

THE FOLK SUBGENUS: A NEW ETHNOBIOLOGICAL RANK

CECIL H. BROWN

Department of Anthropology
Northern Illinois University
DeKalb, Illinois 60115

ABSTRACT.—A seventh ethnobiological rank, the folk subgenus, is recognized and added to Brent Berlin's framework of principles of folk biological classification and nomenclature. A class affiliated with the subgeneric rank is monomially labeled and immediately included in a generic category. Identification of the folk subgenus removes certain terminological difficulties which arise when describing the growth of ethnobiological nomenclature. Most importantly, its recognition permits an elegant formal representation of folk biological taxonomy as empirically attested in several detailed field studies.

INTRODUCTION

In a recent article I (Brown 1986) presented several proposals concerning the growth of ethnobiological nomenclature. One of these proposals, that folk biological categories of the specific rank evolutionarily precede categories of the generic rank, was strongly challenged by Brent Berlin in his accompanying response to my paper. Berlin (1972), in an earlier pioneering work, proposed the privileged status of generic classes in folk taxonomies and their precedence in biotaxonomic development. One reason for my departure from this widely accepted view is that it presents certain terminological difficulties in describing details of the growth and development of folk biological taxonomy. However, I have come to recognize that my own proposal is also problematic with respect to terminology. The present essay attempts to resolve these problems and to reconcile my position with that of Berlin. It does so by recognizing a new ethnobiological rank, the folk subgenus.

BACKGROUND

In Berlin's (1972, with Breedlove and Raven 1973, 1974) framework, each biological class within a folk taxonomy belongs to one of six ethnobiological ranks. Berlin identifies fixed relationships between ethnobiological ranks and levels of taxonomic inclusion (Fig. 1).

The most inclusive class of a folk taxonomy belongs to the "unique beginner" or "kingdom" rank. For example, the unique beginner class in American English folk botanical taxonomy is *plant*. The unique beginner is associated with the first level of taxonomic inclusion or Level 0. Classes affiliated with the "life-form" rank occur only at Level 1 in folk taxonomies. Examples of life-form classes from American English include *tree*, *vine*, and *bush*. Categories of the "generic" rank can also occur at Level 1 (not illustrated in Figure 1), but the vast majority of these are found at Level 2 and are subordinate to life-form classes of Level 1. Examples of generic classes are American English *oak*, *maple*, and *walnut*, which encompass organisms that are also kinds of *tree* (a life-form class).

Categories of the "specific" rank are immediately included in generic classes at Level 3 (or at Level 2 if pertinent generics are at Level 1). Examples are *white oak*, *pin*

Ethnobiological Rank:	Sample Botanical Classes:	Taxonomic Level:
Unique Beginner	plant	Level 0
Life-form	tree (other life-forms)	Level 1
Generic	oak (other generics)	Level 2
Specific	white oak (other specifics)	Level 3
Varietal	swamp white oak (other varietales)	Level 4

FIG. 1—Ethnobiological ranks and levels of taxonomic inclusion with sample botanical classes from American English.

oak, and *post oak*, all of which are kinds of *oak* (a generic class). Specific categories are occasionally partitioned into finer classes of a "varietal" rank, e.g., *swamp white oak*, a kind of *white oak*. The sixth ethnobiological rank, "intermediate," is not represented in Figure 1 since *labeled* intermediate classes are rare in biological taxonomies. Classes of the latter rank typically occur between life-forms of Level 1 and generics of Level 2.

Rank affiliation is determined by several other features in addition to taxonomic level. For example, classes of the unique beginner and life-form ranks are always *polytypic*, that is, they immediately include at least two labeled members. On the other hand, generic, specific, and varietal categories may be either polytypic or *terminal*. Terminal classes include no labeled members.

One important criterion of rank affiliation is linguistic or nomenclatural in nature. For example, life-form classes are labeled by *primary lexemes* (usually simple, monomial terms such as *tree*). Generic classes are also labeled by primary lexemes. On the other hand, specific classes are always labeled by *secondary lexemes*. A secondary lexeme consists of the term for the class in which its referent is immediately included and a modifier, e.g., *white oak*, a kind of *oak*. If specific classes are further partitioned, they include varietal classes which are also labeled by secondary lexemes. A secondary lexeme in the terminology of contemporary linguistics is a "binomial label."

The above is only an outline of Berlin's framework, sufficient for understanding the discussion that follows. Readers wishing further detail are referred to Berlin, Breedlove, and Raven (1973, 1973).¹

Berlin (1972) places the ethnobiological ranks described above in developmental perspective. He assembles evidence of several kinds attesting to a sequence in which languages typically encode ethnobiological ranks. He notes, for example, that classes of the generic rank are vastly more numerous in folk taxonomies than those of other ranks and that these categories are psychologically basic. Consequently, he proposes that the first biological classes to develop in languages are always generic. After generic classes are encoded, classes of either life-form rank or specific rank or both may emerge. Subsequently, taxonomies expand by encoding classes of either the intermediate or the varietal rank, or both. The unique-beginner class is the last to develop (Fig. 2).

RECENT INTERPRETATIONS

Recently, I (Brown 1986) presented a revised sequence for the addition of nomenclatural categories to languages (Fig. 3). The major departure of this sequence from

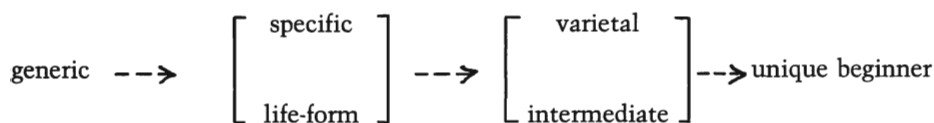


FIG. 2—Berlin's sequence for the addition of nomenclatural categories to languages (adapted from Berlin 1972).

that of Berlin is that I recognize specific categories as preceding generic ones. A principal reason for this revision relates to my recognition that polytypic generic categories typically develop through expansion of reference of terms for classes included in those categories. For example, the Navaho term *kat* labels a generic class consisting of three species of juniper (Berlin 1972:60). The same term is also used more restrictively to refer to one of these three species, i.e., "common juniper," while the other two species are labeled by secondary lexemes, i.e., *kat-nee-ay-li* "strained juniper" and *kat-dil-tah'-li* "cracked juniper." Use of a single term, such as *kat*, to refer to both a generic class and a specific member of that class is known as *generic/type-specific polysemy*. In my paper (Brown 1986) I compiled data strongly indicating that generic/type-specific polysemy typically develops through expansion of reference. For example, in the Navaho case, it is highly likely that *kat* referred initially only to "common juniper," and that it took on its generic application when it expanded to encompass all three species of juniper. Since polytypic generic classes typically develop through expansion of terms for specific classes (or type-specifics), it follows that classes of the specific rank typically precede classes of the generic rank, hence, the revision (Fig. 3).

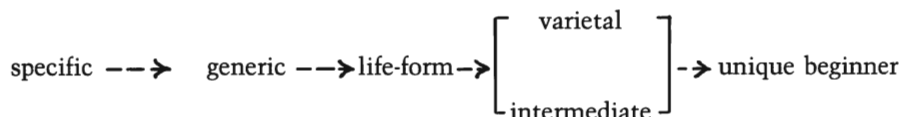


FIG. 3—Revised sequence for the addition of nomenclatural categories to languages (from Brown 1986).

Where Berlin and I differed significantly is in the interpretation of the rank affiliation of the class whose label expands to designate a more inclusive generic category of which it is a member. By the criteria of Berlin's framework, before expansion occurs, the category is affiliated with the generic rank. Thus, a term for a generic class referentially expands to a more comprehensive generic category. In addition, the original less inclusive generic class becomes a specific category (more precisely, a type-specific) when expansion occurs. In my framework, before referential expansion takes place, the labeled category is a folk specific and remains so after its label expands to the generic class of which it is a member. This avoids the terminological complication of having a *generic* category develop from another *generic* category with the latter changing in rank affiliation, i.e., from generic to specific. Under my interpretation, a generic category simply develops from a specific class and this involves no change in rank affiliation.

Another reason for my proposal relates to changes in folk biological classification and nomenclature that occur with a transition from a hunter-gatherer economy to an agrarian one (Brown 1986). Such a shift appears to involve the following developmental pattern: A relatively small number of plants and animals in a local environment are named by hunter-gatherers. These categories, which are designated by primary lexemes, for the most part are terminal and bear a one-to-one relationship to scientific species. In addi-

tion, they are readily perceptible to their namers without close attention (in other words, they are salient). With a transition to agriculture, this inventory of biological names and categories increases significantly in size (cf. Brown 1985). In addition, named, polytypic classes develop which encompass two or more, and sometimes many, related species. This is often achieved through expansion of reference of a biological label which originally was restricted to a single species. The emerging multispecies classes tend to acquire considerable salience, while the salience of labeled monospecies categories included in them tends to decrease.

In Berlin's framework, terminal classes of forager taxonomies are generics. This is so, despite the fact that they typically bear a one-to-one relationship to scientific species. I have proposed that these categories should be called specifics rather than generics in part because the word *specific* denotes a less comprehensive category than does *generic*. This proposal is also motivated by the observation that polytypic, multispecies classes which arise with a transition to farming typically develop through expansion of reference of terms for terminal, monospecies classes of foragers. In Berlin's framework the former classes are generic while, ironically, so are the polytypic, multispecies categories which develop from them. In my framework these are specific classes which, through expansion of reference of their labels, give rise to more comprehensive generic categories.

In his reply to my paper (Brown 1986), Berlin (1986) writes that I "treat all *terminal* taxa as *folk species*." In response to his comments I point out that I, in fact, only propose that terminal taxa occurring in biological taxonomies of hunter-gatherers be relabeled "specific" taxa, leaving open the possibility that terminal classes in agrarian taxonomies are generic. One reason for this is that I did not want to imply that *only* polytypic biological classes are to be recognized as affiliated with the generic rank. However, restricting my relabeling proposal to terminal classes of hunter-gatherers presents a serious problem. This is that in my framework a transition from foraging to farming entails that a specific taxon (*sensu* Brown), which is not dominated by a generic class, becomes a generic taxon (*sensu* Berlin) despite the fact that its range of reference does not change. Thus my proposal also leads to an unwarranted terminological complication.

THE FOLK SUBGENUS

From all of this I have concluded that neither Berlin's terminology nor the terminology I have proposed is sufficient for describing in an elegant manner the phenomena observed. As a consequence, I am abandoning my relabeling suggestion in favor of Berlin's original framework with one major modification. This modification is that a seventh ethnobiological rank be recognized, i.e., the folk subgenus. In brief, a subgeneric class is a taxon labeled by a primary lexeme which is immediately included in a generic class. This differs from a specific taxon, which is also immediately included in a generic class, in that a subgeneric is always labeled by a primary lexeme while a specific class is always labeled by a secondary lexeme.

The generalizations of Berlin's original framework (1972, Berlin *et al.* 1973, 1974) did not include the possibility that taxa labeled by primary lexemes could be immediately included in generic classes. The only classes recognized as being so included were those labeled by secondary lexemes and these, of course, are specific taxa. An exception to this aspect of his early formulation is recognition of the type-specific class as a specific taxon despite the fact that type-specifics are labeled by primary lexemes. In a latter publication (Berlin 1976), other exceptions were recognized. In fact, Berlin significantly altered his framework in 1976 when writing that "it now appears that where a generic taxon is further partitioned into specific classes, and one or more of the included species

are monomially designated (type-specifics excluded), *the monomial(s) will invariably refer to a taxon of major cultural importance*" (Berlin 1976:391-92).

Elsewhere I (Brown 1986:6) have cited several ethnobiological studies which document inclusion of monomially designated classes (i.e., taxa labeled by primary lexemes) in generic categories. However, contrary to Berlin's observation, these sources do not identify such taxa as typically being extraordinarily important or salient. Whatever their degree of cultural importance, it is now empirically certain that taxa labeled by primary lexemes are more than occasionally found to be immediately included in generic classes.

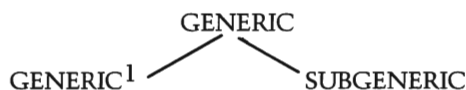
From the above quote of Berlin, it appears that he considers classes labeled by primary lexemes included in generics to be affiliated with the specific rank and thus essentially equivalent to classes labeled by secondary lexemes similarly included in generic categories. However, there are reasons for believing that these two kinds of classes are not equivalent, at least psychologically. Consequently, they should not be associated with the same ethnobiological rank.

As I have argued on two occasions (Brown 1985, 1986), folk classes of a taxonomy labeled by secondary lexemes (binomials) are overall less salient than categories of the same taxonomy labeled by primary lexemes. While I do not intend to repeat this lengthy argument here, I should mention my central hypothesis that binomial terms are more easily remembered or recalled than monomial terms (for lower-salience referents) and, consequently, are typically pressed into service as labels for lower-salience classes in order to enhance their "rememberability" (Brown 1985:51-52). On the other hand, since folk classes labeled by primary lexemes (monomials) are typically of higher salience than those labeled by secondary lexemes, they do not require rememberability enhancing labels.

A major difference between monomially designated classes included in generics and binomially designated classes included in generics, then, is that the former typically are considerably more salient than the latter. On the basis of this psychological distinction, I propose that these respective taxa are affiliated with two different ethnobiological ranks, respectively the folk subgenus and the folk species.

The folk subgenus is so named because in all but one respect it is identical to the folk genus. Like generic taxa, subgeneric classes are labeled by primary lexemes. If a generic class is immediately included in a labeled category, that category is always labeled by a primary lexeme. Similarly, subgeneric classes are always included in taxa designated by primary lexemes. Significantly, subgeneric classes demonstrate the high degree of psychological salience characteristic of generic categories. The only difference between subgenerics and generics is that the latter are always immediately dominated by a generic class, while the former are never so dominated (but, as shown presently, a subgeneric class can be immediately included in another subgeneric class).

The subgeneric can be regarded as a kind of generic taxon. This logically necessitates recognition of an additional kind of generic class, i.e., those generic taxa which are never immediately included in another generic category or, in other words, the traditional generic of Berlin's framework. Thus the word "generic" takes on both a restricted sense and an expanded sense: respectively (1) as the traditional generic, and (2) as a category encompassing both the traditional generic and the subgeneric (Fig. 4).



¹Traditional "generic" of Berlin's framework.

FIG. 4—Representation of the two types of generic classes.

The proposal of a subgeneric rank does introduce one complication into Berlin's framework which may actually help to resolve the long-standing problem of distinguishing life-form classes from polytypic generics occurring at Level 1 in folk taxonomies. Life-forms, in addition to always occurring at Level 1, are labeled by primary lexemes and immediately include taxa (generics) labeled by primary lexemes. Generic taxa occurring at Level 1 which immediately include subgeneric classes are, then, formally very similar to life-form classes, since they occur at Level 1, are labeled by primary lexemes, and immediately include taxa (subgenerics) designated by primary lexemes. Given this, the question arises of how one distinguishes life-form classes from Level 1 generics which dominate subgenerics?

There is, in fact, no clear-cut mechanical-like procedure for making such a distinction. However, there is a factor to take into consideration which points to one interpretation as opposed to the other. This is the occurrence in a contrast set of binomially labeled taxa along with monomially labeled taxa. For example, in Tzeltal (Chiapas highlands, Mexico) the word *čan*, which extends referentially to all true snakes, labels a Level 1 category that immediately includes 22 labeled classes (Hunn 1977:238). Of these 22, nine are designated by monomials, e.g., *kantil* "moccasin," and the remaining 13 are binomially labeled, e.g., *haʔal čan* "garter snake." In terms of the strict criteria of Berlin's original framework, *čan* is a life-form category. However, the fact that the majority of included taxa are labeled binomially suggests that *čan* is psychologically a generic taxon. This can be taken as evidence indicating that monomially labeled taxa included in *čan* are subgenerics rather than generics and, of course, that *čan* is a generic category rather than a life-form.²

I suggest, then, that, as a rule of thumb, a Level 1 class which immediately includes taxa labeled by both monomial and obligatory binomial terms should be identified as being a generic taxon rather than a life-form when the majority of included taxa are binomially labeled.³ This, of course, also means that included taxa labeled by monomials are subgenerics rather than generics. A corollary of this suggestion is that a Level 1 class should be regarded as a life-form category when the majority of included taxa are labeled by monomials. In such a case, taxa designated by monomials are generics rather than subgenerics.

I would also like to suggest another rule of thumb for distinguishing life-form classes from Level 1 generics that immediately include subgenerics. Life-form categories are typically the most polytypic classes of folk biological taxonomies (Brown 1984:14-19), which is to say that life-forms typically include immediately many more labeled categories than classes of other ranks (save the unique beginner). I would estimate that life-form categories recognized in terms of Berlin's strict criteria rarely, if ever, immediately include fewer than 10 labeled taxa. Thus, I suggest that Level 1 classes which immediately include fewer than 10 labeled taxa be regarded as affiliated with the generic rank, meaning that monomially labeled taxa included in such classes are to be regarded as subgenerics. A corollary of this suggestion is that categories immediately including more than 10 labeled taxa be regarded as affiliated with the life-form rank. Of course, given my above suggestion, this corollary will hold only when the majority of immediately included taxa are monomially labeled.

These proposals logically imply one further revision in Berlin's framework. In the latter he identifies two types of binomial labels: the productive primary lexeme and the secondary lexeme. A productive primary lexeme is a binomial which labels a class included in a contrast set which also contains taxa designated by monomials. On the other hand, a secondary lexeme is a binomial which labels a class included in a contrast set in which all other included classes (save a type-specific) are labeled by obligatory binomials. In terms of the 1976 version of Berlin's framework, generics can dominate contrast sets consisting of both monomially and binomially labeled classes. Also in terms

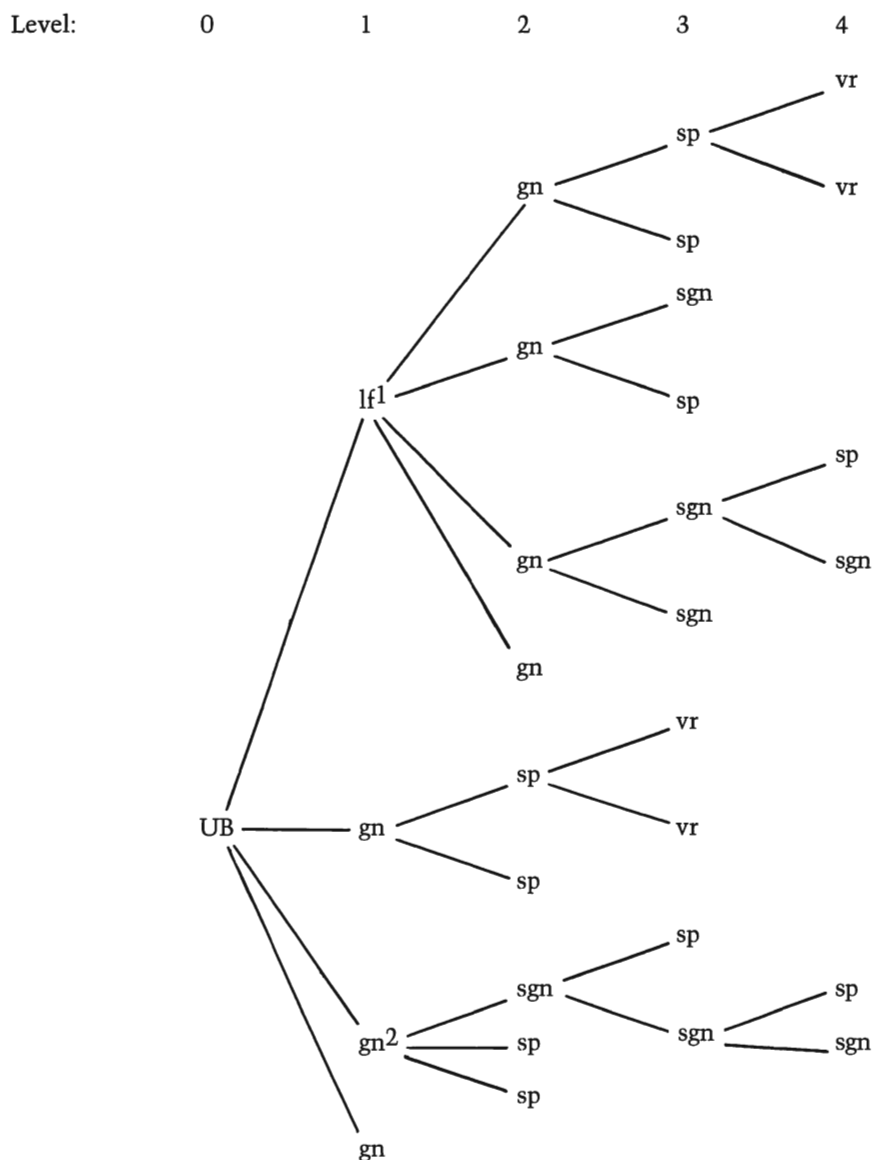
of this framework, when such a contrast set is in evidence, the binomial labels involved are productive primary lexemes rather than secondary lexemes. I suggest that such binomial labels be regarded as secondary lexemes and, further, that the taxa they label always be regarded as affiliated with the specific rank. Productive primary lexemes, then, will be restricted in designation to generic classes immediately included in life-form categories. *This revision entails that both subgeneric and specific taxa can occur in the same contrast set if it is dominated by a generic class.*

The above discussion is focused, for the most part, on Level 1 generics which immediately include subgenerics at Level 2. Subgenerics also occur at Level 3 in folk taxonomies and these are easily identifiable. They are those taxa labeled by primary lexemes that are immediately included in generics of Level 2 which are in turn immediately included in life-forms of Level 1. An example of Level 3 subgeneric categories comes from Tzeltal folk biological classification (Hunn 1977:xxix). The term *č'o* (roughly glossed "rat") labels a taxon which is immediately included in the life-form class *čanbalam* "mammal." The class it designates is, of course, generic. Twelve taxa are immediately included in *č'o* of which eight are labeled binomially, e.g., *sabin č'o* "rice rat," while only three are labeled monomially, e.g., *sin* "harvest mouse." The latter three taxa are, of course, subgenerics.⁴ In addition, in terms of the revised framework the 12 taxa labeled by binomials are specifics.

An example of a Level 3 botanical subgeneric comes from Saami, a language of reindeer herders of Norwegian Lapland (Anderson 1978:519). The life-form class *suoi'dni* "bladed plant" immediately includes the generic category *sinot* which dominates two monomially labeled taxa which are, of course, subgenerics in terms of the revised framework. The first of these two taxa is *giekka-njuolla* which extends to the plant species *Deschampsia flexuosa* ("wavy-hair grass") and *Festuca ovina* ("sheep's fescue"). The second taxon, which encompasses any grazed species of families Gramineae and Juncaceae, bears the same label as the generic category in which it is immediately included, i.e., *sinot*. In terms of Berlin's original framework, the latter class is a type-specific. In terms of the revised framework, it is a subgeneric whose label happens to designate the class in which it is immediately included. To keep terminology more in line with the revised framework, I suggest that the so-called "type-specific" be renamed "type-subgeneric." Additional motivation for this proposal is discussed presently.

Saami provides another example of Level 3 subgeneric taxa which entails inclusive relationships mediated by a class of the intermediate rank (Anderson 1978:457). The life-form *guolli* "fish" immediately includes the intermediates *sái'va-guolli* "fresh water fish" and *mearra-guolli* "ocean fish." A number of generic taxa are immediately included in *sái'va-guolli* at Level 2 including *čuov'ža* which extends to any member of the genus *Coregonus* ("whitefish"). The latter term also labels a type-subgeneric (*C. lavaretus*) at Level 3 which occurs in a contrast set with at least two other subgeneric taxa, *roabát* (*C. vandesius*) and *reas'ka* (*C. albula*).

The subgeneric is similar to the traditional generic of Berlin's framework in that subgeneric classes too can immediately include classes labeled by binomials or, in other words, specific taxa. Ndumba (Papua New Guinea Highlands) provides an example (Hays 1974). The life-form *mauna* "small herbaceous plant" dominates over 60 generic taxa at Level 2. One of these, *heng'gunru*, encompasses various species of the genera *Alpinia*, *Curcumba*, *Homstedia*, and *Riedelia* which fall into 14 labeled subgeneric classes at Level 3 (Hays 1974:393). One of the latter, *kaapi* (*Curcumba longa*), immediately includes three labeled taxa at Level 4, one of which, *fai'kaapi*, is designated by a binomial (secondary lexeme) and is, consequently, a specific taxon. As it happens, the other two members of this contrast set, *kaapi* and *kwaam'bimba*, are monomially labeled. These are examples of subgeneric taxa which are immediately included in a subgeneric class,



UB = Unique beginner; lf = life-form; gn = generic; sgn = subgeneric; sp = specific; vr = varietal.

¹As a rule of thumb this taxon is a life-form class only if it immediately includes more than 10 taxa, the majority of which are monomially labeled.

²As a rule of thumb this taxon is a generic class only if the majority of immediately included taxa are binomially labeled.

FIG. 5—Schematic representation of the relationships of the six universal ethnobiological ranks and their relative hierarchic levels as thus far empirically attested.

a relationship which should be formally incorporated into the revised framework. *Kaapi* at Level 4, of course, is a type-subgeneric.

In the Ndumba example, a Level 3 subgeneric dominates both specific and subgeneric classes at Level 4. Apparently subgenerics found at any taxonomic level can be partitioned into specific and subgeneric categories. For example, in Tobelorese (Halmahera Island, Indonesia) a subgeneric class of Level 2 immediately includes both specifics and subgenerics at Level 3 (Taylor 1980:391-392). In this case the Level 2 subgeneric, *o kohutaa* "banana type," is indirectly included in the Level 1 generic, *o bole* "banana," through an intermediate category, *o bole (ma ca)* "good banana." This subgeneric immediately includes *o kohutaa*, a type-subgeneric, and *o kohutaa-galela*, a specific. As it happens, the type-subgeneric is partitioned at Level 4 by two specific taxa, *o kohutaa ma garehe* "white banana type" and *o kohutaa ma doka-dokara* "red banana type."

Tobelorese also offers a complex example in which three subgenerics are hierarchically related (Taylor 1980:452). A Level 1 generic, *o tahubí* (also known as *o kaboja*), encompasses all varieties of *Manihot esculenta* ("cassava"). It immediately includes at Level 2 the subgenerics *o tahubí* (a type-subgeneric) and *o inggerehe*. The Level 2 type-subgeneric is partitioned into *o tahubí* (a type-subgeneric) and *o karet* at Level 3. Finally, the Level 3 type-subgeneric immediately includes 14 subgenerics at Level 4, none of which, by the way, bear the label *o tahubí*.

Figure 5 is a schematic representation of the relationships of the six universal ethnobiological ranks (including the new subgeneric rank, but not the intermediate) and their relative hierarchic levels as thus far empirically attested in folk biological taxonomies studied in detail. In presenting Figure 5, I am not proposing that these associations exhaust the range of relationships that actually occur. For example, it is not inconceivable that some specific classes immediately included in subgenerics may be found to be partitioned into varietal taxa in some languages. However, since such a relationship has yet to be observed, Figure 5 depicts all specific taxa as being terminal if immediately included in subgenerics.

PROBLEMS RESOLVED

Recognition of the folk subgenus resolves several problems in describing patterns in the growth of ethnobiological nomenclature. For example, in terms of the old framework, monospecies generic classes become specific categories (more precisely type-specifics) when words for them expand referentially to create multispecies generic classes despite the fact that their membership does not change. In other words, generic classes inelegantly become specific classes. In terms of the revised framework, when a word for a monospecies generic class expands referentially, creating a multispecies generic category, the monospecies generic simply becomes another kind of generic, i.e., a subgeneric (more precisely a type-subgeneric) or, in other words, a generic category immediately included in another generic category. Generic classes, then, elegantly remain generic classes after expansion of reference.

By abandoning my (Brown 1986) relabeling proposal in favor of a revised framework of which the subgeneric is a component, another terminological problem is solved. The proposal to which I refer is my suggestion that terminal classes occurring in taxonomies of hunter-gatherers be relabeled "specific." The problem with this proposal, as mentioned earlier, is that it implies that a specific taxon (*sensu* Brown 1986), which is not dominated by a generic class, becomes a generic taxon with a shift from foraging to farming despite the fact that its range of reference does not change. In terms of the revised framework, such a class is generic, not specific, and remains generic after a transition to agriculture.

An important aspect of the revised framework is that it buys us the ability to deal elegantly with systems in flux. The fact that it permits both subgeneric and specific taxa

to belong to the same contrast set is particularly significant in this respect. As I have outlined elsewhere (Brown 1986:6-9), when generic/type-subgeneric polysemy (formerly, generic/type-specific polysemy) develops through expansion of reference, the generic class may initially include several taxa labeled by primary lexemes (monomials) in addition to the type-subgeneric. As folk biological taxonomies grow in size and the salience of taxa in general decreases significantly (cf. Brown 1986), there is a tendency for such labels to be replaced by binomials, especially if the classes they designate decrease in salience. This creates the empirically attested situation in which a generic class immediately includes both taxa labeled binomially and taxa labeled monomially. In terms of the old framework, both types of taxon belong to the same rank, i.e. the specific rank, despite that binomially labeled classes usually are considerably less salient than monomially labeled classes. Formally recognizing these as being specifics and subgenerics respectively of the same contrast set captures this psychological difference, a difference which reflects a system in a state of change.

There is a tendency over time for all monomially labeled classes of a contrast set dominated by a generic taxon to develop binomial labels. Indeed, most polytypic generic classes reported in the literature immediately include (1) taxa, all of which are binomially labeled or (2) taxa, all of which are binomially labeled save the type-subgeneric. Indeed, it is this empirical observation that motivated Berlin to propose initially that all classes which partition a generic category are labeled by secondary lexemes (save the type-subgeneric).

It appears that typically the type-subgeneric is the last monomially labeled class of a contrast set dominated by a generic taxon to receive a binomial name (cf. Berlin 1972). This almost certainly relates to the fact that the type-subgeneric is typically the most salient category of a contrast set. Indeed, as is well understood now, a labeled taxon which becomes a type-subgeneric (after expansion of reference of its label to a more comprehensive generic class of which it is a member) is chosen for referential expansion because of its special salience (cf. Berlin 1972). It is, then, entirely appropriate to identify such a class as being a generic taxon (more precisely, a type-subgeneric) rather than, as in Berlins' original framework, a specific class (more precisely, a type-specific) which is typically low in salience relative to generic classes.

The revised framework also permits a more elegant treatment of changes involving Level 1 categories. It is probably the case that polytypic generics of Level 1 occasionally develop into life-form categories and vice-versa. Consequently, there will be points in times in which Level 1 categories will demonstrate properties of both life-form classes and polytypic generics. The Tzeltal Level 1 category cited above, *čan* "true snakes," is a case in point. Recall that of the 22 labeled classes immediately included in *čan*, nine are designated by monomials and 13 by binomials. Of course, in terms of Berlin's original framework, *čan* is a life-form class. On the other hand, I have suggested the rule of thumb that a level 1 category which immediately includes taxa labeled by both monomial and binomial terms should be identified as being a generic taxon rather than a life-form when the majority of included taxa are binomially labeled. By this rule of thumb, *čan* is a generic category. In addition, it is a generic class that immediately includes both specific classes (which are identified by their binomial labels) and subgenerics. By allowing Level 1 generics such as *čan* to encompass both specific and generic (more precisely, subgeneric) taxa at Level 2, the revised framework captures the possibility that such categories may be shifting rank affiliation from life-form to generic or vice versa.

My rule of thumb is, of course, an arbitrary convention. When a Level 1 category is in transition between life-form and generic ranks, it is in fact neither a full life-form class nor a full generic class but rather something inbetween. This is the case despite the answer yielded through reference to my rule of thumb. The revised framework deals

with this ambiguity in a clearcut manner while the original framework cannot handle it at all.

Other changes can occur in folk biological classification and nomenclature that can be handled by the revised framework but not by the original rendition. Consider, for example, Tobelorese classification and naming of rays (Taylor 1980:257-258). Two patterns are observed. In the first, the generic term *o noara* "ray" is immediately included in the life-form *o nawoko* "fish" and immediately includes two subgeneric taxa, *o gugudai* and *o gorohutu*, each of which designates a species of spotted fantail ray. The second pattern is the same as the first except that an additional class, labeled by *o gugudai*, mediates between the two subgenerics and *o noara* "ray" such that *o gugudai* and *o gorohutu* are identified as being types of *o gugudai*. What is probably occurring in this example is that some speakers of Tobelorese have developed a new subgeneric class which encompasses the two classes of spotted fantail ray by referentially expanding a label for one of these two classes, i.e., *o gugudai*, which, of course, becomes a type-subgeneric. Lacking a folk subgeneric rank, there is no way in which such a change can be similarly dealt with in Berlin's original framework.

CONCLUSION

The revised framework developed in this paper would seem to resolve the terminological problems outlined earlier involved in describing aspects of the growth of ethnobiological nomenclature. In addition, it would seem to reconcile my position with that of Berlin by allowing for the privileged status of generic classes (of two types, see figure 4) and their precedence in biotaxonomic development (figure 2 is valid, while figure 3 is not). However, most important is that recognition of the folk subgenus permits us to represent in an elegant, formal manner folk biological classification and nomenclature as empirically attested in detailed field studies.

ACKNOWLEDGEMENTS

I am grateful to Terence Hays, Joe Malone, and Ralph Gardner White who read and commented on a circulated preliminary draft of this paper. In addition, I want to thank Brent Berlin and Eugene S. Hunn for their reactions to a shorter, verbal presentation of the same given at the 10th Annual Meeting of the Society of Ethnobiology.

LITERATURE CITED

- ANDERSON, MYRDENE. 1978. Saami ethnobotany: Resource management in Norwegian Lapland. Ph.D. dissert., Yale University, New Haven, Connecticut.
- BERLIN, BRENT. 1972. Speculations on the growth of ethnobotanical nomenclature. *Language in Society* 1:52-86.
- . 1976. The concept of rank in ethnobiological classification: Some evidence from Aguaruna folk botany. *Amer. Ethnol.* 3:381-99.
- . 1986. Comment. *Current Anthr.* 27:12-13.
- BERLIN, BRENT, DENNIS E. BREEDLOVE and PETER H. RAVEN. 1973. General principles of classification and nomenclature in folk biology. *Amer. Anthropol.* 75:214-42.
- . 1974. Principles of Tzeltal plant classification. Academic Press, New York.
- BROWN, CECIL H. 1984. Language and living things: Uniformities in folk classification and naming. Rutgers Univ. Press, New Brunswick.
- . 1985. Mode of subsistence and folk biological taxonomy. *Current Anthr.* 26:43-62.
- . 1986. The growth of ethnobiological nomenclature. *Current Anthr.* 27:1-19.
- ELLEN, R. F. 1986. Ethnobiology, cognition and the structure of prehension: Some general theoretical notes. *J. Ethnobiol.* 6:83-98.
- HAYS, TERENCE. 1974. Mauna: Explorations

LITERATURE CITED (continued)

- in Ndumba ethnobotany. Ph.D. dissert., Univ. of Washington, Seattle.
- HUNN, EUGENE S. 1977. Tzeltal folk zoology. The classification of discontinuities in nature. Academic Press, New York.
- _____. 1982. The utilitarian factor in folk biological classification. *Amer. Anthropol.* 84:830-847.
- TAYLOR, PAUL MICHAEL. 1980. Tobelorese ethnobiology: The folk classification of "biotic forms." Ph.D. dissert., Yale University, New Haven, Connecticut.

NOTES

¹It should be noted that Berlin's framework has been subject to considerable criticism, especially during the past five years or so. Ellen's (1986) recent paper in this journal cites most of this critical literature and provides an additional negative assessment. The issues raised are too numerous and complex to be summarized here. However, as I hope to argue in detail in a future paper, this criticism is largely directed at possible (but not always probable) implications of Berlin's framework (which Berlin himself would not have necessarily drawn) and does not directly challenge the empirical findings on which his studies are based or the specific generalizations that Berlin has derived from them. In any case, there is one key component of the framework that has rarely been challenged or even discussed by critics, this being Berlin's recognition of nomenclatural principles in folk biology. (For example, these principles are not discussed critically or otherwise by Ellen [1986] or by Hunn [1982] in an earlier important review of Berlin's work.) In my view, Berlin's recognition of nomenclatural regularities is a major and, almost certainly, enduring contribution to ethnobiological science. Indeed, until these principles are proved invalid (which is highly unlikely), Berlin's framework, despite its possible implications and interpretations thereof, cannot be dismissed or ignored by scholars who have agenda in folk biological classification.

²Despite Berlin's strict criteria, Hunn (1977:238) identifies *can* as a "named complex" rather than as a life-form class. In a personal communication, Hunn has indicated to me that use of "life-form" for the category was rejected on the grounds that nomenclatural evidence indicates that the class is psychologically more like a generic taxon than a life-form category.

³Some binomial terms are optionally applied to categories while others are obligatory in application. For example, the binomial label *maple tree* is optional since its truncated form, *maple*, is equally appropriate referentially. On the other hand, the obligatory binomial *white oak* cannot be similarly truncated to *white* and still maintain the same botanical referent.

⁴One might want to argue that *c'o* "rat" is a rare example of a *labeled* intermediate category. That the majority of taxa immediately included in *c'o* are binomially designated strongly suggests that the class is psychologically generic rather than intermediate.