The following hierarchy has been proposed as representing universal folk taxonomic categories (Berlin, Breedlove and Raven 1974:27; Heine and Legère 1995:15; for later refinements, see Berlin 1992).

- *Unique beginners*: abstract entities that include all other taxa in a given domain (they define their domains).
- *Life forms*: usually not more than five in number for each domain, typically expressed by primary lexemes (for example, "grass" rather than "pampas grass").
- *Generics* or *generic taxa*: many of these may exist, most expressed by primary lexemes.
- *Specifics* or *specific taxa*: less numerous than generics, commonly referred to by secondary lexemes consisting of a generic term plus a modifier.
- *Varietals*: categories within specific taxa, which are usually few in number (with the exception in botanical taxa of some cultivated plants).

A simplified Swahili ethnobotanical taxonomy based on categories used in the Tanga area (H&L 1995:29, 266) is presented in figure 1:

Figure 1. Sample KiSwahili ethnobotanical taxonomy



In figure 1, *mmea* ('plant') functions both as the term for the unique beginner (*mmea*[1]) and as a term for a life form (*mmea*[2]). The life forms, *nyasi*, *mti*, and *mmea*[2] are mutually exclusive. That is, mainland Tanzanian speakers of Swahili will recognize *mwembe* as a member of the life form *mti*, and hence as included within the basic plant taxon *mmea*[1]. However, they will recognize other plants as belonging to the life form *mmea*[2], which does not include *mwembe* and other members of the *mti* taxon.

Specific taxa and varietals tend to be found mostly in cultigens, such as mango trees, and both the Digo survey described in the following section and that of Heine and Legère (1995) summarized here focused on uncultivated plants. I will therefore be concerned only with the organization of life form categories and with the life form membership of generic taxa, rather than dealing with specific taxa and varietals.

Heine and Legère (1995: 26-30) note that a generic taxon is assigned to a given life form depending on whether or not it exhibits certain characteristics. They note that informants from Bwejuu and Jambiani (Zanzibar) used three parameters to distinguish between the life forms *mti* (tree) and *mmea* (plant): size, stem structure, and life expectancy, as illustrated in table 1. (In contrast to informants from mainland Tanzania, these informants did not distinguish a third life form, *nyasi*.)

Table 1: Characteristics of the life forms *mti* and *mmea* (Zanzibar)

Parameter	mti	mmea
Size	big (typically over two meters)	small
Stem structure	woody	non-woody
Life expectancy	several years	typically less than one year

In comparing ethnobotanical taxonomies, it is helpful to distinguish differences due to the use of diverse parameters from differences due to the relative importance assigned to the same parameters. Differences between the relative importance of parameters resulted in certain generic taxa being classed differently in Bwejuu and Jambiani. For example, *muhogo* 'cassava' (*Manihot utilissima*) was classified as *mti* in Bwejuu because it can be used as firewood but as *mmea* in Jambiani because it has a short life expectancy (H&L 1995:27). Because it does not exhibit all the characteristics of a particular life form, *muhogo* is not a prototypical *mti* or *mmea*.

To summarize, then, in describing an ethnobotanical taxonomy at the levels of life forms and generic taxa, it is necessary to distinguish:

1. which life forms are recognised;
2. which generic taxa are distinguished;
3. for each generic taxon, to which life form it is assigned;
4. the parameters according to which life forms are distinguished;
5. the relative importance of these parameters.

Digo ethnobotanical taxonomy

Methodology

In eliciting Digo data, the following procedures were followed. First, informants were asked to state the relations holding between a number of terms that earlier observation suggested might have been used to describe life forms. In eliciting information about specific taxa for the Digo ethnobotany, I had often begun with very general questions, such as, "Tell me about X." Usually the response would be along the lines of, "X is used for such and such a purpose," but occasionally I would be told, "X is a kind of Y." Sometimes the relation between X and Y was that of specific taxon to generic taxon, and on other occasions Y was a term such as 'medicine' or 'food.' Having excluded these latter terms, the remaining words corresponding to 'Y' were written on pieces of card and presented to informants who were asked to state the relationships between them. It was expected that the number of life

forms would be fewer than the terms presented, and this proved to be the case.

Following this, plant names were presented to informants in a random order, also written on pieces of card. Informants were asked if they knew the plant, and if so whether they would describe it using any of the terms for life forms established through the previous exercise. Occasionally this would lead to a modification in the list of life forms. Some informants were interviewed individually, and others were interviewed in groups of up to four people.

Whenever an informant hesitated over the classification of a generic taxon, or if there was disagreement between informants over which life form to assign a certain generic taxon to, I would ask why there was hesitation, or I would ask informants with differing opinions why they chose a certain classification. This revealed a number of parameters, and also revealed variations in the ordering of parameters between informants.

Life forms

In the course of the first exercise, all of my informants identified the following life forms: *linyasi* (corresponding to Swahili *nyasi*), *mmea* and *muhi* (corresponding to Swahili *mti*). However, one informant also provided a label (*mmea*) for the unique beginner of the plant universe.[2] This does not entail that the other informants do not recognize *linyasi*, *mmea* and *muhi* as members of the same universal category; it merely reflects the fact that these informants did not label that category. In discussing this with one group of informants, a consensus emerged that any plant could in fact be labeled *mmea* if it were young (*mtsanga*). That is, a tree seedling could be labeled *mmea* along with other taxa that belong intrinsically to the life form *mmea* (that is, *mmea*^{2}). In saying that a tree seedling could be *mmea*, these informants were not classifying the seedling as a member of the life form *mmea*^{2}, since the seedling could retain its membership of the *muhi* (tree) life form even while young. Since life forms are by definition mutually exclusive, this use of the term *mmea* would seem to refer to the young of any member of the (unlabeled) plant universe.

To summarize, then, the basic Digo ethnobotanical taxonomy consists of three life forms: *linyasi* (plural *nyasi*), *mmea* (plural *mimea*) and *muhi* (plural *mihi*). *Linyasi* corresponds fairly closely to English *grass*, but *mmea* is more restricted and *muhi* less restricted than English *plant* and *tree* respectively.

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[2]This informant, Omari Mohammed Makpwenda, who is employed as a gardener, was the only person interviewed who had post-primary school education. The other informants are all engaged in subsistence agriculture, with supplementary income provided by occasional work, relatives in employment, and the sale of excess produce

Apart from the inclusion of these three basic life forms, however, there were variations between informants. Some informants appeared to treat *mnazi* 'coconut palm' (*Cocos nucifera*) as a life form. (There was no generic 'palm' label.) This may have been due to its simultaneously important and ambiguous status. No other plant rivals the coconut palm either culturally or linguistically among the Digo. Coconut palms are a measure of wealth, and are used for roofing, mats, fence posts, seats, rope, palm wine, and more. Every part of the coconut palm and each stage of its development is labeled, usually by primary lexemes. At the same time the coconut palm is ambiguous between the life forms *mmea* and *muhi*. Like a typical *mmea* it is cultivated, but like a typical *muhi* it is large and bears fruit (see below). Hence those informants who did not classify *mnazi* alongside the life forms classified it either as *mmea* or as *muhi*, but always with reservations. It seems that while other less important plants can be assigned an ambiguous status, this is not an option for the coconut palm among some Digo.

Other variations concerned the terms *ruwa* ('flower') and *mboga* ('vegetable'). Omari Mohammed Makpwenda, mentioned above, treated both of these as life forms. For Omari, *ruwa* covered most ornamental plants as well as individual flowers and blossoms, whereas all other informants treated *ruwa* as a part of certain *mihi* ('trees'), i.e., 'blossom.' Similarly, while for Omari *mboga* described annual cultigens (edible plants that have to be planted each year, such as cabbage and tomatoes), for other informants *mboga* described any food used to accompany a cassava or maize meal, and hence covered meat and beans as well as vegetables.

Identifying parameters

In the section on Swahili I concluded that in describing the life forms and generic taxa included in an ethnobotanical taxonomy it is necessary to distinguish both the parameters according to which life forms are distinguished and the relative importance of these parameters. Table 2 summarizes the parameters used to distinguish the life forms *muhi* and *mmea*. Note that in table 1 above, the informants from Bwejuu and Jambiani only identified life forms *mti* and *mmea*. On the other hand, the Digo informants also identified a life form *linyasi* ('grass'). However, because no grasses were included in the elicitation sessions, no identifying criteria for this life form were forthcoming.

Table 2: Characteristics of the life forms *muhi* and *mmea*

Parameter	muhi	mmea
Cultivation and location	not cultivated, typically found in the bush *(tsakani)*	typically cultivated, usually found in farms and gardens
Uses	used as medicine *(dawa)* but not as food, apart from fruits	plant itself may be used as food or spice
Size	big (typically over two meters)	small
Fruit	may bear fruit, often edible.	does not bear fruit

The parameters have been tentatively placed in order of importance in table 2. For example, although a prototypical *muhi* is large, even a plant such as *chibalazi Mlungu* (*Desmodium velutinum*), which in English would be called an herb or grass, was classified by the majority of Digo informants as *muhi* because it grows wild. This plant and a number of others were also described as *chidzihi*, the diminutive form of *muhi*.

Classification of generics depends on a combination of the number and relative importance of the parameters, and the extent to which each parameter applies to a given plant. For example, one informant, Fatuma Juma Malimau, a skilled herbalist, said of *mbirimbi* (*Averrhoa bilimbi*), "*Ni muhi, lakini nkuphandwa*" 'It's a tree, but it's usually cultivated.' Although being cultivated rather than growing wild is usually the most important parameter, *mbirimbi* may grow to over two meters high and bears small, cucumber-like fruits which are sliced and added to stews or squeezed to yield juice that is used as a bleaching agent. According to the parameters of size, uses and fruit, *mbirimbi* qualifies as *muhi*, even though it is cultivated. Other informants could not decide whether to classify *mbirimbi* as *muhi* or *mmea* and so placed it ambiguously in both taxa.

On the other hand, *mbalazi* 'pigeon pea' (*Cajanus cajun*) was classified by all informants as *mmea*, despite qualifying as *muhi* under three parameters: it can grow to over two meters in height, it bears edible fruit, and its leaves are used as a medicine to treat eye complaints. However, unlike *mbirimbi*, which is only cultivated by a few people, *mbalizi* is a common cultigen, and pigeon peas are sold commercially as well as being used for home consumption. *Mbalazi* is

a member of the life form *mmea* because it is an important cultigen, whereas *mbirimbi* is classified as a member of the life form *muhi*, or as a marginal member of the life form *mmea*, because it is a relatively unimportant cultigen.

Conclusions

This study, although restricted in its scope, has demonstrated that linguistically similar classifications of natural categories may obscure significant differences in folk botanical taxonomies. Although the categories plant*/mmea/mmea*, tree*/mti/muhi* and grass*/nyasi/linyasi* suggest that English, Swahili and Digo speakers classify the botanical universe in similar ways, a preliminary investigation reveals that these categories (life forms) are not identical. Even among speakers of the same language, both the number of life forms and their characteristics may differ, as Heine and Legère's (1995) study of Swahili dialects reveals. The Digo study reported here was motivated by the need to know how best to organize a published ethnobotany, but the results may also have implications for more general dictionary work and for translation.

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