

**"COVERT CATEGORIES" RECONSIDERED:  
IDENTIFYING UNLABELED CLASSES  
IN TOBELO FOLK BIOLOGICAL CLASSIFICATION**

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**ABSTRACT.**—Covert categories can usefully be posited in the description of Tobelo folk biological classification in order to delimit the domain of investigation, to reflect groupings apparently referred to by Tobelo themselves, to provide "missing" superordinate classes for sets of co-hyponymous terms, and also to reflect those covert classes that must be posited for the description of lexemes in other domains. A review of methods generally used to posit covert classes, however, reveals that all are based on tests of perceived similarities among organisms. Such tests produce groupings that may be culturally irrelevant, that do not belong in a linguistic description, and that are based on similarities that may not be those used in hierarchically relating taxa. In order to avoid these difficulties, two alternative methods are tentatively proposed: "co-hyponymy," which identifies contrast sets lacking a superordinate term; and "definitional implication," which posits the covert classes in this domain required for the definitions of terms throughout the lexicon, based on a systematic review of vocabulary.

**INTRODUCTION**

Folk biological classification has proven to be one of the most culturally important and most exhaustively lexicalized areas of folk classification among pre-industrial peoples, reflecting those peoples' generally intimate familiarity with locally available fauna and flora. Although folk biological classification represents only one part of the subject matter of ethnobiology as a science, an ethnobiologist's concern with semantic and classificatory topics is justified primarily because decisions about the uses of plants and animals in subsistence, technology, medicine, and other areas of cultural endeavor are presumably based on criteria which can be linguistically expressed and discussed, and on a system of grouping local plants and animals into classes used in natural language (Taylor 1980a).

The great increase in research on folk biological classification systems over the past twenty years affirms the predominance of taxonomic relations among classes in ethnobiological domains, though folk biological taxonomies have admittedly also become notorious for irregularities of the sort enumerated by Ellen (1979:13): "multiple and interlocking hierarchies, extra-hierarchic relations, synonymy, homonymy, polysemy, anomaly, covert categories and residual taxa." The distinctiveness of the "basic" or "generic" terms within those domains has also been widely reported, as has the observed fact that, if we consider only lexically labeled classes, folk biological classification systems seem to be universally "shallow" (having few taxonomic levels) but "wide," that is, having very large contrast sets, particularly among classes labeled by basic or generic terms (Berlin, Breedlove and Raven 1973).

While it is possible to present a description of a folk taxonomic system which includes only lexemically labeled classes, or even to define either "semantic classes" or

systems of "classification" such that each class must be designated by a single lexeme (e.g. Conklin 1962:128), several cogent reasons have been offered for considering "covert" or unlabeled categories or classes within descriptions of folk taxonomies.

In a paper which inaugurated the study of covert categories in folk taxonomies, Berlin, Breedlove, and Raven (1968) emphasized that in attempting to identify covert categories of Tzeltal plants they adopted formal methods for uncovering categories which, though unlabeled, were recognized and used by natives. The inclusion of covert classes in a description of folk classification thus had the primary advantage of representing more precisely the shared set of structured relations among classes. Two further advantages of formally identifying covert classes were that (1) where the highest-level taxon or "unique beginner" is unlabeled a covert taxon can establish the domain of classificatory structures and (2) recognition of covert groupings of labeled classes could structure relations among the very wide contrast sets of basic ("generic") classes. Covert categories continue to be posited primarily in folk biological taxonomies, although the methods for positing them and the ontological or "psychological" status of the posited categories have been a subject of debate (Brown 1974 and reply by Berlin 1974; Hays 1976, Hunn 1976, 1977, Atran 1983).

In my own investigations of folk biological classification among the Tobelo (or "Tobelorese") people of Halmahera Island, Indonesia (Taylor 1980a, 1980b, 1982), I have also attempted to identify covert classes and have posited them using methods described below.<sup>1</sup> I have not, however, based my analysis on methods used by other authors (Berlin, Breedlove, and Raven 1968, Hays 1976, Hunn 1977). Though their methods differ, these all share the goal of identifying covert classes based on tests for *perceived similarity* among plant and animal classes. A critique of procedures designed to identify covert classes based on such tests will show that sometimes the only local cultural significance of those classes may be their sudden appearance as a result of tests designed to find them, that similarities observed may not be those used in hierarchically relating folk taxa, and that such classes do not in any case belong in a linguistic description. It is not my purpose to argue that categories posited on the basis of such tests are necessarily worthless, only that their status as culturally recognized groupings of plant or animal classes is questionable, and that in any case they do not belong in a linguistic description of a semantic domain. Of course, much other interesting folk biological information (e.g. "symbolic" associations, medicinal and technological uses of folk taxa, techniques of cultivation, etc.) also does not belong in descriptions of semantic domains.

The two main techniques I have used in this study are derived from the two major areas of structural semantic investigation (Ikegami 1967:49, 60): (1) the description of the relations among lexemes in terms of their meanings, which leads to the method I call that of *co-hyponymy*, and (2) the description of the meaning of a single lexeme, which leads to the method I call *definitional implication*. The classes posited as a result of applying these methods to the Tobelo case are, at the very least, useful heuristic devices which point up relations among labeled classes in ways that the Tobelo themselves might recognize. At most, they represent covert classes used by the Tobelo themselves, comparable perhaps to similar classes used by other ethnic groups.

#### THE PROBLEM OF THE "UNIQUE BEGINNER"

Undoubtedly one of the most vexing problems for an ethnographer attempting to study folk classification of fauna and flora occurs when he discovers that, for speakers of many languages, no "unique beginner" or highest-level term exists (such as 'animal', 'plant', or 'living thing') which can define the domain of his investigation (Levi-Strauss 1966:1-2). Of course, it is possible to study plant and animal nomenclature by identifying the types of lexemes used to designate classes of all organisms that biologists con-

sider "plants" or "animals." It is also possible to study man-plant or man-animal interactions without concerning oneself with the establishment of domains like "animal" or "plant" that have any relevance for the native speaker. But one cannot discuss "folk" classification—that is, the shared, structured set of relationships that members of a culture posit among those classes—without considering whether this assortment of terms for "plants and animals" names classes of objects grouped together or even considered similar by native speakers themselves.

The highest-level Tobelo terms designating classes of what we consider animals and plants ('animal', 'tree', 'herbaceous weed', etc.) have multiple senses, and there is no named higher-level "plant" class or named class of "living things." I have also been unable to find any distinctive grammatical treatments of plants or animals, although these can be found in some other languages. If we only consider lexically labeled classes in our study of Tobelo folk classification, we must content ourselves with one of two alternatives: (1) studying the relationship among those Tobelo classes which happen to contain objects biologists consider "biological"—and calling this the study of "Tobelo" ethnobiological classification, or (2) considering each highest-level term in the language—including 'tree', 'vine', 'rice', and many "basic" classes—a separate "unique beginner" establishing a separate domain. The serious problems with either alternative leave us no recourse except to posit covert higher-level classes, for the following reasons:

(1) The first alternative is adopted in one of its forms by Hunn (1977) and implicitly conceded by many ethnobiological studies which delimit the subject-matter of "folk" biology as the range of "folk" ideas about the subject matter of our Western biological science (i.e. the animal and plant kingdoms). But any analysis which claims to be "semantic" or to study meanings of terms and relationships among native classes cannot take as its point of departure a class whose membership is based entirely on a translation from another language or system of thought. To do so in this case would risk analyzing relationships among "native" ideational forms collected together in a way which is foreign to Tobelo language and culture.

Hunn (1977:44), however, argues that since the choice of a "unique beginner" is "arbitrary," we might as well use the domain of Western biology to investigate folk concepts of plants or animals. We can, of course, investigate classification of objects grouped together on any analyst's criterion, whether we take as our domain the set of all "animals and plants" or the set of all "objects smaller than a breadbox," if we consider such study useful. But we would have to leave aside any claim that such a grouping forms a culturally significant unit or domain to the "natives" whose classification system is under study. And the terms within such a domain can hardly be said to "contrast," since most definitions of semantic contrast (e.g. Conklin 1962, cf. Kay 1971) refer to contrast among subclasses of a *semantic* (not an "arbitrary" or contrived) class.

(2) The second alternative—considering each highest-level term in the language a separate domain of investigation—is not acceptable *in the Tobelo case* for four reasons, which may be listed in order:

1. The Tobelo themselves, as has been reported for many other cultures, seem to refer to groupings at levels higher than those labeled in the folk taxonomy. In the area of what we consider "plants," for example, there are minimally the named groups of 'tree', 'vine', and 'herbaceous weed', and also there are over 80 "basic" classes (having over 200 "terminal" or lowest-level subclasses) which are unaffiliated with these major plant groups. Yet Tobelo refer to groupings of such plants in everyday discourse. Thus an unfamiliar or distant bamboo can be denoted a *boka o tiba-oli* '(an object) rather like a *tiba* (*Schizostachyum* spp.; a bamboo)'. This whole phrase is sometimes substituted in sentences for the name of some particular bamboo species, or even used to refer to *more* than one species. Such regular non-lexemic phrases might be considered evidence for the existence of a covert class; that is, the phrase in this example may be a non-lexemic reali-

zation of the covert BAMBOO class.<sup>2</sup> While this is an important argument for the existence of covert classes, it is not reliable—in the Tobelo case—as a method of finding or positing them, since similar phrases ('rather like an X') are frequently made up for special purposes and without reference to generally used covert classes.

2. A second frequently-cited argument for positing covert classes has produced methods which will be criticized below; this is the argument of perceived similarity among classes, and it may briefly be paraphrased here. There are, after all, so many similarities among classes not grouped together under any higher-level term that we would expect those similarities to be conceptually recognized in any system of classification. Continuing the above example, the various labeled species of what we call "bamboo" are more like each other than like 'rice', 'sugar palm', 'cycad', and the other basic plant classes with which they seem to contrast. This similarity is recognized in biology and seems so obvious that it must be clear to folk classifiers, and could underlie local references to higher-level groupings noted above. It has been argued, therefore, that our analysis should posit covert classes like BAMBOO based on *tests* for this perceived similarity.

Though they suggest that positing covert classes could be worthwhile, both these arguments are hardly sufficient reason in themselves to posit such classes. Nor do they provide techniques for reliably delimiting the boundaries of those classes, as the critique below will argue. There are, however, two other reasons for considering that covert classes can be posited for Tobelo BIOTIC FORMS—and that they are required by the data:

3. Polysemous terms which form a contrast set in one of their senses are "co-hyponyms" (Lyons 1977:291) and must be considered contrasting subclasses of a higher-level class. It will be shown below that polysemous Tobelo terms for 'tree', 'vine', and 'herbaceous weed' form a co-hyponymous contrast set in one of their senses. This implies that they are immediate subclasses of an unlabeled higher-level domain, which we can call the PLANT or FLORAL FORM domain. Though these facts do not delimit the boundaries of any such FLORAL FORM domain, they do indicate that any analysis of these data *must* posit such a domain containing (minimally) these three named subclasses.

4. Finally, the method of "definitional implication" which I outline in detail below can be justified by recognizing that an adequate description of Tobelo animal or plant classification is only part of the larger task of describing the entire Tobelo lexicon. Many Tobelo words which are not names for animals or plants nevertheless have classes of biotic forms *implied* in the definitions of those words. We can use these related words to posit the covert classes implied in those definitions. It may be more parsimonious to posit a set of covert classes and then use them in the definition of "related" terms, than to independently define the set of objects to which each of those "related" terms may apply. Thus we may conclude that, though positing covert classes may seem to violate the requirement of parsimony in a linguistic description, it is not only required by the data, but may also be the more parsimonious path to a complete description of lexical structure within the language.

#### "COVERT CATEGORIES" AND THE PERCEIVED SIMILARITY OF FOLK TAXA

Because confining their analysis of a folk taxonomy to lexically labeled categories would have been too restrictive, Berlin, Breedlove, and Raven (1968) suggested techniques for discovering "many meaningful and culturally revealing categories related by inclusion that are not conventionally, monolexemically labeled" (1968:209). With the exception of evidence for the "unique beginner" PLANT class drawn from a distinctive Tzeltal numeral classifier used only for members of this domain, all the techniques were based on tests for locally perceived similarities among organisms.

We can consider the covert class within a description of language in the light of the normal relation between a linguistic sign and the objects that it denotes. This is often expressed as a triadic relation or "triangle of signification" (Lyons 1977:96-99; cf. Ogden and Richards 1923:11), in which the three angles A, B, and C of a triangle represent (A) the linguistic *sign*, e.g. a lexeme, and (C) the *object* denoted by that sign, which are mediated in some sense by (B) some concept of the *class* of objects which may properly be denoted by the sign. "The members of any naturally conceived class of things, arrived at pragmatically by stimulus generalization, have some distinctive quality or combination of qualities in common, that furnishes the basis for their common designation" (Scheffler and Lounsbury 1971:4). Those distinctive qualities of a natural class are "the *significant features* of the objects and the *defining features* of the class". Following Scheffler and Lounsbury's (1971:3-6) terminology, we may say that the sign *denotes* the object or objects, and at the same time *designates* the class of such objects, and *signifies* the defining features of the class. From this perspective we can see that, in order to integrate covert classes into the classification systems we describe, and to treat them alongside labeled classes (i.e. taxa) in a hierarchically arranged classification scheme, we must have all the elements of the "triangle of signification" *except* the linguistic sign. Alternatively we may insist on finding some non-lexemic phrase or expression used to refer to the covert class, and consider that to be the sign, functioning like a lexeme to denote members of the class and to designate the class. In either case, we should recognize the need for distinctive features if we wish to integrate such a class into the same taxonomic model used for labeled taxa.

One alternative to this view is presented by Hunn, who prefers to consider the folk taxon "a set of real objects, in the present case, a set of animal organisms" (Hunn 1977:42), rather than the class of those objects. The taxon or class, however, is not the same as its members; by Hunn's definition, every time a housefly anywhere dies or is born the taxon (rather than its membership) changes! We do not define the English-language taxon *housefly* by this shifting set of organisms which are the temporary members of the class, but rather by the constant attributes (or "features") of that class itself.<sup>3</sup>

Berlin, Breedlove and Raven (1968) however, recognize the importance of discovering distinctive features in positing covert categories. They commendably combine tests of perceived similarity among organisms with tests to determine whether distinctive features can be found to define the classes posited. The two major techniques used to determine candidates for covert categories are (1) card sorting, and (2) tests of triads, both of which test the informant's (native consultant's) perceived similarity among organisms. In the card sorting technique, names of labeled plant classes are written on separate pieces of paper and informants are instructed to group them together. As Atran (1983:58) has pointed out, this method of elicitation seems designed to find only taxonomic relations, because only names of plant classes *within* the higher-level ("life form") classes are presented to the informant. "Thus, the method of elicitation may have unduly restricted recognition of complexes only to those which happened to fall entirely within the range of a given life-form" (Atran 1983:58). Furthermore, as Brown (1974:327) notes of both sorting tests and triads tests, "Such tests often present informants with culturally irrelevant options coercing them to sort items together which they rarely, if ever, group together on an ordinary *day to day* basis. Such groupings can hardly be considered culturally relevant." Brown also argues that many of the unlabeled groupings of plants and animals which can result from such tests are not covert classes at all, but labeled, culturally recognized categories which cross-cut the folk biological taxonomy. Atran (1983:55-56) cites examples from the Bunaq of Timor (Friedberg 1970; see also Friedberg 1979) and the Brou of Cambodia (Matras and Martin 1972) to illustrate that cross-cutting classifications relating to cosmology, cultural usefulness, or ecological affinities between plants may intersect the proper folk taxonomy under study. In short,

the major problem with using sorting tests to determine folk taxa is that one can never be sure that the principles on which the sorting task is carried out correspond to culturally relevant principles used in hierarchically relating semantic classes. In using a card-sorting technique to investigate Navajo principles of classification, for example, Perchonok and Werner (1969) discovered that "people evidently felt no compulsion to use the same principle of classification consistently throughout the [taxonomic] tree," and that individuals not only differ in the classifications produced by this method, but also that they without exception "agree to the rightness of another person's classification, even though it differs considerably from their own" (1969:234), indicating that categories formed on the basis of such tests are not stable.

Hunn (1977:55) has correctly recognized that *perceived similarity* among such naturally diversified organisms as animals and plants is not just a simple matter of similarities among whole well-defined groups of classes ("covert categories"). Instead, he envisions handling this problem by recognizing that the degree of differences among named classes forms a continuum, which he proposes to represent by linking them into "chains" or "complexes". Such "chains" of organisms, in which *a* is linked to *b* and *b* is linked to *c* but *a* and *c* are not linked, are very difficult to reconcile with the notions of semantic class (or "concept") underlying the "triangle of signification" model of the relationship between a sign and its denotata, and thus must function very differently from the taxa discovered in the lexically labeled portion of the folk taxonomy, and should not be integrated with those taxa in the same model. Hunn gives the example (1977:55) of the 'slug' class, which is allegedly perceived by his informants to "link" the 'snail' class (or "complex") with that of the 'worm'. Though the three are not subclasses of any higher-level named class, this worm-slug-snail "chain" is allowed to creep into the posited taxonomy of named forms, leaving its trail of fragile posited link-ups so unlike the clear-cut taxonomic class-inclusion relationships which it and the other "chains" have infiltrated. If investigation of such "chains" may serve to give us more information about the way natives perceive or "feel about" these taxa, then they might usefully be included in ethnobiological studies alongside information on how the plants and animals are used, where they grow, how often natives see them, etc.—but all that information does not have to be forced into a description of the natives' classificatory system, alongside the clear relationships of class inclusion which are expressed (even if all those other things are not) in a folk taxonomy.<sup>4</sup>

We may also consider the use of "folk keys" constructed by informants as a technique to determine the distinctive features of categories posited on the basis of perceived similarity, (see e.g. Berlin *et al.* 1968:293). It is important to note that in folk as in biological keys more than one of these artificial arrangements of binary oppositions can be used to "key out" or arrive at the same set of items. More importantly, even if the keys did represent the way "folk" actually identify classes of organisms (that is, if the binary oppositions used, *and* the order in which they occur, were actually those natives used to identify objects), it still does not follow that the higher-order oppositions are those which form the most inclusive classes.

In biological systematics, where classification attempts to represent phylogenetic relationships among organisms, it is possible to write a "natural key" (Simpson 1961:15-16) in which the key first "keys out" higher-order taxa, then keys out the lower-order taxa in the order in which they subdivide the highest-level taxon. But most biologists who want to *use* keys to identify specimens would never bother with such a cumbersome arrangement (nor, probably, would folk classifiers).

Among the Tobelo—and I suspect others too—it seems that informants' stated reasons for grouping organisms together (whether for a folk key or for some other purpose) are often not really statements of the distinguishing features of that class, but rather "rules of thumb" (Goodenough 1951) which will be found not to hold true in all

circumstances; just as an American asked to list the features of a "door" might give answers without taking "sliding doors" into account.

In natural conversations, Tobelo regularly wanted to figure out what kind of unfamiliar animal or plant was sighted by someone who did not recognize it. Where no hint was available except that it was a 'bird', for example, questions might involve the animal's behavior, time of day sighted, how it moved, and similar queries which clearly could not all be references to the distinctive features of the class, because, for example, a night bird (such as an owl) is still an owl at noon. If such queries are a guide to folk keys actually used, they bear much more resemblance to the multiple-approach keys sometimes included in field guides, in which oppositions need not be binary, the key need not key out all possible taxa, and an observer may key out specimens in more than one way with each of several types of key (see e.g. Fitter 1953:178-9). If such non-binary, multiple-approach keys represent one way Tobelo might identify specimens, as natural conversations indicate they might, then clearly folk keys constructed by informants may not be aimed at keying out taxonomic groups in their hierarchical order, but instead may, *if* properly representative of folk identification, only provide one of several ways natives identify specimens and place them in terminal or near-terminal classes in their taxonomy. An adequate folk key could yield interesting results for the study of folk identifications, but those results would still not constitute a classificatory structure such as a folk taxonomy.

Many of the same criticisms can be made for the "method of paired comparisons" used to identify covert classes, in which informants are requested "to compare all logical pairs of any set in terms of all the similarities and differences that he felt were relevant for any pair" (Berlin *et al.* 1968:293). As in the card-sorting techniques, the apparent lack of overlap cross-cutting higher taxonomic levels is possibly a result of the fact that paired comparisons are generally tested only *within* (not across) labeled taxa. In any case, we may suspect that, as with features found through construction of folk keys, features found by this means are quite different from the distinctive features used in componential definitions of labeled classes, because (1) informants' statements about similarity among members of a class often reflect "rules of thumb" rather than the features which actually discriminate the class; and (2) the features used and referred to most often are not necessarily those which are "judged important by the informant" for defining classes. In order to relate frequency of occurrence with importance for componential definitions, the technique requires that all the attributes distinguishing one class from another be equally "weighted" or distinctive (as well as equally likely to be verbalized), and thus that they can be compared by simply counting the number of times they are invoked in judging the dissimilarity of classes (cf. also Berlin *et al.* 1974: 61).

The assumption that native information-processing rules are like "natural keys," processing information about the taxa to which particular objects belong *in order* from the most inclusive to the least inclusive taxon, also underlies the method Hays (1976: 503) has introduced to identify covert classes in folk taxonomies:

Assuming that my informants perceive their world and conceptualize it according to similar, though not identical, information-processing rules . . . much of the variability in their statements and acts is likely to be patterned in discoverable ways. I suggest that one of the patterns in plant naming responses is that, far from indicating random guesses, the diverse names offered tended to form relatively small sets whose members tended to co-occur regularly. Multiple instances of such co-occurrences, I propose, may be taken as evidence of conceived similarity among the categories designated by the names such that their tokens were readily "confused" with each other. . . . The categories as designated by these co-occurring names, then, may be considered conceptually grouped, whether the grouping itself is habitually named or not; when it is not, it may be referred to as a covert category or complex.

While Hays's methods commendably allow for a careful study of intra-cultural variation

among informants in naming responses, his reliance on pressed voucher specimens in unnatural contexts probably greatly increased the variability of naming responses, because so little of the plant (excluding also its growth characteristics and habitat) was available for examination by informants. But even if these methodological problems could be surmounted, there is no evidence that information processing rules function like natural keys; if they function like non-natural keys the "co-occurrences" will not represent hierarchically-related groupings. In any case, understanding such information-processing rules would not help us describe language as a system (Saussure's *langue*) rather than as behavior (*parole*).

A final argument for the existence of covert "mid-level" categories within folk taxonomies derives from the notion that man cannot store and process enough information at the same time to simultaneously consider contrast sets of large numbers of taxa such as those found in folk taxonomies. The argument follows Wallace's (1961) hypothesis which sets a limit of 64 items within a contrast set (Berlin *et al.* 1968:297). However, Wallace's (1961; cf. Miller 1956) limitation only concerns the storage and processing of information in short-term memory. Anyone can certainly imagine more ways to explain how Tobelo, for example, *might* "store and process" information about over three hundred basic classes which subdivide the Tobelo 'tree' class without stuffing them all into their short-term memories at the same time (note, for example, D'Andrade's n.d. notion of "cross-indexing" or the multiple-approach keys described above). Nor do informants need to consider at once the entire definition of any particular class. Not all the features used in defining a class need to be used to identify any particular member of the class. A type of 'tree' may be defined by characteristics of the bark, flower, leaves, etc.—but in fact the Tobelo and others can, for many kinds of 'tree', identify its leaves or its bark or its wood, without reference to the whole tree. Of course, as less information is available, misidentification becomes more likely.

In any case, a description of a particular semantic domain is part of the total description of a language, and language should be described in terms acceptable to some meta-theory of linguistics or semantics. Any adequate linguistic description risks presenting explanations that a psychologist, neurophysiologist, or cybernetician will have difficulty interpreting in the light of his specialization; but we need not choose one of his many possible interpretations and tailor our linguistic description to fit it. We should instead first describe language in linguistic terms, then consider relationships to other types of interpretation, rather than risk jumbling them together from the start.

Considering all the problems with the attempts to posit cover classes by testing for perceived similarities among classes, one might wish to simply ignore any unlabeled classes in the description of an ethnobiological domain. But for reasons stated in the preceding section we must still try to posit them, though with techniques other than those reviewed here. Any class so posited must have at least one distinctive feature which makes it acceptable as a semantic class, and which is shared by its subclasses.

#### CO-HYPONYMY

It was noted above that many of the highest-level terms in Tobelo folk biological classification have multiple senses. It is one of the tasks of anyone describing the Tobelo language to distinguish those senses of polysemous terms. If, however, we were to study only Tobelo "plant" classification separately from the larger task of describing the Tobelo language, we might ignore most other senses of terms like 'tree', 'vine', or 'herbaceous weed', and include in our analysis only those senses which occur in the domain of investigation. In order to illustrate how the study of polysemous terms can help us understand the folk classification system, several senses of the three highest-level Tobelo terms for "plant" (*o gota* 'tree', *o gumini* 'vine', and *o rurubu* 'herbaceous weed') are detailed below.<sup>5</sup>

(n. = noun; vb. = verb):

*gota* 1 n. 'tree' (including saplings) contrasts with *gumini* 1 'vine' and *rurubu* 1 'herbaceous weed' (excludes palms, cycads)

*gota* 2 n. 'relatively large tree' (excluding undergrowth of saplings) vs. *rurubu* 2 'weeds, unclutivated undergrowth' and various cultivated plants

*gota* 3 n. 'lumber' (wood from a *gota* 1 'tree' used for manufactures) contrasts with other materials of manufacture, e.g. *katu* 'thatch', *paku* 'nails', etc.

*gota* 4 n. 'firewood' vs. *rage-rage* 'kindling wood'

*gota* 5 n. 'woody tissue, wood' vs. *kai* 'bark', *ngomaba* 'throat (i.e. central steam tissue)', etc.

(i)-*gota* vb. 'to be woody, to have woody tissue' (from *gota* 5)

(*bo-maa*-)*gota-gota* vb. 'to gather firewood' (from *gota* 4)

*gumini* 1 n. 'vine' vs. *gota* 1 'tree' and *rurubu* 1 'herbaceous weed'

*gumini* 2 n. 'rope'

*rurubu* 1 n. 'herbaceous weed' vs. *gota* 1 'tree' and *gumini* 1 'vine'

*rurubu* 2 n. 'weed, uncultivated undergrowth' (including 'tree' saplings, moss at the bases of small plants, vines growing among undergrowth etc.) vs. *gota* 2 and various cultivated plants

*rurubu* 3 n. 'thickness, density' (of hair, leaves, trees, undergrowth, houses, etc.)

-*rurubu* 1 vb. 'to be thick, dense' (from *rurubu* 3)

-*rurubu* 2 vb. 'to be full of undergrowth or weeds' (from *rurubu* 2)

One can easily find cases in natural Tobelo conversation where the same object may be denoted by two or more of these terms. For example, tree-like palm or cycad "trunks" may be called *gota* 4 'firewood', yet palms and cycads are *not* in the 'tree' (*gota* 1) class. Similarly a Tobelo may refer to a small sapling as *rurubu* 2 'undergrowth' in the context of clearing fields, for example, whereas in a context in which he is looking for medicinal bark of that plant he may refer to the same sapling as a *gota* 1 'tree'. It is possible to have acceptable sentences like *ma rurubu nenanga o gota* 'this weed (*rurubu* 2) is a tree (*gota* 1); or said of the same sapling, *nenanga o rurubuua, o gota bo* 'this is not a herbaceous weed (*rurubu* 1), it is a tree (*gota* 1)'. If our informant then turned to the task of clearing the undergrowth and forest, we might hear him say of the same steadfast sapling, *nenanga ma rurubu toparibobi, botino daba ma gota totoyanga* 'Now I'll just cut down this undergrowth (*rurubu* 2, including the sapling), later I'll cut down the trees (*gota* 2). Without considering the polysemy of these terms and without recognizing that separate contrast-sets are being utilized, one might be puzzled by these superficially contradictory applications of terms.

Such examples of polysemous terms can be sorted out only by isolating the senses

of those terms and noting the contrast-sets in which they occur. Where this can be done, as in this example of the contrast between *gota* 1, 'tree', *gumini* 1 'vine' and *rurubu* 1, 'herbaceous weed' it is possible to argue that, *in these senses*, the three terms are co-hyponyms; that is, that they are terms labeling contrasting subordinate classes which are included in some superordinate class. Lyons (1977:298) has noted that "lexical gaps" in English frequently occur in which terms seem to contrast but have no superordinate term in a taxonomy.

In cases such as that of 'tree', 'vine', and 'herbaceous weed' in the Tobelo language, we must posit a higher-level class, which we may call PLANT or FLORAL FORM, which has these senses of each of the Tobelo terms listed above as its subclasses. The method of co-hyponymy consists essentially of identifying a set of terms which can be shown to directly contrast in at least one of their senses, but which have no superordinate term to label the entire set. Having posited a FLORAL FORM domain by this method, we still have not resolved the problem of the boundaries of the domain, although it must minimally include the full range of the three subordinate terms on whose basis the FLORAL FORM class was posited. To more directly establish the boundary of the FLORAL FORM domain, we may turn to the method of "definitional implication."

#### DEFINITIONAL IMPLICATION

The method of "definitional implication", which is tentatively introduced here as a method for the determination of certain kinds of lexical domains, is based upon the assumption that the description of any set of lexemes in a language is only a part of the larger task of describing the entire lexicon of that language. In some cases, the description of certain lexemes requires positing covert classes of objects to which those lexemes are presumed to apply. Some of the Tobelo terms discussed below (such as 'male', 'female', or 'fat') seem to be partly defined by the classes of objects to which they are *presumed* to apply, and cannot be identified by any characteristics of objects properly labeled by the terms themselves.

The results of making these assumptions about positing unlabeled classes may be seen in Fig. 1. That diagram represents all the basic or "generic" terms within the posited BIOTIC FORM domain as if they were on the same *basic* (or  $B^0$ ) level. This is consistent with the fact that the distinctiveness of these terms has long been recognized in folk biological nomenclature, and, though evidence for their distinctiveness cannot be detailed herein (see Taylor 1980b:244-252) it is possible to nomenclaturally distinguish Tobelo terms below the basic level (i.e.  $B^-$  terms) from terms at basic and higher levels ( $B^0$  or  $B^+$  terms). Levels below  $B^0$  are not represented in this diagram. The highest lexically labeled classes in the FLORAL FORM (or PLANT) domain are only at the  $B^{+1}$  level, while some FAUNAL FORMS are labeled two levels above the basic terms. The large numbers of named basic classes cannot be included on this diagram; the line extending to the right of most contrast sets of basic terms, and the dots following the examples listed, will substitute for the other basic terms not listed (there are, for example, approximately 146 basic classes of 'fish', though only two are listed). The significance of the broken line connecting the 'human being' (*o nyawa*) class to FAUNAL FORM will be discussed below.

Alinei (1974, cf. Taylor 1977), whose theory of lexical structure has suggested this view of a lexical domain (Alinei 1974:69-151), offers a systematic attempt to identify the underlying structure of lexemes in one domain in terms of sense-components drawn from the entire Italian lexicon. Unlike Alinei, however, I have here restricted the analysis of a particular domain to an example (BIOTIC FORM) established by a sense-component which is not itself realized by any lexeme in the language, although it is required in the

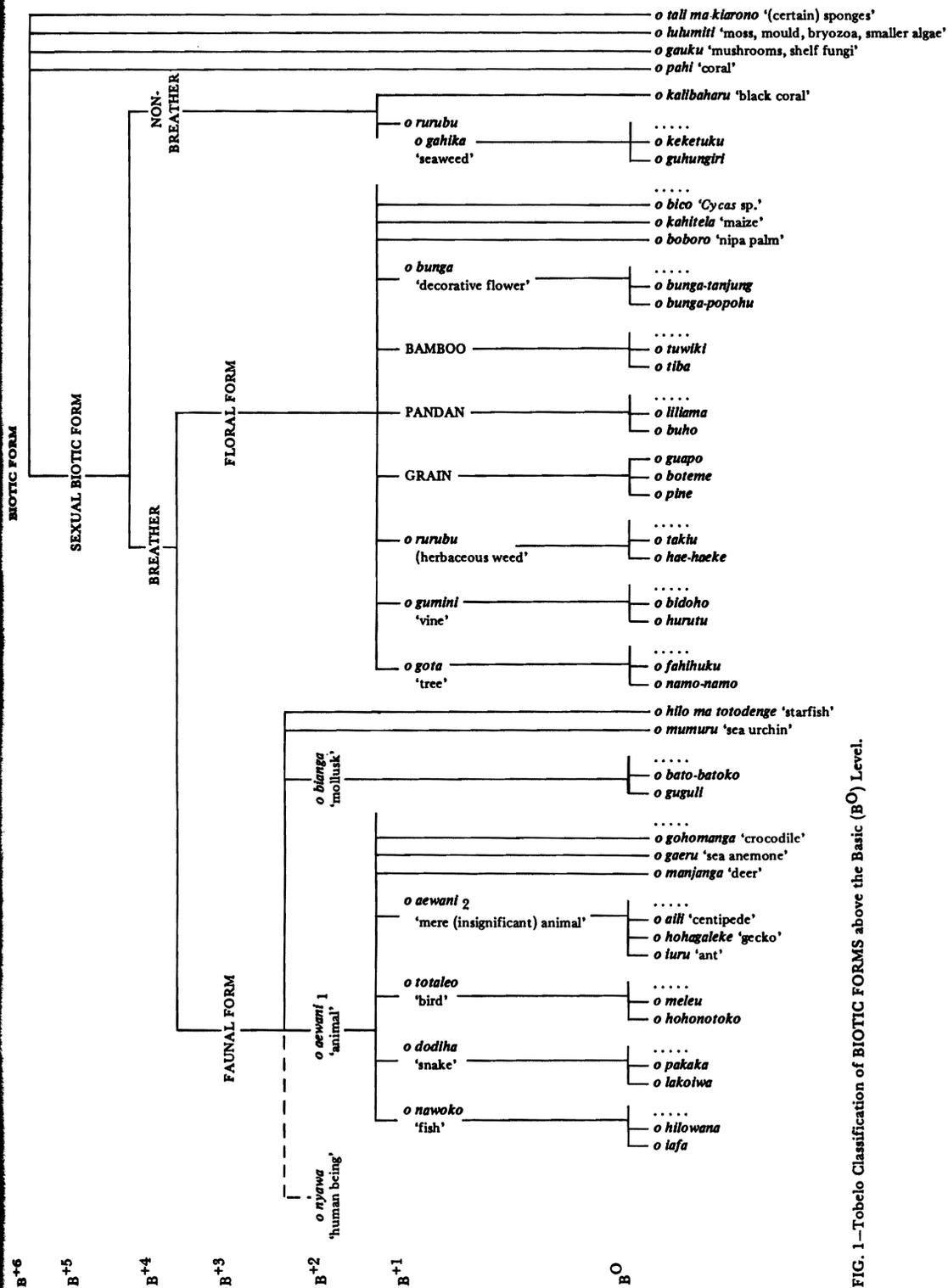


FIG. 1—Tobelo Classification of BIOTIC FORMS above the Basic (B0) Level.

definition of other lexemes. I have further restricted the analysis to outlining the hyponymic relations of this posited BIOTIC FORM domain to other labeled and unlabeled classes within the domain.

It is clear from definitions of lexemes within folk taxonomies that a superordinate class may appear in the definition of subordinately related classes. Thus, for example, "bird" will probably have "animal" as a feature in its definition, just as "owl" and "robin" will probably have the notion of "bird" in their definitions. More importantly, "bird" will probably also be found in the definition of at least the primary senses of other words too. It is the implied class of subjects of verbs like *tweet* or *chirp* (compare *hoot* and its implied subject *owl*); it is also likely to be found in a definition of *beak*, (*to perch*, or *feather*). If, in English, we happened to have names for the various types of bird (*robin*, *sparrow*, etc.) but no word for "bird", we could still posit a BIRD class because the occurrence of a sense-component BIRD in the definition of so many lexemes in English would allow us to posit a covert BIRD class implied in the definitions of those terms. It is more parsimonious to posit the class and then use it in those terms' definitions than it would be to repeat in each term's definition a more detailed statement of the class of objects (i.e., birds) to which each of those terms can apply.

Similarly, I have posited biotic classes apparently implied in the definitions of the rich Tobelo lexicon dealing with animal and plant forms. Ethnobiologists have often noted the wealth of terms applying to animals or plants, but have seldom used these to derive covert classes. In the case of Tobelo terms, I systematically reviewed all entries in Huetting's (1908) Tobelo-Dutch dictionary as well as my own data on terms relating to plants and animals, first with a key informant familiar with my semantic analyses, and later with other Tobelo at Kampung Pasir Putih (Jailolo District, Halmahera). We selected as potentially productive several hundred terms for plant and animal parts and products; for cutting, processing, cultivating, or handling plants, animals, or their products; for sounds or actions done by, or for characteristics of, plants or animals; in short, any terms that seemed related to living things and which might possibly contain some subclass of living things as part of their definition. These were quickly narrowed down to a small fraction of the number originally investigated, because rough attempts to develop componential definitions of such terms quickly indicated that it was not necessary to posit any covert classes in order to define most of the terms.

Ideally, sense-components within definitions in the Tobelo lexicon would be given using Tobelo lexemes for sense-components which are realized in the Tobelo language. Any metalanguage (including potentially one derived from Tobelo) could be used for those sense-components *not* directly realized in Tobelo. This goal of developing a fully "emic dictionary" remains extremely difficult for many practical reasons (Pawley 1970), although we can still analyze individual domains or portions of domains using assumptions that would make up such a dictionary.

Upon examination, the great majority of terms relating to plants and animals do *not*, when adequately defined, turn out to contain any classes of BIOTIC FORM in their definitions. It is important to emphasize that we should posit covert classes of objects in the definitions of terms only if alternative definitions cannot suffice to define the term in question. It is insufficient to argue that, because terms like 'leaf' or 'wing' apply only to plants or animals, they presume the existence of a PLANT or ANIMAL class. If those structures can be defined by reference to shape or function they do not require notions of PLANT or ANIMAL in the definition.

We may consider in order the four features or sense-components (living vs. non-living, sexual vs. non-sexual, breathing vs. non-breathing, and fatty vs. non-fatty) which allow us to posit covert classes above the B<sup>+2</sup> level, then we will consider the covert B<sup>+1</sup> classes of FLORAL FORM (or PLANT) implied in the definitions of other terms. No evidence has been found for positing covert subclasses of FAUNAL FORM.

1. *Living vs. Non-living* (+L vs. -L)

Organisms which may be said to 'live' (*-wango* 1) or 'die' (*-bonenge* 1) constitute the class of BIOTIC FORMS, the class of all organisms which are the implied subjects of 'live' and 'die', a class implied in the definition of these lexemes. Only this primary sense of the verbs 'live' and 'die' can be used in the participial form *ma ngangoo* 'living' or *ma bonenge* 'dead'. However, several other senses of these terms must be distinguished. Thus a motor or a fire may be said to *-wango* 2 'live' ('to run', 'to burn') or 'die' ('stop running' 'stop burning'), but the participial forms *ma ngangoo* 'living' and *ma bonenge* 'dead' can refer only to BIOTIC FORMS and *not* to these special cases. A disease or recurrent sickness, as well as any of over a dozen locally-named varieties of *o tokata* 'ghost' may be said to *-wango* 3 'act up, flare up' (i.e., be temporarily active), though the form *-bonenge* 'die' is not applied to the apparent disappearance of these entities and they may never be considered *ma ngangoo* 'living'. There is in addition another sense, *-wango* 4 'to grow (of its own accord without being planted)', contrasting with *-datomo* 'be planted, cultivated'. This is a special sense which again does not form the participial, and cultivated plants can of course be said to *-wango* 1 'live'. The class of BIOTIC FORMS may be posited as the highest-level covert class establishing the domain of investigation.

2. *Sexual vs. Non-sexual* (+S vs. -S)

A class of SEXUAL BIOTIC FORMS may be posited on the basis of the lexemes (*ma*) *nauru* 'male' and (*ma*) *beka* 'female'; that is, the class of SEXUAL BIOTIC FORMS contains all those BIOTIC FORMS expected to have 'male' and 'female' subclasses. It includes both FAUNAL and FLORAL forms, as well as 'seaweeds' and 'black coral'. Only *o pabi* 'coral', *o gauku* 'mushrooms and shelf fungi', *o lulumiti* 'moss, mould, bryozoa, smaller algae', and *o tali ma kiarono* '(certain) sponges' are not expected to possess this distinction. While the male-female distinction is recognized as one associated with mating and reproduction at least among *aewani* 'animals' (and, of course, humans), male and female plants are not considered to mate for reproduction. The local definitions of 'male' and 'female' do not coincide with a biologist's notion of sexual difference in animal and plant species; very often plants considered 'male' and 'female' forms of the same basic (B<sup>0</sup>) folk class are from different botanical families (Taylor 1980a:224-225). Tobelo informants from several villages have volunteered the information that "all" 'trees', 'vines' and 'herbaceous weeds' have both 'male' and 'female' forms of each basic class though they were not familiar with all the male and female plant forms. In fact, however, basic plant classes whose 'male' and 'female' subclasses are *known* are far from the majority; informants also differ in their familiarity with the often esoteric knowledge of 'male' and 'female' forms. Among 'animals' (*aewani* 1), Tobelo seem to assume there is mating and reproduction among 'male' and 'female' forms of each of these FAUNAL FORMS, and sometimes they are perceptive enough to recognize valid morphological signs of these organisms' sex (e.g. the widened abdominal segments on the undersides of female crabs). For most insects, worms, fish and other animals, however, they are quite at a loss to recognize whether any particular organism is in fact 'male' or 'female', though the presumption again is that there *must be* 'male' and 'female' forms.

3. *Beathing vs. Non-breathing* (+B vs. -B)

The BREATHERS, including all FLORAL and FAUNAL FORMS, form a subclass of SEXUAL BIOTIC FORMS defined by the ability to 'breathe' (*-womaba*). Ability to breathe implies possession of a 'throat' (*ma ngomaba*). Apparently considered the breathing organ, the *ngomaba* 'throat' refers to the esophagus and windpipe of verte-

brates and to the esophagus of other animals, and to the stem cavities or the central core of stem tissue in vascular plants. It seems to be considered an organ of central importance to the survival of plants and animals.

I have tentatively noted (Fig. 1) the posited existence of a class of organisms, the NON-BREATHERS, which may contrast with BREATHERS as the subclass of all SEXUAL BIOTIC FORMS which cannot 'breathe' and have no 'throat'. This class, the most tentative of all those posited here, is not required by or implied in the definition of any lexeme. It unites seaweeds, sea grasses, and 'black coral'. All members of this class are plant-like organisms living attached in similar ways to the sea floor or to objects on the sea floor, and are considered to have 'male' and 'female' forms but to lack 'throats'. The Tobelo B<sup>+1</sup> term *o rurubu o gabika* 'seaweed' is anomalous in that it does not contrast with any other B<sup>+1</sup> term; it is also nomenclaturally anomalous and can be shown to be a recent introduction translating the North Moluccan Malay term *rumput laut* 'seaweed'.

#### 4. *Fatty vs. Non-fatty* (+F vs. -F)

The Tobelo noun *baki* 'fat', and verb *-baki* 'to have fat' are other lexemes that seem to be defined partly by the class of objects presumed to possess them, and we may call that class FAUNAL FORMS. All *aewani* 1 'animals' and *bianga* 'molluscs' are presumed to have *baki* 'the layer of substance occurring between the outer skin and the flesh of FAUNAL FORMS'—even those FAUNAL FORMS (such as tiny insects) which are too small for Tobelo to physically determine whether such a layer is present.

The BREATHERS which are not FAUNAL FORMS may be called the class of FLORAL FORMS (or PLANTS). We have seen that such a class must be posited because of the co-hyponymy of the contrast set 'tree'-'vine'-'herbaceous weed'. Several lexemes appear to be candidates for having the FLORAL FORM class in their definition, but perhaps the strongest would be the word *utu* which may be glossed 'the body or entirety of a PLANT on which a PLANT part is located'. Thus leaves, roots, flowers, etc., may be said to be *ma utu-oka* 'on the plant' (even though they are not on the main stem of the plant). No "part" of any loose branch, bamboo or wooden vessel, or of any non-FLORAL FORM such as mushroom or seaweed, or other object may be said to be *ma utu-oka* except parts of FLORAL FORMS. In this sense the term does not label a taxon or function like the noun *aewani* 'animal', but it is often correctly translated 'plant' in English. Thus to distinguish the 'tobacco plant' (*o tabako*) from the 'cigarette' (also *o tabako*) Tobelorese may add *ma utu* 'its entirety of plant', i.e. "the plant."

To summarize the discussion of classes tentatively posited at the B<sup>+3</sup> level and above, we may offer componential definitions of the covert classes posited (Table 1). The fact that such definitions can be arrived at indicates that these are classes which *could* be used by the Tobelo themselves. All of these classes except the NON-BREATHER class were found necessary to posit in order to define lexemes in the Tobelo language. The NON-BREATHER class has so many distinctive features, and the separation of its 'seaweed' from its 'black coral' subclasses seems so atypical and probably intrusive, that the class has been posited here for those reasons. Because no such argument could be sustained for grouping together the asexual biotic forms into one class, the four "basic" classes having the features +L (living) and -S (non-sexual) have not been grouped into one posited class, and do not appear in this summary.

In addition to these classes at level B<sup>+3</sup> or higher, there is evidence for three covert classes of FLORAL FORM: BAMBOO, GRAIN, and PANDAN. Each of these covert classes has been observed lexicalized in some phrase of the form 'rather like an X', where 'X' is some particularly focal member of the covert class.

It should be noted that the form *o bunga* 'decorative flower', seen at the B<sup>+1</sup> level in Figure 1, seems to be a recent intrusive term from Indonesian, just as the concept of

TABLE 1.—Unlabeled Classes of Tobelo BIOTIC FORM Above B<sup>+2</sup> Level

Level	Unlabeled Class	Componential Definition			
B <sup>+6</sup>	BIOTIC FORM	+L			
B <sup>+5</sup>	SEXUAL BIOTIC FORM	+L	+S		
B <sup>+4</sup>	BREATHER	+L	+S	+B	
B <sup>+4</sup>	NON-BREATHER	+L	+S	—B	
B <sup>+3</sup>	FAUNAL FORM	+L	+S	+B	+F
B <sup>+3</sup>	FLORAL FORM (=PLANT)	+L	+S	+B	—F

planting and cultivating flowers around the home for purely decorative purposes is apparently a recent phenomenon. Although this term *bunga* is polysemous in Tobelo, it is apparently used to designate this subclass of FLORAL FORMS; thus it is not necessary to posit a covert DECORATIVE FLOWER class in this case.

The covert B<sup>+1</sup> classes of FLORAL FORM, along with the evidence for positing them, may now be considered:

### 1. BAMBOO

The posited BAMBOO class is lexically realized by the form *boka o tiba-oli* 'rather like a *tiba* (*Schizostachyum* sp.) bamboo', and includes ten basic (B<sup>0</sup>) classes. Like the non-lexemic phrases which realize the other covert classes of FLORAL FORM, the phrase means "rather like" the most culturally important basic class of plants within the covert class.

The class must be posited because only the young shoots of members of this BAMBOO class may be termed *o diburu* (Dodinga dialect, cf. *o jiburu* in Boeng dialect of Tobelo). Thus this lexeme must be defined as 'young shoot of BAMBOO', and the covert class is implied in the definition of the lexeme. Hueting's (1908:22 and 325) Tobelo-Dutch dictionary lists the terms *o badiku* and *o tabadiku*, which he notes are of Ternate origin, and which he translates "bamboo, general name" and "bamboo" respectively. These words were unfamiliar to my Boeng and Dodinga dialect informants, however.

### 2. GRAIN

The "basic" class *o pine* 'rice' is subdivided into fifteen B<sup>-2</sup> subclasses. Though undoubtedly others could be found if all villages were investigated specifically for 'rice' varieties, these represent all varieties known at my two field site villages (where rice is not a major staple). The only other known subclasses of GRAIN are *o boteme* 'Italian millet' (*Setaria italica* Beauv.), and *o guapo* 'sorghum' (*Sorghum bicolor* Moench). The GRAIN class may be realized by the phrase *boka o pine-oli* 'rather like rice'. It appears to be necessary to posit this class in order to define the term (*ma*) *afa* 'chaff of GRAIN'. Despite the large vocabulary associated with rice and millet cultivation, I found no other term requiring GRAIN in its definition.

### 3. PANDAN

PANDAN is here posited as a covert class, containing five basic classes of pandana-

ceous plants, because it is required in the definition of at least one of the terms used to describe the handling of pandanaceous leaves: *-bakoto* 'to gather PANDAN leaves'. The apparent lexical realization of this class is quite commonly used, i.e. 'rather like a *bubo* (*Pandanus* sp.)' (*bubo* is the most culturally important form of pandanaceous plant). The verb *-bakoto* cannot even be used for the superficially similar action of gathering *boboro* (*Nipa* palm) leaves. As with the lexical realizations of other covert classes posited here, the phrase 'rather like an X' could hardly be considered sufficient evidence for the class if it were only used to describe other plants; instead, it is used as a noun to designate the whole class.

Before concluding, it is necessary to comment on the placement of the *o nyawa* 'human being' class within this scheme of Tobelo BIOTIC FORMS. Only this class stands out as having no basic ("generic") terms. If one considers (as I do not) that the purpose of positing higher-level covert classes is only to show the classificatory associations of all the basic terms in the domain, then we need not concern ourselves with the position of this class, since it is not labeled by a basic term. Because it seems in some contests to contrast with *aewani* 1 'animal' we may tentatively place it at level B<sup>+2</sup> in Fig. 1. In any case, these levels are only important insofar as they indicate relations of class inclusion among subclasses of BIOTIC FORM; no claim is made for particular characteristics of terms or classes at any level except the basic one, and presumably those who do make such claims for characteristics of particular levels (e.g. Berlin *et al.* 1973, Brown 1977, 1979) will have means of recognizing the levels to which their generalizations apply. Nevertheless, the 'human being' class does meet the defining features of the FAUNAL FORM class, and thus of all the superordinate classes, and must be included in this diagram and in our analysis for that reason. The broken line is used in Fig. 1 to indicate that, while included for those reasons, this 'human being' class is sufficiently different from other BIOTIC FORMS to be distinguished in that fashion on the diagram. With that addition, we may say that Figure 1 summarizes the posited relations among labeled and unlabeled classes that form the Tobelo system of classification of BIOTIC FORMS above the "basic" (or "generic") level.

### CONCLUSION

This paper has criticized some methods for positing covert categories in folk classification, and introduced some others. In particular, the disadvantages of positing covert categories on the basis of tests for perceived similarity among organisms has been emphasized. Categories derived from such tests may prove useful in describing local perceptions about animals and plants, but cannot produce classes of the sort that belong in a linguistic description of a semantic domain.

By instead focusing on co-hyponymous contrast sets within folk taxonomies, and by examining a wide range of vocabulary items for classes implied in their definitions, it may be possible to avoid some of these difficulties. The methods of co-hyponymy and of definitional implication used here do produce classes that seem to have some "psychological reality" because they can be shown to underly lexemes used in the language under study. Nevertheless, it is also possible to consider them purely heuristic devices which may be used to *describe* locally perceived similarities among named animal and plant forms.

I prefer to consider the methods of co-hyponymy and definitional implication techniques for establishing a lexical field (cf. Lehrer 1974:15-45)—in the example considered here, the field of the BIOTIC FORM in Tobelo. The usefulness of the covert classes so posited depends primarily on their ability to assist in the description of the semantic relationships among labeled classes which divide up that field.

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## NOTES

1. This report is based on fieldwork totaling 33 months, carried out among the Tobelo of Halmahera Island during two field seasons. The first (October 1977-July 1979) was supported by a Fellowship for Doctoral Dissertation Research in Southeast Asia from the Social Science Research Council of New York, with an additional Research Grant from the Concilium of International and Area Studies (Yale University). A second field season (December 1980-November 1981) was supported by a grant from the National Geographic Society.
2. Posited covert classes will here be distinguished by being written in upper case letters (e.g., BAMBOO, BIOTIC FORM).
3. Hunn's argument against the use of distinctive features in this way is surprising (Hunn 1977:42 and footnote):

. . . I reject the alternative approach to taxonomic axiomatization that would define taxa as sets of features. Such an approach is not consonant with the postulate that taxa are related to one another by set inclusion . . . [footnote:] If a taxon (*t*) is defined [by] . . . features (*a, b, c*), then a taxon (*t-1*) which is immediately included in the taxon (*t*) must be defined as a set of features (*a, b, c, d*). Thus *t-1* cannot be a subset of *t*.

This argument seems to confuse the distinctive features used to define a class with the *members* of that class (or the *elements* of a set). In defining classes of English "kin", for example, we might define *parent* with features like (a) Kin, (b) First ascending generation, and (c) Lineal. *Father* would require a fourth feature, (d) Male. Yet *father* is clearly a subclass of *parent*.

4. Elsewhere Hunn (1976) has argued that such "chains" more accurately reflect perceived differences among organisms than can be reflected in the taxonomic model, and that taxonomic models do not distinguish between what he calls "deductively" and "inductively" defined categories (the former based on a small number of abstract features, the latter based on large numbers of naturally occurring shared characteristics). The aim of the semantic description of a domain is to describe the meaning of each linguistic form occurring in the domain and to describe the sense relationships of those forms to each other. Taxonomic principles are valuable insofar as they can be used to structure class-inclusion and contrast relations among linguistic forms, though they admittedly will not fully describe *perceptions about* the objects denoted by those forms. As for the numbers of features defining "categories," his interesting distinction between "inductively" and "deductively" defined categories does not make it less necessary to assert that the description of any semantic class should include at least one defining feature to distinguish that class from others in the domain.
5. This analysis of these polysemous terms and the ensuing discussion are from Taylor (1982), where the example was used to indicate the importance of distinguishing polysemous terms in nomenclature; here the example is brought up for a different purpose, to illustrate the method of co-hyponymy in positing covert classes.