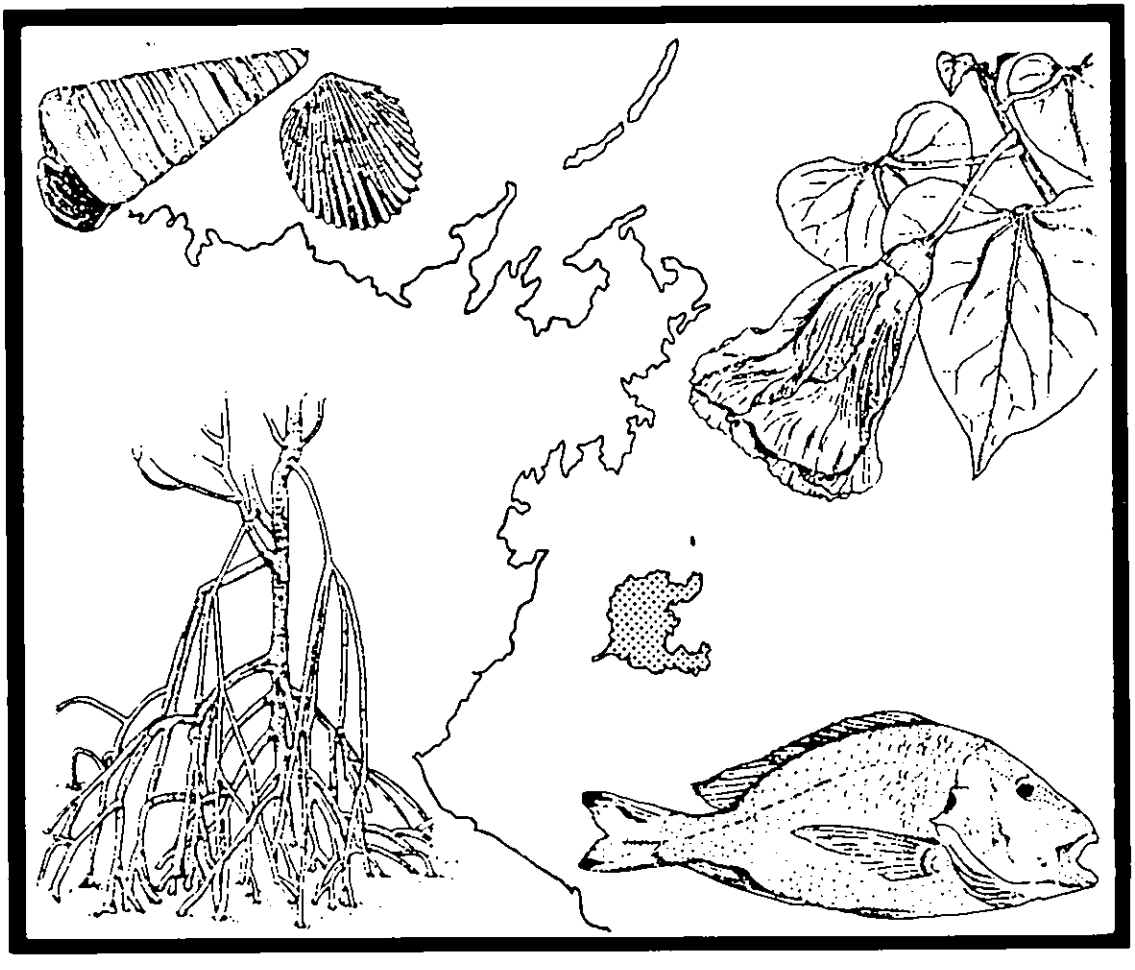
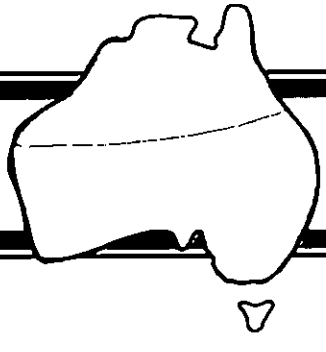
J.A. Waddy

Classification of Plants & Animals from a Groote Eylandt Aboriginal Point of View

VOLUME 1





Australian National University North Australia Research Unit
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Classification of Plants & Animals from a Groote Eylandt Aboriginal Point of View

Julie Anne Waddy
B.Sc.(Syd.), B.A. Dip.Ed., Ph.D. (Macq.)

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Chapter One

INTRODUCTION

taxonomy classification, especially in relation to its principles or laws

classification the assignment of plants and animals to groups within a system of categories distinguished by structure, origin, etc. The usual series of categories is phylum (in zoology) or division (in botany), class, order, family, genus, species, and variety. (The Macquarie Dictionary, 1981)

To classify things is to arrange them in groups which are distinct from each other... (Durkheim and Mauss, 1963:4)

...to classify is not only to form groups; it means arranging these groups according to particular relations... Every classification implies a hierarchical order... (Durkheim and Mauss, 1963:8)

Traditionally, in western formal logic, classification has been taken to mean hierarchical classification by genus and species. (Needham, 1979:66)

These dictionary definitions and statements by anthropologists are in keeping with a western scientific viewpoint of the meaning of the word classification. This word refers me immediately to the ordering of the plant and animal kingdoms and specifically to their arrangement in the scientific hierarchy.

Here I wish to comment firstly on scientific classification and then to discuss the use of the word classification by folk biologists and other anthropologists in relation to studies of plants and animals in other societies.

Scientific classification really begins at the level of kingdom, in the division of living things into the animal and plant kingdoms. It then proceeds downwards through phylum or division, class, order, family, genus and species. Finer divisions may be made when appropriate. The species is seen as the basic unit, being, for present purposes, those individuals that are more or less alike, and that are able to interbreed and produce fertile offspring under natural conditions (Australian Academy of Science, 1967). Species may be subdivided to give varieties.

In recent years increasing interest has been taken in the principles of folk classification. In using the term folk classification, I am following Hunn (1977:3) who distinguished between folk science and ethnoscience. The emphasis in ethnoscientific studies is on a rigorous application of formal methods of elicitation, whereas, as Hunn noted, 'studies of folk science shift the emphasis from method to content'. Thus folk biology is concerned with descriptive analysis of a society's knowledge of its plants and animals. Folk biological classification,

then, is the assignment of plants and animals to groups within a system of categories, normally based on similarities in form and behaviour but from the point of view of a particular society. Examples of higher order categories in English are tree, bird and fish. Other systems of folk classification can be similarly defined, such as the folk classification of foods. The study of folk classification seeks to elucidate the principles of classification underlying the observed system of categories.

Whereas in scientific classification the principles of classification are explicit, the principles of folk classification are frequently not verbalised by members of the society whose system is being studied and the available data may therefore need to be interpreted by the folk biologist. The result has been considerable variation in the way in which folk classification systems have been reported. At the same time, however, research workers have been fascinated by the relatively high degree of correspondence between individual folk biological taxa and scientific taxa. Because of this correspondence and the existence of more inclusive categories, our scientifically trained minds immediately suspect parallels between folk classification systems and the scientific hierarchy.

[1]The major contributions to folk classification studies, based on exhaustive studies of either the plant or the animal kingdom, have been by Conklin (1954) for the Hanunóo of the Philippines; Bulmer and his colleagues (1968–1975; Majnep and Bulmer, 1977) for the Kalam of Papua New Guinea; Berlin, Breedlove and Raven (1974), and Hunn (1977) for the Tzeltal of Mexico; and Hays (1979, 1983) for the Ndumba of Papua New Guinea. Each of these researchers has described the folk classification system of the area studied as hierarchically organised.

Hierarchies, whether scientific or folk, may be called taxonomies. Stimulated by the work of Berlin, Breedlove and Raven, Kay (1971, 1975) has developed a theoretical framework within which folk taxonomies, and biological taxonomies in particular, may be viewed. He has provided the following definitions:

> A taxonomy... always includes both a taxonomic structure and also a set of names, and a mapping involving the set of taxa and the set of names.
>
> A taxonomic structure is concerned with sets (or classes, or segregates), called taxa (singular taxon) , and the relations among them. (1971:868)

The different levels, or ranks, of a taxonomic structure are related, like genus and species, by class inclusion. Further aspects of Kay's theory will be mentioned where appropriate.

Before examining the nature of folk classification systems, I wish to examine other ways in which the term 'classification' has been used in anthropological literature in relation to the classification of plants and animals.

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[1] Parts of this chapter and of chapter 3 have been previously published (Waddy, 1982a).

CLASSIFICATION: SYSTEM OR SYSTEMS?

In anthropological literature, the term 'classification' is often used in other senses than by folk and scientific biologists. For example, Needham (1973) has spoken of symbolic classification such as classification systems associated with the contrast right and left, clearly a binary contrast. According to him (1979:3), symbolic classification is a classification in which a particular category functions as a symbol that 'stands for something else, e.g., as... an eagle for the United States'. He defined classification as 'a systematic set of classes, a class being regarded as a conceptual grouping of things (books, women, mountains) by virtue of particular resemblances that in some way or another associate them together.' He spoke of named classes as categories (compare 'taxa' above). Needham has stated that 'one of the most interesting features of symbolic classification... is that characteristically it is not hierarchical' (1979:67). However the distinction between folk biological classification, symbolic classification and any other form of classification, such as classification of foods, has not always been recognised. When more than one system of classification has been recognised, the nature of the different systems and their relation to one another has not always been made clear.

One of the earliest discussions of classification by anthropologists was by Durkheim and Mauss in their classic Primitive Classification (1903[2], see 1963). They were particularly interested in primitive classification of plants, animals and natural phenomena in relation to social groups, as exemplified in the totemic beliefs of Australian Aborigines and North American Indians. They discussed the division of natural species and phenomena among clans and moieties. This type of classification, where plants, animals and natural phenomena may be assigned to the one social group, is what I would term totemic classification. Durkheim and Mauss stated that the divisions of society 'served as divisions for the system of classification' and, further, that 'not only (were) the external form of classes, but also the relations uniting them to each other, ... of social origin'. (1963:82-83) In other words, there is a hierarchy of natural species which is closely related to the pattern of social organisation into tribe, moieties and clans.

Durkheim and Mauss (1963:81) considered primitive classifications to be the forerunners of the first scientific classifications on the basis that

> i) they are systems of hierarchized notions
> ii) their object is... to advance understanding, to make intelligible the relations which exist between things... to connect ideas, to unify knowledge...

They characterized such primitive classifications as 'scientific' in contrast to 'technological classifications', which they considered to be linked to practical concerns (1963:81). They thus recognised the possibility of more than one classification system.

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[2] Where a bracket includes two dates for a particular reference the first indicates the original date of publication, the second the date of publication of the edition consulted. The original date of publication is only referred to in the first reference to a book/paper; thereafter only the date of the edition consulted is given. This convention has only been observed where the date of publication of the original has a bearing on my argument.

It is a pity that Durkheim and Mauss did not elaborate on their notion of 'technological classifications'. Their only example is animals grouped 'according to the means used to get them: for example, animals living in water, or in the air or on the ground'. Durkheim and Mauss stated that 'at first such groups were not connected with each other or systematized', which would suggest that 'technological classifications' may not have 'a hierarchical order'. Hunn (1977:61) has characterised classifications of this kind as 'descriptive', meaning that they are 'close to perceptual reality' and thus belong in the cognitive domain. He considered Durkheim and Mauss's technological classification to be similar in nature to folk biological classification. By contrast Durkheim and Mauss's 'primitive classifications' are considered by Hunn to be 'explanatory' or, as Durkheim and Mauss stated, 'scientific' or 'speculative'. Hunn likened the latter classifications to an explanatory model of scientific classification such as the theory of evolution. He would thus interpret primitive classifications, including the totemic, as theories explaining the relationships between species.

Discussing primitive classifications in a later publication, Durkheim (1915, see 1976:148) stated that

> classification is a system whose parts are arranged according to a hierarchy. There are dominating members and others which are subordinate to the first; species and their distinctive properties depend upon classes and the attributes which characterize them; again, the different species of a single class are conceived as all placed on the same level in regard to each other.

Since primitive classifications were deemed so clearly hierarchical and were considered to be the forerunners of scientific classification, it would seem to me that, from Durkheim and Mauss's perspective (and contrary to Hunn), it is 'primitive classification' which should be considered similar to folk biological classification.

However, Durkheim and Mauss did not specifically address the issue of the existence of folk biological classification, the actual naming of plants and animals and the ordering of the taxa within a hierarchical system separate from totemic classification. They sought to explain the origins of scientific classification on the basis of patterns in society, such that 'moieties were the first genera; clans, the first species'. But they did not give a clear indication of how this might be applied to plant and animal taxa. Thus it is not clear whether they recognised the role of higher order folk categories such as tree, bird and fish as part of a hierarchical classification system.

Another anthropologist who was particularly interested in classification was Lévi-Strauss. Lévi-Strauss recognised totemic classification of plant and animal species but interpreted it as one of many 'levels' of classification in contrast to, for example, levels 'operating by means of abstract categories or that using nominal classes' (1966:136). He considered that all the various levels fitted together into a single 'system of logic work(ing) on several axes at the same time' (1966:63). He noted

> the existence of <u>a classification</u> with, as it were, an adjustable thread which gives the group adopting it the means of 'focusing' on all planes, from the most abstract to the most concrete, the most

> cultural to the most natural, without changing its intellectual instrument (1966:136, emphasis added).

In discussing the documentation on plant and animal classification in so-called primitive societies, he has stated that it 'shows how commonly zoological and botanical classifications do not constitute separate domains but form an integral part of an all-embracing dynamic taxonomy...' (1966:139).

In his bid 'to discover how relations which exist in Nature... are used to generate cultural products which incorporate these same relations', he has constantly sought evidence of transformations from the realm of Nature to the realm of Culture. To this end he has made extensive use of binary oppositions such as Nature/Culture, raw/cooked, black/white. His emphasis on binary contrasts has led him to say that 'the universe is represented as a continuum made up of successive oppositions' (1966:139). Lévi-Strauss has not accepted that biological folk taxonomies are irreducibly distinct from other forms of classification such as totemic classification.

Morris (1976:543, 1979:120) and Ellen (1979a:19) have both commented that Lévi-Strauss has not distinguished between technological and symbolic classification. A number of other researchers have reported what they claim to be <u>the</u> classification of a particular society when in fact their data could be interpreted to give several different classification systems. Examples will be given shortly. As Bloch (1977:285) has said, 'Of course there is nothing wrong in doing that in itself, but there is, if it is suggested that what they find is <u>the</u> cognitive system of the people they studied.'

In discussing aspects of classification of the animal domain for the Nuaulu in eastern Indonesia, Ellen (1975:223) suggested caution 'before assuming that <u>the</u> structure of a particular classificatory domain has been elicited and (in being) suspicious of unsubstantiated claims in the literature to have done so.' With specific reference to the classification of cuscus species, he found that three classification systems could be distinguished - one based purely on lexical differentiation, one based on ritual significance and one based on morphological features. The system in use at any one time depended on the context of the situation. The names remained the same but the way they were grouped together varied. When utilitarian or ritual features are in focus, the classification may be quite different from that when morphological features alone are in focus. Bloch (1977:285) came to a similar conclusion from his studies on differing Balinese concepts of time.

An excellent example of the error alluded to by Bloch and by Ellen, in which <u>the</u> classification system is presented, is found in the work of Fowler and Leland (1967). The taxonomy they describe for the Northern Paiute in North America is based initially on the binary oppositions edible/inedible and useful/non-useful. Each of the three categories 'things that are eaten', 'things that are used' and 'things that are not used' is divided into **naadi** 'things that grow in place' and **yicin·adi** 'things that move'. Both these categories are further divided in an identical manner each time they occur. Thus it is quite evident from the data given that it would be possible to construct a biological classification system which is distinct from the two binary classifications (see pp.182-84). In support of a single sytem of classification Fowler and Leland (1967:383) pointed out that 'Plants are classified in a different way under each of the three main divisions...'

There is a level at which differences are apparent. However I would maintain that these three apparently different forms of classification represent three different systems of classification, viz. (i) the classification of edible plants which is given on p.30, (ii) the classification of useful plants which is logically based on the various uses to which the plants are put, and (iii) the classification of plants which are not used, which appears to be linked to what I would term biological classification. The more commonly used systems may be those based on utilitarian features but that does not mean that the various systems must be interpreted as one. Friedberg (1968:314) has also criticised Fowler and Leland for their failure to recognise the possibility of more than one system of classification.

Dieterlen's account (1952) of the classification of plants by the Dogon in the Sudan is another example of what the author claims to be the classification system (my emphasis, J.W.). In this complex system of twenty-four classes, or families as Dieterlen called them, each class is associated with a different part of the body and contains a wide assortment of things including plants and animals. This system appears to be a form of symbolic classification, since Dieterlen has shown that it has links with the local mythology. Dieterlen (1952:124) has noted that 'within each family, the Dogon distinguish trees (**timmu**), shrubs (**uryo**) and herbs (**dogo timmu** and **dogo**)'. Such categories would thus appear to form the basis of their biological classification system.

More recent examples are seen in Lebeuf (1977) and Kesby (1979). The system reported by Lebeuf for the Kotoko people of Cameroon is

> primarily based upon the elementary division of all Creation into masculine and feminine categories... The system includes five fundamental limitative series: wild mammals, birds, edible grains, wild plant life, and fish. Each of the first four includes twenty-four species, the fish alone containing thirty-six. (1977:185)

A further series of interrelationships is apparent with the elements Earth, Water, Air and Fire, in such a way that 'the taxonomic system of Kotoko people places man in total contact with the universe' (1977:190). Although there are insufficient data to be sure, it would seem that the system reported by Lebeuf belongs essentially to the symbolic realm. It does not include all living things, even from the categories named above.

Kesby studied the classification of plants and animals by the Rangi of Tanzania. Though he has listed five or six categories of what Berlin would term life forms, he has reported these within the context of the binary oppositions above/below, night/day and water/land, contrasts which would appear to belong to the symbolic realm. He has interpreted their classification of plants and animals as a single system.

In his discussion of animal classification in a village of northeastern Thailand, Tambiah (1969:443–47) found it a problem that parts of what he considered to be the system appear to be based on edibility and others are not. He found that animals were primarily classified into **sad baan** 'animals of the house or village' (domesticated animals) and **sad paa** 'animals of the forest'. Animals of the forest are further differentiated into 'wild animals similar to domesticated animals', 'other animals' and 'animals of the deep forest' which are rarely seen. The last category in particular is considered inedible, but certain animals in each

of the other categories are also inedible. Other categories of living creatures include **maeng** 'insects and a few aquatic invertebrates', **nog** 'most birds' and **sad naam** 'water animals'. The last two categories are generally considered edible and the first inedible but in each case there are exceptions.

Tambiah was seeking to integrate animal classification with social organisation and dietary prohibitions. I would suggest that his difficulty in understanding their animal classification system might not have arisen if the data had been considered firstly from the point of view of biological folk taxonomy and then from the point of view of food. That is not to say that the interrelationships between the systems as stated by Tambiah are invalidated but rather that some of the difficulties of classification can be removed by considering the biological system separately from the food classification system. Animal food classification, hierarchically organised, may well be a subset of animal biological classification but the question of edible vs. inedible becomes a simple binary contrast, crosscutting the various biological taxa. Edibility is not a basis for biological classification, nor for food classification per se. It is another way of classifying the universe. Edibility depends upon 'other social facts, such as concepts of social distance, marriage rules, and house categories, i.e. (upon) other systems of human classification', as Tambiah pointed out. Tambiah went on to show that the inedibility of certain animals in the Thai system he studied is partly due to their status within the (biological) classification system.

Other researchers have realised the possibility of more than one system of classification. Friedberg (1970:1114–16,1127–29), for example, in commenting on Lévi-Strauss, showed from her data on Bunaq classification in Timor that classification of plants as plants, what I have termed biological classification, is based largely on morphological features. She found that factors associated with myth and ritual did not have any direct bearing on classification of plants from the biological perspective. When the Bunaq opposition of hot and cold, with its implications of danger and illness vs. longevity of life, was applied to plants, the resulting classification cut right across the biological classification of the same plants. Furthermore the classification of some plants as hot or cold could change depending on their stage of growth. Thus Friedberg considered that such a binary contrast is distinct from other ways of classifying plants. Nevertheless she recognised that biological classification may assist in the interpretation of myth and ritual and vice versa.

Morris (1976:543) questioned Lévi-Strauss's suggestion that plant and animal classification is part of an overall symbolic classificatory system linking all other classificatory schemas. Like Friedberg he found that biological classification of plants and animals by the Hill Pandaram of southern India constitutes 'a cultural domain which is largely independent of other aspects of Hill Pandaram culture'. He found no evidence of mythological or totemic belief with which biological classification might be related. Unlike Tambiah, Morris did not find any evidence to suggest that dietary taboos were in any way related to the biological classification system.

Conklin (1962a:299), in discussing problems of folk plant classification, noted that the Hanunóo can classify their plant species on the basis of domestic vs. wild species or on the basis of woody plants, creepers and herbaceous plants, but that the former crosscuts the latter. The latter classification, based on the form of the plant, is the first major division of the Hanunóo biological folk taxonomy. The former is one of many other possible classifications which may or may not be hierarchical. In this instance 'domestic vs. wild' appears to be another example of a simple binary contrast.

One way in which different classification sytems have been viewed has been to divide them into general purpose and special purpose classifications. There has been some debate as to just which classifications are general and whch are special purpose (see Berlin, Breedlove and Raven, 1966:275; Bulmer, 1970:1086–88; Berlin, 1974:267; Hunn, 1975a:15; 1982:832). But it is agreed that general purpose classifications are 'natural' in the sense that their members possess many attributes in common. It is now agreed that the biological classification system is a general purpose classification akin to the scientific classification system. As Sneath (1957:185) has said, 'The underlying assumption of scientific classification is that there is a natural order, a system of similarities, which can be discovered by investigation'.

A different perspective on classification systems has been given by Dwyer (1979:19; n.d.:25–33). He has been concerned with the evolution of taxonomic systems. In the light of his data on Rofaifo animal classification in Papua New Guinea he has suggested that, though there may be different classification systems evident in certain societies, the separate systems develop in time into a single system of classification incorporating each of the various domains based on biological, economic and symbolic criteria. For the Rofaifo he found these domains to be coincident. The implication of Dwyer's hypothesis is that at some point in the past the classification systems of the Rofaifo or their ancestors were separate rather than coincident.

Many more examples of folk classification systems could be given but I trust that I have included sufficient examples to make my point. Throughout the book I have tended to select examples where the author has made comments with theoretical implications rather than examples which are purely descriptive.

From the data thus far presented it may reasonably be concluded that there is more than one way of classifying plants and animals from the point of view of any one society. Thus folk biological classification may be distinguished from totemic and other forms of symbolic classification. Binary classification of plants and animals can result in such paired categories as edible/inedible, totem/non-totem, domestic/wild. There may be relationships between the various systems of classification but difficulties arise in interpreting data if the various systems are not distinguished.

The types of classification with which this book is concerned are:

i) folk biological classification
ii) the binary contrast edible/inedible and the classification of foods
iii) the binary contrast totem/non-totem and the classification of totems, and
iv) linguistic classification.

The terms 'food classification' and 'totemic classification' have been taken to include the initial binary classifications of the plant and animal domains as a matter of convenience in labelling the sections of this book.

THE NATURE OF FOLK CLASSIFICATION SYSTEMS

The nature of biological, food, totemic and linguistic classifications will now be examined in some detail. But before doing so it is necessary to consider some basic terms of reference.

Basic units of classification

One of the reasons for confusion over the number of different classification systems there may or may not be lies in the fact that, generally speaking, the same basic units, having the same names, are used irrespective of the classification system being considered. Ellen (1975:224) specifically reported this in his discussion of cuscus classification, as noted in the previous section. A particular plant or animal may be called by the same name regardless of whether the focus is on the plant or animal itself or on its potential as food, or on its ritual significance or on its potential usefulness. What is different in each case is the system of classification and the resultant higher order categories. The names of these higher order categories may well differ from system to system but the names of the basic units are generally the same. As Conklin (1962b:129) has said, 'Unlike scientific taxa, folk segregates may belong simultaneously to several distinct hierarchic structures'.

However, there has been considerable debate as to just what is the basic unit of folk classification, if in fact there is a basic unit. Some writers, including Lévi-Strauss, simply use a term without clearly defining its use. Others, particularly folk biologists, have sought to identify such units. I will now examine a number of terms which have been used to refer to the supposedly basic units of classifications.

Lévi-Strauss made constant reference to 'espèce', translated 'species', in his book, La Pensée Sauvage (1962), but he nowhere defined exactly what the term meant. He considered that above the level of species are 'elements, categories, and numbers', but below the level of species is a 'collection of individuals', having proper names as appropriate for the species. To Lévi-Strauss (1966:138) it was disconcerting that 'species appeared as inert and separate classes (when) confined within the limits of their respective "kingdoms" '. He noted that 'The natural sciences for a long time regarded themselves as concerned with "kingdoms" ', each independent of the other. He thus felt that a taxonomy must be all-embracing to allow for the apparently dynamic nature of the species. I think the idea that Lévi-Strauss was really trying to convey is that the same notion of species can be expressed within several semantic domains. The concept of species is not confined to the biological classification system but it can also be the basic unit within food classification or totemic classification, for example.

Bulmer (1970:1072) sought to clarify Lévi-Strauss' use of the term and came to the conclusion that espèce was being used with a wider meaning than is usual for English 'species'. He considered that certain assumptions underlay Lévi-Strauss' total argument, viz.

> that in any total folk-classification of plants or animals there are certain important lower order categories which are seen as "objective" by the users of the classification and which are the smallest logically natural units, defined by multiple criteria, by a

> complex system of definitions, and not just marked off from their congeners by a single defining character; and that these bear, in a majority of instances, some meaningful relationship to objective unities and discontinuities in nature, i.e. to biological as well as logical natural groupings.

Accepting these as reasonable assumptions, Bulmer and Tyler (1968:349) proposed the specieme or folk species as the basic unit of folk classification, i.e. the lowest level taxon defined in terms of multiple criteria. This is seen as a 'natural kind' within the environment and is most often a terminal taxon, i.e. one which is not further subdivided. Examples in English are pelican and ghost gum. Bulmer (1970: 1077–78) has considered that, in the case of locally familiar organisms, the majority of folk taxa are 'natural' categories. He has argued that 'Karam zoological classification, at the lowest level, is concerned with objective discontinuities in nature' (1970:1081). He considered that the basis of such objectivity is in the observable differences between biological species although he recognised that not all folk taxa will be classified in a biologically realistic manner.

Berlin, Breedlove and Raven (1973:215–16), by contrast, proposed the folk genus as the basic unit, defining it largely on the basis of the distinction between primary and secondary lexemes. Primary lexemes are, 'for the most part, unique, "single-word" expressions that can be shown to be semantically unitary and linguistically distinct... Psychologically, (such lexemes) seem to be more basic or salient than (secondary lexemes)' (Berlin et al., 1974:27–28). Secondary lexemes normally consist of two words, one of which is a simple primary lexeme. Thus 'kangaroo', 'wren' and 'gum tree' are primary lexemes, but 'red kangaroo', 'blue wren' and 'ghost gum' are secondary lexemes. Taxa labelled by secondary lexemes are included within taxa labelled by primary lexemes. The former are folk species, the latter folk genera. Folk genera are labelled by generic names, which are primary lexemes. Berlin, Breedlove and Raven (1973:216) further maintained that

> generic taxa are the basic building blocks of all folk taxonomies. They represent the most commonly referred to groupings of organisms in the natural environment, are the most salient psychologically and are likely to be among the first taxa learned by the child.

Hunn (1977:45) criticised this assertion by suggesting that the association of taxa and names needs to be verified by specifying independent criteria for recognising types of names and types of taxa.

In his 1976 paper, Berlin (1976:387) modified his criteria for the folk genus, noting that 'While there may be general agreement among folk biologists as to the significance of generic taxa, there is little agreement concerning the criteria to be utilized in assigning some class of plants or animals to generic rank.' He then stated that

> i) Generic taxa are consistently labeled in folk biological taxonomies... usually by primary lexemes.
> ii) Most generic taxa are taxonomically included in one of the few major life form taxa.

Life form taxa will be defined in the following section. For the present, it is sufficient to note that they are such taxa as tree, bird and fish. It should be noted that Berlin (1976:386) chose the term folk genus (instead of folk species) for the basic unit of folk classification largely because of the way in which scientific classification developed historically from its roots in folk classification and because for practical classification purposes it is the scientific genus which can be most readily identified.

An attempt to define a basic unit objectively has been made by the cognitive psychologist, Rosch and her colleagues (1976). They have considered cognitive aspects of classification of concrete objects in general, including plants and animals. In considering taxonomies of familiar categories such as furniture, fruit, clothing and so on, they defined basic objects as the most inclusive categories whose members:

i) possess significant numbers of attributes in common, i.e. the most general classes of which attributes are predictable,
ii) are used in the same way,
iii) have similar shapes and thus can be readily identified by their overall appearance, and
iv) can be identified from averaged shapes of members of the class, i.e. can be imaged.

Rosch (1976:386) anticipated that Berlin's folk genus would be equivalent to their basic object category. However, for the city-dwelling subjects studied, the basic categories turned out to be those superordinate to the folk genus, viz. terms such as tree, bird and fish. Because of this unexpected result Rosch acknowledged the need for further study on the effect of ignorance vs. expertise on what would be considered as basic object categories in biological classification.

In the light of Rosch's results, one might question the search for a general definition of a basic unit in folk classification on the ground that what is considered 'basic' may turn out to be culturally specific. This issue has been discussed by Dougherty (1978:76), who suggested that it may well 'prove correct that the most salient or fundamental categories in biological classification are (generally) not fixed by nature but vary as a function of an individual's or a culture's degree of interaction with the domain concerned.' In other words, in an urban society, where people no longer directly depend on their environment for their livelihood, the categories which turn out to be basic are those superordinate to the folk genus. But in a hunter-gatherer society, where every need is satisfied directly from the environment, the basic categories are most likely to be folk genera. Even in such societies there will be those who are experts and those who know relatively little about their environment, but the latter group will have a greater awareness of the environment than city-dwellers. I would suggest that, at least in societies dependent on hunting and gathering and/or subsistence farming, the basic object categories will normally be folk genera.

Hunn (1977:50) has argued that in most cases a folk taxon can be recognised by a characteristic configuration enabling it to be separated from other taxa by significant discontinuities. Underlying his treatment of these discontinuities is the assumption that, if the natural world is considered as a continuum, the points at which discontinuities are perceived vary from culture to culture, and between folk and scientific taxa, because the perception of discontinuity – in Hunn's terms,

the perceptual salience - varies. Compared with Bulmer's approach, Hunn's seems more readily able to allow for folk taxa which do not correspond closely to scientific taxa. Bulmer focused on observable differences which he considered were objective. By focusing on the perception of discontinuity, Hunn allowed for the eccentricities of folk perception which are not always explainable.

The folk perception of discontinuity in the natural world may be affected by: (i) identifiable characteristics, (ii) cultural significance,[3] and (iii) frequency of observation.[4] If the identifiable characteristics of two or more scientific taxa are minimal and there is little or no difference in their cultural significance then they may be perceived as one entity even though the differences between them may be recognised. Similarly, if an animal or plant is rarely encountered it may be included with another scientific taxon, and thus again be perceived as one entity.

At this point I would differ from both Bulmer and Dwyer (1976:435) who interpret terminal unlabelled subdivisions of taxa to be speciemes with the same cognitive status in the folk taxonomy as labelled terminal taxa. To me they appear to have fallen into the trap of assuming that correspondence of any folk taxon with a scientific taxon implies the same degree of perception of discontinuity, despite Bulmer's awareness of this trap (Bulmer, 1970:1078). If two scientific species are given different names in a folk taxonomy, the degree of folk perception of discontinuity would appear to be greater than if these same two are included within the one labelled folk taxon where the subdivisions are unlabelled.

I would say that the basic units within the folk classification system must be labelled, i.e. named (see also Berlin, 1976:387), as in Berlin's folk genus. Linguistically labelled subdivisions of the basic unit - Berlin's folk species for example - represent a lesser degree of perception of discontinuity than the basic units. Their identifiable characteristics would be slightly less than the identifiable characteristics separating undivided taxa, though the subdivided taxa may still be defined by multiple criteria. Linguistically unlabelled subdivisions of a taxon represent an even lower degree of perception of discontinuity. It seems most unlikely that an unnamed subdivision of a taxon could have the same conceptual content or cognitive status within a hierarchy as a labelled taxon or, for that matter, that a secondary lexeme could have the same conceptual content as an undivided primary lexeme. Berlin, Breedlove and Raven (1973:240) and Hunn (1977:46-50) have stated that there are different psychological processes involved in distinguishing taxa at different levels of inclusion.

Ohnuki-Tierney (1981:457) has also stressed the importance of the role of linguistic labelling in perception of discontinuities. It is one thing to recognise differences in sensory stimuli. It is another thing actually to name, and thereby

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[3] Hays (n.d.) has suggested that assessing cultural significance requires us to take into consideration both the number of uses of a species, i.e. differential responses to that species, and also the number of possible substitutes for a given use.

[4] Berlin, Boster and O'Neill (1981:106) have found frequency of observation to be linked with identifiable characteristics in their assessment of perceptual salience for Aguaruna bird categories. They used 'the term salience to refer to the relative perceptual importance or distinctiveness of any specified species of bird' (1981:96).

allow classification of, a perceived unit. He has suggested that 'Before natural discontinuities are transformed into cultural discontinuities, meaning must be assigned to the former.'

I think it is implicit in the work of Berlin, Hunn and also Hays (1979) that it is only the named taxa, at least at the lowest levels, which truly reflect the perception of discontinuity and thus of 'natural' categories. Rosch and her colleagues (1976:435) have stated that 'Universally, basic object categories should be the basic classifications made during perception,... the most codable, most coded, and most necessary in the language of any people.' There are differences in the degree of the perception of discontinuity as indicated above. It is these differences which give rise to differing cognitive status and thus to the different levels of a taxonomy.

One of the difficulties for folk biologists has been the assessment of cognitive status within the hierarchy of taxa at various levels of inclusion (Hays, 1983:607). It is at this point that Berlin has confounded the questions of perception and of cognitive status as Dwyer (1976:433) has claimed. Berlin's folk genus purports to convey both cognitive status and perception of discontinuity – without, however, either the cognitive status or the degree of discontinuity being satisfactorily defined.

Hunn (1977:51) has sought to redefine the status of generic taxa in terms of 'the width of the gaps isolating taxa and the "width", or heterogeneity, of the taxa themselves.' The major difficulty of such a formulation, as Hunn himself has admitted, is the problem of measurement.

Rosch is on much surer ground because of the experimental evidence she has amassed to support the notion of basic objects. The degree of discontinuity can reasonably be ascertained, at least for a sample portion of the environment. However, there is a problem – viz. trees, birds and fish are considered as basic objects along with dogs, cats and kangaroos (Rosch et al. 1976:432). It is quickly apparent that the categories 'tree', 'bird' and 'fish' potentially contain a much wider diversity than do the categories 'dog', 'cat' and 'kangaroo'. Intuitively I want to equate the cognitive status of the latter to that of 'oak', 'eagle' and 'salmon'. Otherwise the implication is that the most inclusive terms (plant and animal) may appear at two levels – immediately superordinate to the basic categories tree, bird and fish, but also immediately superordinate to mammal, which in turn includes the basic categories dog, cat and kangaroo. Perhaps a further variable needs to be identified in order to maintain the apparently equivalent cognitive status. Rosch's basic object category would then be readily equivalent to Berlin's folk genus, thus providing non-linguistic criteria to define the degree of discontinuity.

In summary then, there has been no agreement among folk biologists as to just how the basic units of the biological classification system should be named or defined. Although there are difficulties with Berlin's folk genus, as Hays (1983:609) has said, 'Berlin's proposed typology of folk taxonomic ranks is a so-far unequalled contribution to the discovery of general principles that do appear to exist in folk classification systems' and his folk genus is a most important part of that typology. It is the term which I find most acceptable, probably because its use is bound up with his hierarchical model of classification. Though I cannot demonstrate it, intuitively I feel that Berlin's generic taxa rest on comparable degrees of perception of discontinuity. I am thus willing to accept his folk genus

as the basic unit of folk biological classification, at least until a more satisfactory alternative can be agreed upon, and I have in fact done so in my Groote Eylandt study.

Biological classification

As noted at the beginning of this chapter, folk biological classification is the assignment of plants and animals to a system of categories, based largely on form and behaviour, irrespective of cultural use. The use which is made of a plant or animal may affect the actual perception of discontinuity between it and other kinds of plant or animal but it should not affect the category to which it is assigned as a plant or animal for its own sake. The nature of those categories and the relationship between the various categories may well differ from one society to another. The relationship between the various categories is particularly subject to differences in interpretation by different folk biologists.

Some folk biologists have asserted on the basis of the evidence before them, that folk biological classification is hierarchical. Hays (1979:258), for example, has gone so far as to say that 'No society has yet been discovered which does not conceptualize its environment in such a way, and taxonomic models that display the mutually-exclusive groupings (folk taxa) in a hierarchical structure can be successfully constructed when sufficient data have been obtained in a systematic way.' For a variety of reasons, other researchers have denied that folk biological classification should be interpreted as hierarchical and have suggested alternative ways of understanding the data before them. Each one has usually implied, if not explicitly stated, that his or her schema would be generally applicable to other societies.

Examples of hierarchical and non-hierarchical models of biological classification will now be given. I will then discuss the comparison of folk classification with scientific classification and finally the development of folk biological classification.

Hierarchical classification

Taking the folk genus as the basic building block of folk taxonomies, Berlin, Breedlove and Raven (1973:216) ranked folk taxa by inclusion relationships to produce five levels of inclusiveness (Fig. 1).

The highest level, the unique beginner, is equivalent to the scientific rank of kingdom, a level which is commonly not labelled in folk taxonomies including Tzeltal. However Berlin, Breedlove and Raven's hierarchical classification explicitly allows for the possibility of labelling at this level.

Life form taxa can be recognised as follows:

i) Life form taxa occur at the first level of the folk taxonomy and are immediately preceded by the unique beginner when the unique beginner is defined as the kingdom 'plant' or 'animal'. Taxa of life form rank are few in absolute number, they are invariably polytypic, and they include among themselves the majority of all taxa of lesser rank.

ii) Nomenclaturally, life form taxa are labeled by primary lexemes and immediately precede taxa most of which are labeled by primary lexemes.
iii) Biologically, life form taxa are diverse in extension as can be objectively measured by an enumeration of the number of distinct biological species included in each such class.
iv) Psychologically, life form taxa can be defined by a small number of biological characters... (Berlin, 1976:384–85)

Typical examples of life form taxa in English are tree, bird and fish.

Generic taxa have been discussed in the previous section. Specific and varietal taxa are much less common in folk taxonomies than generic taxa, and varietal taxa are generally considered to be rare. Specific taxa normally occur in contrast sets of two or three but cultivated species may be differentiated into larger sets. 'Biologically, contrasting specific taxa differ on the basis of very few

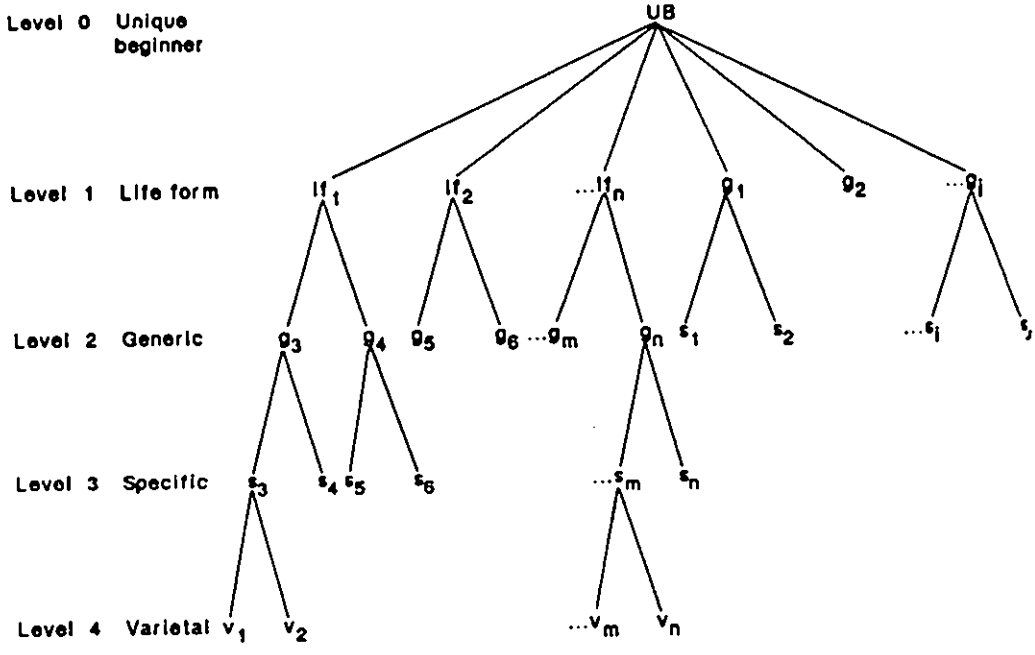


Figure 1 Schematic presentation of Berlin's schema. (Adapted from Berlin, Breedlove and Raven, 1974:26)

morphological characters' (1976:390). Both specific and varietal taxa are generally labelled by secondary lexemes. They are distinguished 'primarily because of the close attention they receive as a result of their cultural significance' (1976:392).

Berlin, Breedlove and Raven allowed for the possibility of intermediate levels in a hierarchy but in their opinion such levels are generally covert. The majority of folk generic taxa are found at Level 2 regardless of whether or not they are terminal taxa. Thus equivalent rank, or cognitive status, is maintained for taxa of equivalent lexemic status and psychological salience. Some taxa of generic rank are raised to the level of life form because of the lack of a superordinate taxon. They are called unaffiliated generics. Essentially, Berlin, Breedlove and Raven have taken the observed data, started at the top and worked down in order to impose the levels of their hierarchy on the data (though, as noted, they may allow taxa of the same rank to appear on more than one level).

Hunn (1975a:20, 1977:53) and Hays (1979:253) have essentially followed Berlin, Breedlove and Raven's schema but with minor modifications, though in a more recent paper Hunn (1982:835) has proposed an alternative model which will be considered in the next section. Hunn's proposal to redefine the status of generic taxa has already been noted in the previous section. Hunn (1977:51) has interpreted the natural world as a continuum such that the unique beginner refers to the total continuum, from beginning to end. Taxa are marked off by discontinuities in the continuum. The larger the gap marking a discontinuity, the more probable that it will mark a boundary of a taxon closer to the unique beginner. Hunn (1977:57) also noted the existence of residual categories which he defined negatively as 'perceived to be a member of X but <u>not</u> a member of any distinctive kind of X.' Initially he applied this term specifically to categories within folk genera. He interpreted similar categories at the life form level as 'unlabeled regions of "taxonomic space" ' (1976:511). In a later paper he has referred to these categories also as residual categories (1982:834).

Hays (1979:267) interpreted the Ndumba data on plant classification to show a much higher degree of polytypy than anticipated by Berlin. He found that some folk specific taxa could be labelled with primary lexemes instead of secondary lexemes and that some of these were residual taxa which included any plants which belonged in the superordinate folk generic taxon but which were not differentiated in a separate folk specific taxon. Hays also reported a larger number of varietal taxa than previously reported in other classification systems and the existence of subvarietal taxa.

In a later paper, Hays (1983:596) pointed out that Berlin's criteria for determining taxonomic ranks 'are not theoretically derived definitions but empirical generalizations' and thus are best considered as 'hypotheses of arguable validity' which need to be tested against further data. He has suggested that there is a fundamental difference between the taxonomic and linguistic criteria used in determining rank and the biological and psychological criteria and that in fact the latter two are the ones on which rank might be more reliably determined (1983:607). From his interpretation of his Ndumba data, the distinction between primary and secondary lexemes cannot be used to determine rank.

In establishing his hierarchical classification of Kalam vertebrates, Bulmer (1968:622) began with the most inclusive labelled taxa, which he called primary

taxa, and worked downwards to the terminal, or least inclusive, taxa. In his experience terminal taxa may be at any of four levels but most are at Level 2. A schematic interpretation of Bulmer's data is shown in Figure 2 for comparative purposes.

Bulmer's primary taxa vary considerably in their degree of internal variation. Some primary taxa are undivided and may be considered equivalent to Berlin's unaffiliated generics. Other primary taxa, like Berlin's life form taxa, are divided into a large number of terminal taxa. But some primary taxa are divided into secondary taxa which are themselves divided into tertiary taxa. These taxa may or may not be terminal taxa. In the majority of cases it is the terminal taxa which represent the 'natural' kinds that Bulmer and Tyler (1968:349) called folk species or speciemes. In some instances these speciemes are unlabelled subdivisions of a taxon. Thus the rank, or cognitive status, of folk species cannot be fixed within the hierarchy, either by position or by lexemic status. The implication of this is that terms of apparently similar psychological salience can be found at several levels of the hierarchy without any indication of equivalence.

A third hierarchical system has been suggested by Dwyer in his interpretation of Rofaifo mammal taxonomy. Dwyer (1976:435) used Bulmer's concept of 'specieme' or folk species but reversed the levels applied to taxa. All terminal taxa are at the lowest level. In other words he has worked from the bottom upwards through categories of increasing inclusiveness. A schematic interpretation of Dwyer's data has also been provided for comparative purposes (Fig. 3).

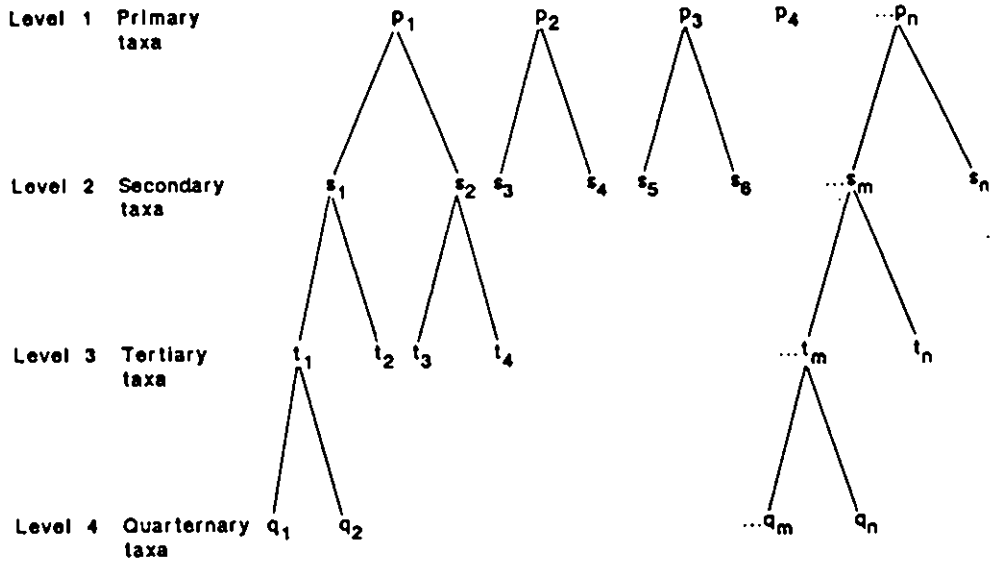


Figure 2 Schematic interpretation of Bulmer's data.

From the figure it will be seen that unlabelled subdivisions of taxa have been given equivalent rank to labelled undivided taxa. If it is accepted (as I do) that basic units must be named, the implication of Dwyer's schema can only be that terms at any one level of the hierarchy differ in psychological salience. Since Dwyer's study is limited essentially to mammals, all of which are included within two 'primary' taxa, he gives no examples of taxa equivalent to Berlin's unaffiliated generics. However he does give examples of taxa which are only included in the highest superordinate taxon.

Non-hierarchical classification

Hunn (1982:835) has interpreted the existence of residual categories as an obstacle to the acceptance of the taxonomic model, since the latter requires 'a set of mutually exclusive taxa that jointly exhausts the domain' and that each member of a set should be in direct contrast. In the light of these objections he has proposed an alternative model which he has called the natural core model. He has suggested that folk biological domains be interpreted 'as composed of a general purpose, polythetic core of taxa surrounded by special purpose, monothetic concepts in peripheral positions.' Hunn (1982:836) has stated that 'As a general rule, instances of polythetic concepts are distinguished by many features while monothetic concepts are defined in terms of one or a small set of criterial features (ie., necessary and sufficient conditions for category membership.)' He has interpreted polythetic taxa as natural and monothetic taxa as artificial in the sense that the defining criteria are imposed upon reality and the boundaries of such taxa tend not to coincide with natural discontinuities.

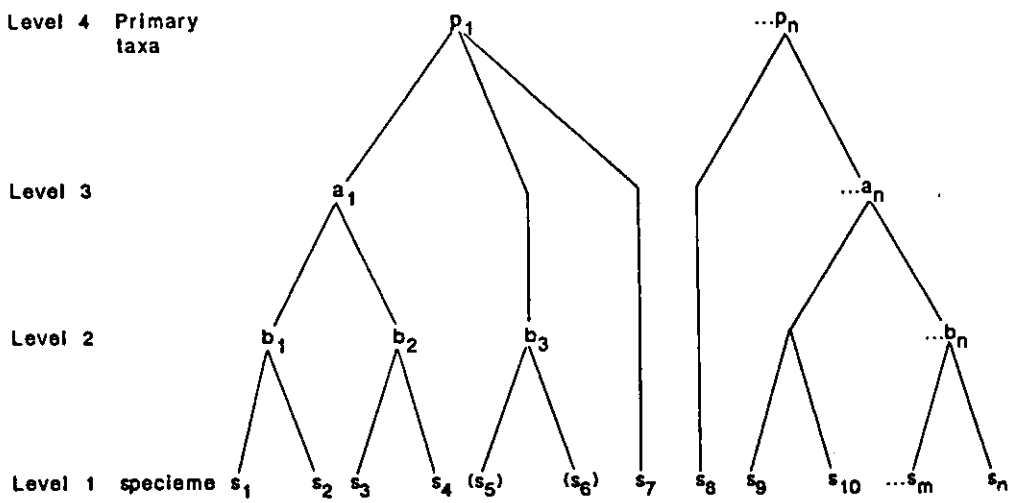


Figure 3 Schematic interpretation of Dwyer's data. ( ) designate unlabelled taxa at the lowest level.

A further difficulty that Hunn (1982:837–38) has noted is that certain life form taxa seem to be defined at least partly in relation to practical significance rather than on the basis of morphology. He has suggested that 'the practical significance of each taxonomic distinction' should be systematically described 'from the native point of view' and that 'Each taxon should be definable in terms of a unique activity signature' (1982:840–41). In order to do this Hunn noted that folk biologists would be required not just to ask for the names of things 'but also the who, what, when, why, and how which define their practical significance' (1982:842). He has suggested that 'The practical value of an element of folk biological knowledge is a function of its role in the cultural plan that generates adaptive behavior' (1982:843). Hunn has not given any practical suggestions as to how activity signatures might be measured nor as to how these might influence the distinction between core and peripheral taxa. He concluded his article by noting that most life form taxa 'belong on the artificial periphery of a folk biological domain' and that it is 'practically motivated categories by which core taxa are most often conceptually organized by folk systematists'.

One of the Implications of the relationships expressed in hierarchical classifications is that, for example, if a blue wren is a wren and a wren is a bird, then a blue wren must be a kind of bird. This can be interpreted to imply storage of direct relationships in the memory and the ability to generate indirect relationships. Randall (1976:544) has stated that 'there is to (his) knowledge absolutely no empirical support for the existence of such reasoning.' A hierarchy should be seen only as a possible explanation of the available data. He therefore questioned the validity of reported hierarchies on the grounds that while the various adjacent levels of a hierarchy may well represent valid relationships of class inclusion, the total hierarchy is something contrived in the mind of the informant for the benefit of the researcher, generated by appropriate questioning. The greatest difficulty, as Randall has seen it, is that there may be instances of nontransitive relationships appearing in such hierarchies where, for argument's sake, a scrub oak is a kind of oak and an oak is a kind of tree but a scrub oak is not a tree, it is a shrub.

Randall suggested a non–hierarchical classificatory schema, based on association between categories and their perceptual characteristics stored directly in the memory (Fig. 4).

> Thus, for example, the category scrub oak might have associated with it in the memory characteristics which we could call "dwarfness," "oakness," and "shrubness"... If the memory contained such associations... then it would be comparatively easy for an informant to answer the usual types of hierarchically framed questions, even though the knowledge is not stored in this way. (1976:550)

Because Randall has mixed categories from a variety of special purpose classification systems, including food classification, as well as biological classification, the complexities of his system are mind-boggling, especially if there is a high degree of binomialisation in the names of taxa (secondary lexemes in Berlin's terms).

Bright and Bright (1965:252–54) raised two objections to the interpretation of folk biological classification systems as hierarchies. In their study of several

Indian tribes of southwest California they found that certain terms were used polysemously, i.e. with more than one meaning such that one is included in the other (cf. the uses of the English word 'animal'). Thus the Yurok word **tepo·** 'fir tree' can also be used to refer to conifers in general. They also found that certain plants which had no recognised name would often be likened to a particular named plant, suggesting a horizontal relationship which is not easily expressed in a hierarchy. They proposed a 'sphere of influence' model (Fig. 5), a centre-oriented classification. They recognised that it is possible to interpret folk biological classifications as hierarchical but they considered that 'Where members of a culture use a single term to classify objects at different levels of generalization, it may be that the very concept of levels and of hierarchy is irrelevant to their semantic structure' (1965:258).

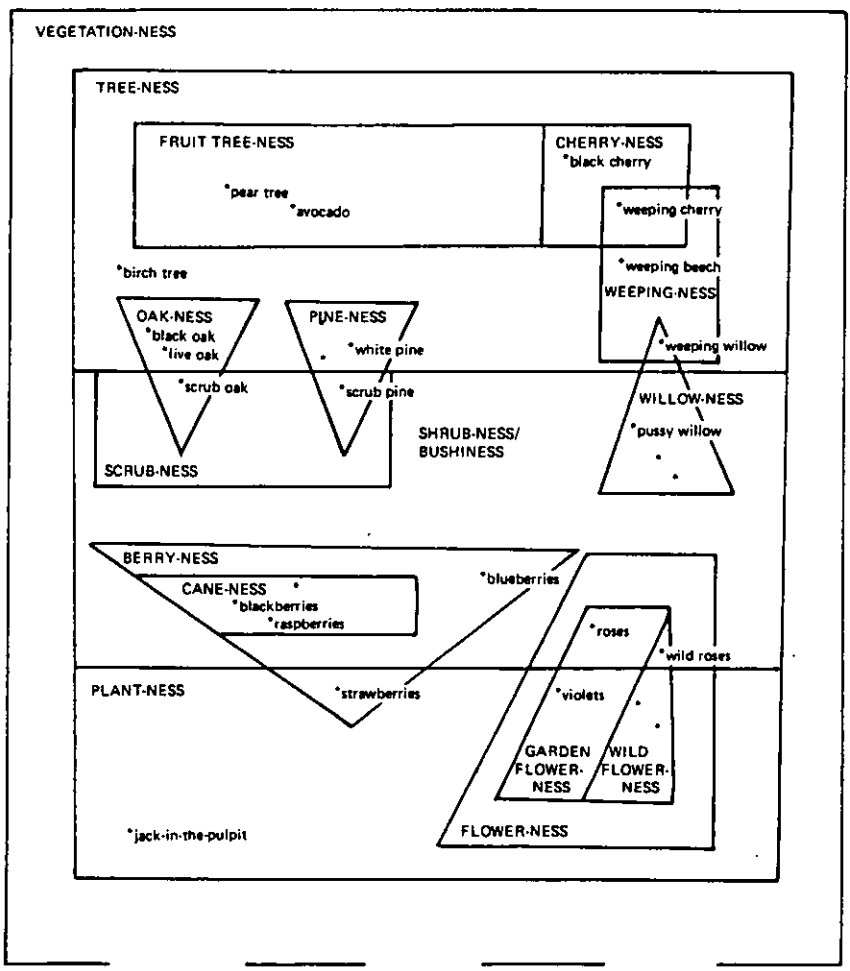


Figure 4 Randall's model. A memorisation of characteristics model of some English plant categories. (Randall, 1976:551)

The problem of polysemy was recognised by Kay (1971:881). He allowed for this by stating that 'if a lexeme is polysemous in a taxonomy, its various senses always correspond to taxa which can be arranged in a sequence of immediate precedence'.

The problem of horizontal relationships in a hierarchy has been discussed by Hunn (1976:511). He noted that 'mid-level covert groupings are best interpreted as chains... (i.e.) groupings of taxa constructed by reference to "horizontal" relations among members of a single contrast set'. There is no doubt that the

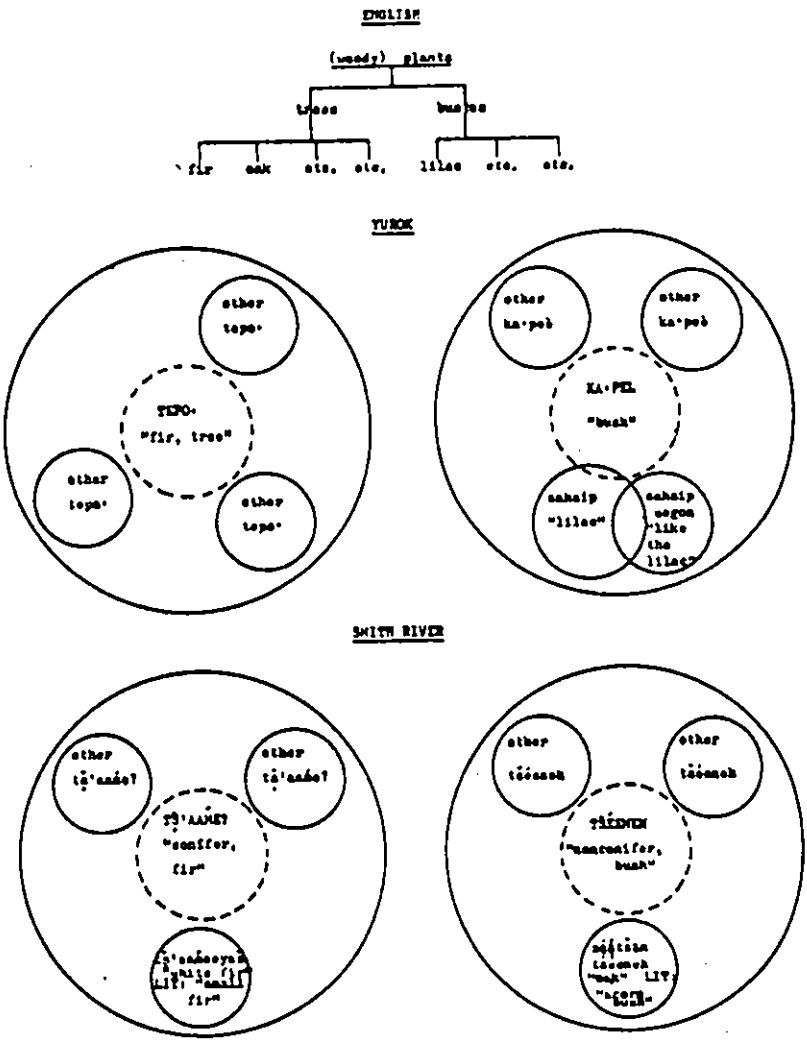


Figure 5 Bright and Bright's model. A sphere of influence model. (Bright and Bright, 1965:253)

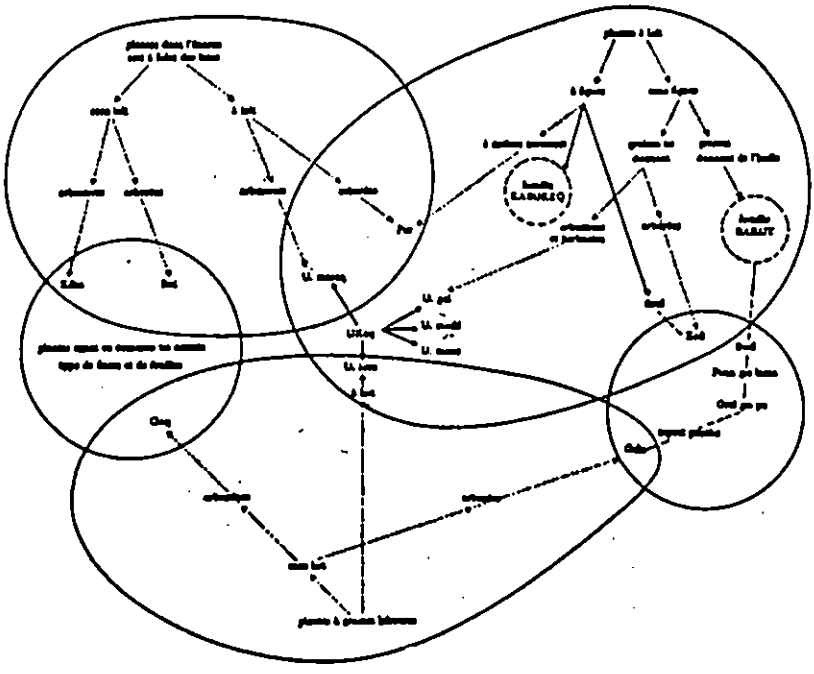
members of such a group belong within the appropriate superordinate taxon, but their membership may be based on horizontal relationships, e.g. likeness, rather than on fixed rules of membership. Hunn (1975b:17–19) suggested this concept in his study of the classification of gulls. In this example, there is no doubt whatsoever that all members of the chain belong to the named life form taxon 'bird', based on normal rules of membership, but the membership of certain species of birds within the category of 'gulls' is based more on general affinity with other species than on strict rules of membership. In Bright and Bright's data, there may be chaining in horizontal relationships but there are still taxa which are included by normal rules of membership within higher order taxa.

While Friedberg (1970:1121,1127) considered that the data she collected on Bunaq classification of plants indicate a preponderance of hierarchical ordering based on morphological criteria, she suggested that the total classificatory system is more in the nature of a network than of a hierarchy (see, for example, Fig. 6). She considered that in such a system it is not the boundaries of the group that are important but the nucleus around which it is organised. Furthermore one passes from group to group by means of various 'bridge' or 'node' plants though the nature of such links is not always definable. Friedberg supported her view by quoting Lévi-Strauss (1962:88, 1966:66), viz. 'Another difficulty is due to the natural complexity of concrete logics for which the existence of some connection is more essential than the exact nature of the connections.' Lévi-Strauss's comment was made in reference to 'the difficulties characteristic of "totemic" logics', i.e. the problems he found in relating plant and animal classification to totemic classification within a total system of symbolic classification working 'on several axes at one time'.

To my mind Bunaq classification appears to be very like other systems reported. Friedberg (1970:1123) commented that when Bunaq informants are asked to classify a plant they immediately state its appropriate life form term, viz. herb, vine, tree or similar term. They then seek to relate it to other plants, often on the basis of morphology, but also on the basis of edibility or other specific functional use. While these other relationships are very real within the Bunaq conception of the plant world, I wonder whether they need necessarily be incorporated into a total classificatory system such as Friedberg suggests. I would maintain that edibility and other functional uses are special purpose binary classifications and do not belong within the biological hierarchy. Friedberg (1979:85–86) has claimed that 'there are no superior taxa corresponding to what Berlin calls life form. Among the Bunaq, the notions of trees, **hotel**, herbs, **u**, and lianas, **mun**, belong to the system of identification rather than to the system of representation'. Surely the basic purpose of biological classification is in fact identification. Representation in her sense would seem to refer to the use made of plants rather than to the cognition of them.

Friedberg's data on cultivated plants give ample evidence of what Berlin would classify as folk genera and folk species. She has also included at least five examples of folk varieties. Further, **Balo-Dik** 'Taro-Yam' and **Kabokeq** 'fig species' would seem to qualify as labelled intermediate taxa.

Friedberg has made extensive use of dichotomous choices in indicating the nature of each group. Such choices appear to operate as expedients to simplify a group. Friedberg recognised the limitation of the method of dichotomous choices – essentially it is an analytical tool useful for identifying unknown plants.



VI.

Barut: Aleurites moluccana Willd., Euphorbiaciacées, le Bancoulier
Bol: Hibiscus tiliaceus L., Malvacées
Bwil: Melanolepis glandulosa Reinw. Rechbf. & Zoll., Euphorbiacées
Erol:
  E. guzu: Ficus ampelas Burm., Moracées
  E. belis; Ficus callosa Willd., Moracées
Gela: Salmalia malabarica (DC.) Schott., Bombacacées
  G. ewi: Ceiba pentendra (L.) Gaertn., Bombacacées
Goq: Gossypium sp. Malvacées, le Coton
  deux types: G. apa, G. loi.
Kabokeq: Ficus septica Burm., Moracées
Kibu:
  K. apa: Hibiscus sp., Malvacées
  K. belis: Sida rhombifiolia L., Malvacées
  K. guzu: Urena lobata L., Malvacées
  K. si gusuk: Sida acuta Burm., Malvacées
Orel gie pu:
  O. g. p. pana: Dysoxylum gaudichaudianum (Juss.) Miq., Araliacées
  O. g. p. mone: Delarbrea collina
Pur: les Ficus Banian (voir planche III)
Ukaq:
  U. masaq: Calotropis gigantea (Willd.) Dryand ex Ait., Asclépiadacées
  U. lotu: Asclepias curassavica L., Asclépiadacées
  U. gol: Euphorbia prostata W. Ait., Euphorbiacées
  U. mami: Trichodesma zeylanica R. Br., Boraginacées
  U. mone: Clerodendron sp., Verbénacées
Zoil: Alstonia (voir planche III)

Figure 6 Friedberg's model. A network model. (Friedberg, 1970:1130)

However it seems to me that it is her extensive use of dichotomous choices within the various groups reported that has led to her suggestion of a network classification. When biological classification is disentangled from other special purpose classifications, a hierarchical structure akin to Tzeltal plant taxonomy is evident (cf. Berlin et al., 1974).

Another perspective on animal and plant classification has been provided by the linguist Grimes (1980a and b) in his report on classification among the Huichol of Mexico. He used defining criteria as the basis of what amounts to a dichotomous key, though he described the overall system as a 'tree-like network' (1980a:188). He was concerned that the 'cover terms' (life form and possibly intermediate terms according to Berlin) appear scattered through the system rather than being concentrated near the root of the tree. Part of the reason for this lies in the inclusion of 'cover terms' in the defining criteria of categories further from the tree root. For example, the definition of one of the smaller categories of birds is 'it eats WORMS (cover term) and has a red breast'. The other main reason for 'cover terms' being scattered appears to be because the data are arranged as a dichotomous key. As has previously been stated, a dichotomous key is an analytical tool to aid in identification: it does not constitute the classification system. Reported cross-classifications are the result of different defining criteria being in focus such as form, habitat, what the animal eats or its edibility for the people concerned.

Grimes derived his data by systematically asking the questions,

i) What are its siblings?
ii) What shows that they are its siblings? and
iii) How do you tell one sibling from another?

It seems that the answers to all three questions relate to horizontal relationships between folk taxa rather than to vertical relationships, particularly where there is the possibility of finding covert categories based on chaining. The answers to the second question may indicate the defining criteria for the superordinate category, i.e. the basis of class inclusion. I would suggest that Grimes' data can be arranged hierarchically with names at as many as four levels below the level of unique beginner.

Price (1967:5) suggested that the Huichol data do not in fact represent a relationship of inclusion but rather descriptions based on attributes. Rather than dividing plants into the classes 'trees' and 'plants', he considered the division in terms of large vs. small 'supporting members', such that the relationship of the lower level to the upper level (supporting member) is one of 'greater specificity to less specificity'. I find such an explanation difficult to accept, at least on a general basis, on the ground that one can ask questions of the type, 'What kind of tree is this?' Grimes' Huichol data would suggest that such questions are possible for any of the 'cover terms'.

Hallpike (1979:202) also questioned the validity of hierarchical classification, but from a different perspective. Following Piaget and Vygotsky, he considered that the hierarchies reported are nothing more than complexive classification, of the same nature as that provided by a young child when asked to group items together. A child groups objects on the basis of experiences and associations of everyday life, often changing the basis of classification part way

through the exercise. Thus he may group a toy animal with a baby doll because the baby is said to be playing with it. He may then add a dish for the animal to eat from. The child sees these things as belonging together. Hallpike argued that the logical implications of class inclusion inherent in reported folk taxonomies are not understood by the supposed users of such taxonomies. Rather, these taxonomies have been interpreted as hierarchical by observers trained in scientific thinking. Native speakers of the language concerned may have a quite different interpretation of the various terms.

It could be argued that this does not necessarily invalidate the folk biologist's interpretation, particularly as native speakers are also largely unaware of the relationships between the grammatical categories of their language as reported by linguists. But what is more significant at the moment is that Hallpike has questioned the actual basis of classification. He has suggested that most of the evidence he has seen does not support the possibility of conceptual thinking on which hierarchical classification is based. Rather the evidence he has seen supports the notion of complexive thinking which results largely in classification based on relationships of association. Although this has implications for the nature of folk biological classification, I will discuss Hallpike's evidence under the heading of the basis of classification, after discussing the nature of other classification systems.

It is worth noting that in Morris' report of Hill Pandaram classification systems, though he recognised there were several independent systems, he considered that there was 'no systematic taxonomic hierarchy' (1976:547). However when his data for both plant and animal classification are considered in the light of Berlin's hierarchical model, there is a very good fit. Morris himself has presented the data hierarchically. He found it a problem that the 'more uncommon or other less utilised plants' were not handled systematically.

Folk vs. scientific classification

Dwyer (1976:425) has asked 'To what extent does the folk classifier perceive the same entities as the scientific zoologist?' He pointed out that determining the correspondence between two systems depends on perception. There must be some way of establishing their relation. He selected the scientific species as the objective unit of comparison with which folk taxa, viz. speciemes, must be compared. Berlin advocated comparison of the scientific species with his folk genera, though he also compared it with his folk species (see Berlin, 1973:267–68; Berlin et al., 1974:102). However I agree with Hunn (1977:64) when he stated that 'it is not the case that the scientific species must be selected'. The unit of comparison could be another scientific taxon such as genus or family. I understand him to be saying that, while the scientific species is indeed a basic objective unit, irrespective of evolutionary theory, we need to take cognisance of the range of scientific species in a given environment before determining the degree of correspondence. If there is only one scientific species representing an entire family in the given environment, it is much more likely to correspond to a single folk taxon than a number of closely related species, other things being equal. Hunn has devised what he called a coefficient of dissimilarity (see p.90), which is calculated after removing any scientific taxa from the same genus, family etc. that cannot be found in the local environment plus scientific taxa below the level of that equivalent to (labelled) terminal folk taxa. This measure is

not affected by the cognitive status of folk taxa within a hierarchy. It utilises scientific taxa from different levels of the scientific hierarchy as the objective basis of comparison with folk taxa.

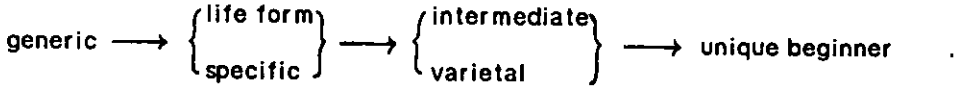
Implicit in Dwyer's question is the western scientifically oriented viewpoint. The question could equally have been framed: To what extent does the scientific zoologist perceive the same entities as the folk classifier? As each language has its own form of folk classification but there is essentially only one scientific classification system, comparison is certainly easier if the degree of correspondence is determined with reference to the scientific system. For the reverse situation to apply there would need to be general agreement upon a basic unit from within folk classification systems which could be used as the basis of comparisons.

Some may argue that we should not be seeking to compare folk classification with scientific classification. But I would reply that it is the only reasonably objective means of comparing one society's system of classification with that of another. In northern Australia where there is such diversity amongst Aboriginal languages and yet a growing cultural and marital interchange between the different tribal groups, there is a need for the recognition of scientific species, particularly those of totemic significance, if people are to be sure they are talking about the same creature. Working through English has led to confusion and caused distress in the past, particularly in relation to potential marriage partners in a society where marriage is strictly exogamous across tribal moieties. English terms such as dove and pigeon have not been consistently applied to the same scientific species from one place to another. When such scientific species are important totems used in establishing relationships between different tribal groups, there is a strong possibility of confusion, especially when the species concerned belong to one moiety in one place and are distributed between the two moieties in the other. Hopefully further confusion may be avoided and thus further breakdown of Aboriginal society lessened by enabling comparison of folk taxa to be undertaken through scientific species.

Development of biological classification

As more and more data have become available for folk biological classification systems in different languages, interest has been shown in the similarity of folk biological categories in different languages and in their apparently similar development over time.

Berlin (1972:52–53) has suggested that there are 'six universal categories of ethnobotanical nomenclature', viz. generic, specific, major life form, varietal, intermediate and unique beginner, (as defined earlier in this section). He suggested that there is a general sequence of development of these named categories as follows:



This sequence does not mean, for example, that all generic taxa are labelled before any life form taxa appear, but rather that some of each category will appear before any of the next. Further, at least one life form and one specific taxon will be named before intermediate or varietal taxa but either one may be named first.

Brown has concentrated on the development of life form categories and has amassed a large volume of data from several hundred languages. He has suggested a universal sequence of development for both plant and animal life form terms (1981a:83; 1982:213–15). Both sequences have been revised by Brown from earlier formulations. The developmental encoding sequence for plants is shown in Figure 7. Brown (1979a:366–67) has defined these terms as follows:

TREE	large plant (relative to the plant inventory of a particular environment) whose parts are chiefly ligneous (woody)
GRERB	small plant (relative to the plant inventory of a particular environment) whose parts are chiefly herbaceous (green, leafy, nonwoody)
BUSH	plant of intermediate size (relative to TREE and GRERB)
GRASS	herbaceous plant with narrow, often bladelike or spear-shaped leaves
VINE	plant exhibiting a creeping or twining or climbing stem habit

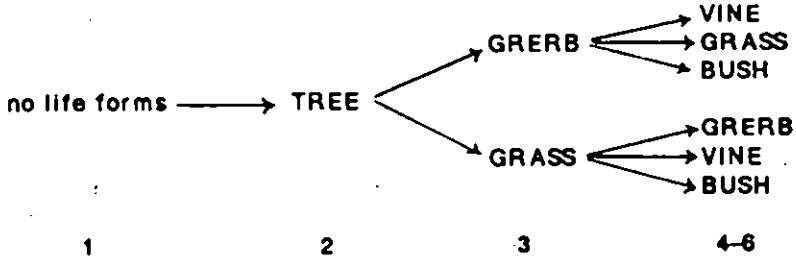


Figure 7 Folk botanical life form encoding sequence. (Brown, 1982:214)

For animals, the sequence is shown in Figure 8.

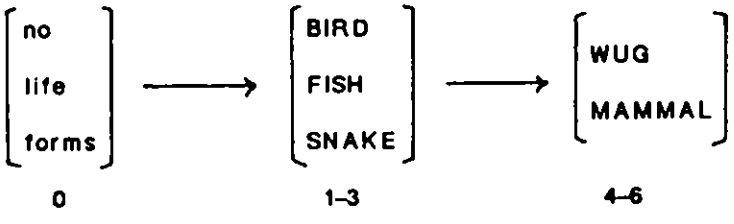


Figure 8 Folk zoological life form encoding sequence. (Brown, 1981a:83).

The critical features associated with these categories are given by Brown (1981a:86) as follows:

FISH — Creature possessing fins, gills and a streamlined body; adapted to an aquatic environment. This life-form is occasionally extended to other aquatic animals lacking some or all of these features, e.g., whales and aquatic crustaceans. In such cases true fish usually constitute the focal members of the class (Hunn, 1977:250).

BIRD — Creature possessing feathers, wings and a bill or beak; adapted to flying. This life-form is occasionally extended to bats or even flying insects. In such cases true birds usually constitute focal members of the class.

SNAKE — Featherless, furless, elongated creature usually lacking appendages; adapted to crawling. This life-form in its greatest extension includes snakes, worms, lizards, eels and occasionally, other elongated creatures such as reptile-like insects.

WUG — Small creature other than those included in FISH, BIRD and SNAKE. This life-form always encompasses bugs, i.e. insects and other very small creatures such as spiders and frequently is extended to worms. Occasionally the category also includes other creatures such as lizards, tortoises, and frogs if these are small.

MAMMAL — Large creature other than those included in FISH, BIRD and SNAKE. This life-form is sometimes restricted to mammals, but more often is extended to other large animals such as iguanas and crocodiles and, in addition, to such creatures as tortoises and frogs if these are large.

Brown (1979b:792) has pointed out that what he has identified as life form categories 'do not always meet Berlin's strict criteria for affiliation with that rank' though he found Berlin's criteria useful in the initial stages of his research. He has based his life form categories entirely on 'the form of the whole animal' (or plant). Thus terms for fish and snake are included as life form terms even when they have been introduced into the language because there are no representatives in the local environment (1981a:97-98). However, Hunn (1982:837-39) has criticised Brown's 'so-called universal life form taxa' on the grounds that they 'represent no consistent type of concept, and that this restriction of life forms to concepts based on "overall morphology" is neither consistently applied nor theoretically justified.'

From a developmental point of view Brown has suggested that labelled categories at Stage 1 will be present in a language, provided there are representatives in the local environment, before categories in Stage 2 are added and so on, but where stages are grouped together terms may be added in any order.

There is an interesting implication of Berlin's and Brown's suggested universal sequences of development. One of the reasons some workers have been reluctant to accept a hierarchical form of classification is because the apparent hierarchy is very shallow. This may simply be because the language has not developed further terms rather than because the existence of a hierarchy as such is doubtful.

Food classification

In any society sources of food are normally restricted to the plant and animal domains. Both plants and animals may be classified according to whether they are edible or inedible. Edible plants and animals may be further classified as foods, for example, as meat and vegetables.

Edible vs. inedible

The binary classification, edible/inedible, may be applied to the plant and animal domains to produce a list of foods. The complete list is generally different for different societies, even where the environments are similar. As indicated on p.7, edibility is socially determined. Non-Aboriginal Australians generally consider witchetty grubs to be unfit for human consumption, but Aborigines have apparently been eating them for thousands of years.

In anthropological literature relating to food much attention has been given to attempts to rationalise what may or may not be eaten, by whom, with whom and under what circumstances, e.g. Douglas (1966), Tambiah (1969) and Dentan (1968). Various explanations have been offered as to why certain animals should be considered inedible. Douglas (1966:166) has suggested that the Lele of the Congo do not normally eat the pangolin because of its anomalous status within 'the' classification system. In fact, as Ohnuki-Tierney (1981:455) has pointed out, Douglas has not given sufficient detail of the Lele scheme of classification for the place of the pangolin in a wider context to be understood.

Douglas (1966:41-57) has also interpreted the dietary restrictions of the Israelites, as given in Leviticus, in terms of anomaly. Hunn (1979:109) has suggested that the abominations of Leviticus turn out to be animals which are singular representatives of orders or families. The ten edible animals are all cloven-hoofed ruminants. There are only four animals which are specifically prohibited and these are either cloven-hoofed or chew the cud but not both. The remaining ninety animals are assumed to be inedible. Hunn's point is that the prohibited animals are not so much anomalous as that they have particular combinations of characteristics which are poorly represented in the environment in question.

In seeking to explain dietary prohibitions in a Thai village, Tambiah (1969:448ff.) has put forward a series of propositions relating classifications, dietary attitudes and omens or inauspicious signs.

> Proposition 1: An animal that is not placed in an ordered system of major classes receives further signification as ambiguous food...
> Proposition 2: An unaffiliated animal, if it is seen as capable of leaving its location or habitat and invading a location or habitat of primary value to man, will be the focus of strong attitudes expressed in the forms of (1) a food taboo and (2) a bad omen or inauspicious sign.
> Proposition 3: An animal that is placed in a class because it shares certain dominant properties of that class may yet be seen as exceptional or anomalous and therefore ambiguous as food or inedible (even if other members of its class are edible) if it

shares one or more characteristics with animals of another class which carries strong values and is considered inedible.

Proposition 4: An animal that belongs to a class that is edible and positively valued, if it also shares one or more characteristics with a member of another positively valued and edible class qualifies as an auspicious and eminently edible animal.

He thus suggested that the underlying reasons for dietary prohibitions can be found within the (biological) classification system.

In a study of the Semai of Malaya, Dentan (1968:28-30) has sought to determine 'the' conceptual system and the characteristics on which its classification rests. Like Tambiah, he reported that animals which do not fit neatly into the natural order call for more dietary restrictions than animals which are considered to be typical examples of a class.

From another perspective Goodale (1982:209) has hypothesised 'the existence of key resources in all societies', resources such as the yam and cycad in Tiwi culture in northern Australia which 'symbolically (are) key resources and metaphorically... stand for all nourishing substances that allow for growth and life to continue' (1982:203). Yams and cycads have been significant food resources for the Tiwi but toxic yams in particular have been the focus of an annual ritual considered essential to the health and welfare of the people.

Classification of foods

In discussing the classification of foods per se, much attention has been given to the application of humoral pathology, which results in the binary opposition of 'hot' and 'cold' foods, with or without a neutral category. As Laderman (1981:470) has said, 'those who believe in the reality of humoral distinctions perceive of them as having an empirical basis. The ultimate criterion informants give for determining whether a substance is "hot" or "cold" is its effects on their bodies.' Such systems are subject to much individual variation which Laderman has suggested is 'incorporate(d) into the model'. She stated that 'Humoral systems are dynamic rather than taxonomic', lacking in clear-cut boundaries.

In discussing classification of 'things that are eaten' by the Northern Paiute Indians, Fowler and Leland (1967:383-86) noted that plant foods are grouped 'according to the part of the plant that is eaten: <u>seeds</u> (literally "eye") (**apui**), <u>roots</u> (tuber or expanded stem) (**at-na**), <u>berries</u> (**kam-adi**), <u>greens</u> (**puinaadi-**), and <u>flesh</u> (**atuku**)'. Paiute animal food categories at the same level of differentiation are essentially the same as those for animals which are used in other ways and those which are not used (see p.5).

Little attention has previously been given to the possibility of a hierarchical classification of food. In English we talk about food as a unique beginner, and then subdivide into fruit, vegetables, cereals, meat, milk and so on. Taking the category vegetables, we can distinguish between green vegetables and root vegetables. Green vegetables include such groups as peas and beans, cabbages and Brussel sprouts. There are snake beans, lima beans, soya beans and so we could go on. It may be noted that terms such as peas and beans are identical to the folk

generic taxa of the biological classification and terms such as snake beans and lima beans are identical to the folk specific taxa. However the superordinate terms of the food classification system differ from those of the biological classification system, at least in English.

Perchonock and Werner (1969:232–35) found that food could be classified hierarchically by the Navaho Indians. They showed how the classification of meat could be considered as a subset of the classification of the animal kingdom whereas the classification of plant foods was different from the classification of plants per se, except for overlapping of the category 'domesticated plants which get ripe'. Unfortunately they did not provide detailed data on the food classification systems.

Totemic classification

Radcliffe-Brown (1929, see 1952:117) defined totemism 'to apply wherever a society is divided into groups and there is a special relation between each group and one or more classes of objects that are usually natural species of animals or plants but may occasionally be artificial objects or parts of an animal'. He pointed out that 'totemism is not one thing but is a general name given to a number of diverse institutions which all have, or seem to have, something in common'. Included are sex-totemism, moiety totemism, section totemism of several kinds, clan totemism, both matrilineal and patrilineal, and individual or personal totemism. Elkin (1933:129–39), who was writing specifically about Australia, also distinguished different forms of totemism.

Radcliffe-Brown (1952:131) suggested that one of the ways in which, in Australia,

> the world of nature is brought within the social order is to be found in the systems of classification of natural species, existing in a number of diverse forms in different parts of the continent with this one thing in common to them all, that the more important natural species are so classified that each one is regarded as belonging to a certain social group, and occupying a specific position in the social structure.

This, to me, is totemic classification: the ordering of plants and animals (and natural phenomena) as belonging to particular social groups.[5] It is this aspect of totemism which I wish to consider in this book.

Worsley (1967:156) rightly pointed out that 'Totemism is... not merely a cognitive ordering, it also has affectual and evaluative meaning. Totemism... to the aborigine, expresses symbolically the totality of his society and its relationship to the wider order of Nature and the supernatural.' It is thus a type of symbolism, as Hiatt (1969:92) has said, and totemic classification is a form of symbolic classification. However I do not wish to discuss the deeper issues of the symbolic significance of totemism and its part in ritual life. My concerns are the classification of plants and animals as totems by the Groote Eylandt Aborigines

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[5] Different perspectives on totemism and classification have been given by others such as Levi-Strauss (1964, 1966).

and the relationship of totemic classification to biological and food classification.

Totemic classification may be broken down into a number of aspects, all of which are relevant to this study, viz.

i) the selection of plants and animals and other phenomena as totems,
ii) the distribution of totems among social groups,
iii) the associations between totems within social groups, and
iv) the sharing of totems between social groups.

Each of these aspects may be considered in relation to other classification systems, particularly biological classification. The nature of totemic classification will be more clearly understood when viewed in relation to biological classification. In fact, as Ellen (1978:155) has stated, 'an understanding of (biological) classification systems is a necessary pre-condition for the adequate interpretation of symbolic systems'.

Selection of totems

The selection of totems entails a simple binary classification of the universe into those things which are totems and those which are not. The difficulty comes when one tries to find some rationale for the selection of totems.

In Radcliffe-Brown's comments on totemic classification quoted earlier in this section, there was a significant phrase to which attention should be drawn. Radcliffe-Brown implied that it is 'the more important natural species' which are selected as totems. He had stated this more explicitly earlier in the same paper (1952:129):

> ... natural species are selected as representatives of social groups, such as clans, because they are already objects of the ritual attitude on quite another basis, by virtue of the general law of the ritual expression of social values...

This law stated that

> Any object or event which has important effects upon the well-being (material or spiritual) of a society, or any thing which stands for or represents any such object or event, tends to become an object of the ritual attitude.

Radcliffe-Brown (1952:123) defined ritual attitude as an 'attitude which involves some measure of respect expressed in a traditional mode of behaviour with reference to that object' and is imposed by a society on its members. With regard to totemism, a ritual attitude results in a 'ritual relation' between persons and their totem.

Thus Radcliffe-Brown's view of totemic selection or, indeed, of the selection of any species toward which there is a ritual attitude, is that it is based on socio-utilitarian importance. Bulmer (1978:3) provided evidence against this view in his discussion of Kalam totemic species. Tambiah (1969:452) also rejected it, as indicated in his list of propositions pertaining to dietary rules given on p.29.

Many natural species in different societies have been subject to a ritual attitude of avoidance, commonly expressed in a prohibition on eating them. Early definitions of totemism stated that there were taboos on killing or eating one's totem (e.g. Goldenweiser, 1910:182-83), an aspect of Australian totemism which appears to be much more restricted in its distribution than at first thought. Some explanations of dietary prohibitions were given on p.29, notably in terms of status within the biological classification system. The implication then is that at least some totems may conceivably be selected because of their anomalous or ambiguous status within the biological classification system. Alternatively, following Hunn, totems could be selected because they are singularly representative of scientific orders or families in the environment concerned.

Bulmer (1978:2) has discussed the choice of totems by the Kalam in Papua New Guinea in relation to their biological taxonomy. He showed that the thirteen plant and animal taxa chosen by the Kalam as totems are all taxonomically salient in one way or another, i.e. in terms of the Kalam biological classification system, though none of the totemic animals is common or of economic importance and none of the totemic plants is of major significance. Of the six animal taxa which are totems, all are 'singularly distinctive members of the (Kalam) taxa in which they occur' (1978:4). Bulmer then pointed out that 'there are many groups of animals in Kalam taxonomy of which the largest or otherwise most singular members are not selected as totems'. However, many of these are significant in other ways, such as being associated with the dead or with magical practices. Bulmer's argument was that taxonomic salience 'predisposes an animal for totemic selection, rather than the reverse' (1978:14). He considered that, for the Kalam, the species which are

> accorded ritual value need neither individually have important direct effects on the well-being of society, nor even individually and directly represent other phenomena or events of importance... they can equally be selected as salient representatives of groups of creatures which collectively are of utilitarian or socio-utilitarian importance.

Bulmer's assessment of Kalam classification systems led him to suggest two questions which might be asked with reference to Australian Aboriginal classification of plants and animals, viz.

> i) to what extent there is a correlation between the inclusion of animals (and plants) in Aboriginal totemic and para-totemic classifications and their salience in everyday ethnobiological taxonomies; and
> ii) to what extent the presence of a species or other category of animal or plant in a particular totemic or other ritually significant series facilitates or precludes its selection for another list. (1978:15)

Bulmer recognised that Aboriginal societies generally have a much larger number of totemic species and therefore predicted that their choice of totems would 'go much further down the list of taxonomically salient species than do the Kalam'. He suggested that this could happen without the society 'being accused of being random in their selections'. Bulmer concluded that there is in fact a relationship between totemic and biological classification, in contrast to Worsley's implication,

resulting from his Groote Eylandt studies, that any such relationship seemed so slight it was best ignored (1967:156).

Bulmer (1979:59) later pointed out that the objectivity of his judgements of 'taxonomic salience' has been questioned by Dwyer, though Bulmer has not indicated Dwyer's reasons. Bulmer defended himself by making further reference to the Kalam classification of birds. He confidently asserted that 'In Kalam animal classification, within any formally recognized taxon or covert category, size, other things being equal, implies salience' (1979:63). However he went on to elaborate other factors which could affect salience although he did not actually define the term. He summarised his findings by suggesting that salience may be attached, (i) to 'natural' groups of species (named or covert) and to individual species within these groups, (ii) to 'the largest, typical species of any sizeable, "non-natural" group based on a combination of the criteria of habitat (both spatial and vertical dimensions being considered) and feeding habits' and, (iii) to species which, in their spontaneous interaction with man, are the most consistent and fearless or the most mysterious (1979:70).

The second and third areas to which salience may be attached are not strictly related to taxonomy. If the application of the term taxonomic is limited to hierarchical structures, and I think Bulmer would agree with this, then he has actually gone beyond taxonomic salience. It might be better to talk about taxonomic and ecological salience since the second and third areas to which salience may be attached involve interaction of a species with its environment.

Distribution and association of totems

The distribution of totems is the assignment of plants, animals and natural phenomena to social groups, giving rise to a list of totems for each social group. The association of totems is the relationship between the totems in each social group.

The central issue in regard to the distribution of totems is the basis of distribution. Are totems distributed among social groups entirely at random? Or is there some basis of distribution? If the latter, what is the basis of distribution? Is distribution based on a hierarchical system of classification? Or is there some other type of classification in operation? Most studies on totemism have indicated the actual distribution of totems among social groups but very few have indicated the basis of distribution. The basis of distribution is essentially the totemic classification system itself. One could equally well ask: What is the nature of totemic classification?

As noted on p.3, Durkheim and Mauss considered that primitive classifications of plants, animals and natural phenomena in relation to social groups, what I have called totemic classification, were hierarchical in nature. But what is the nature of this hierarchy? What are the superordinate categories? Are there any terms which can be considered inclusive of the totems of a clan or of a moiety or of a tribe? It is conceivable that there might be a society where there is both moiety and clan totemism. But could the moiety totem be said to include the clan totems? I doubt it. To me, it seems that Durkheim and Mauss saw the hierarchical nature of social classification, saw the totems associated with social groups, notably clans, but interpreted them as part of the one system instead of

belonging to two systems, one of which, viz. totemic classification, is not hierarchical. Social classification serves as a framework for the distribution of totems but does not itself constitute an integral part of totemic classification. Social classification has meaning apart from totemic classification.

Worsley (1956:60) contrasted totemic classification with 'proto-scientific classification' which he saw as 'a primitive system of classification of nature on the basis of (man's) interaction with (his) environment'. He referred to the 'classification of totems' found on Groote Eylandt, listing what he considered to be the principal and secondary totems of each clan. He stated that this type of classification is 'marked by agglomerative, arbitrary and fortuitous accretions, which are often individual and subjective in their provenance', whereas proto-scientific classification 'relies on a rational, ordered, consistent and systematic approach, with objective analysis of natural phenomena' (1956:60-61).

Hiatt (1969:87) and Bulmer (1978:1) have suggested that Worsley's comments can be interpreted to mean that the selection of species as totems is to a large extent random. However, to my mind, he was more concerned with the distribution of totems than with the selection of species as totems. He was suggesting that the basis of distribution within biological and food classification on the one hand and totemic classification on the other is quite different.

Worsley's 'proto-scientific classification' is what I have called biological classification, which I have indicated to be hierarchical in nature. Is Worsley suggesting that totemic classification is indeed random? I do not believe so, at least not entirely random. Worsley (1956:60) pointed out that the selection of totems is not arbitrary to the extent that animal and plant species are of prime interest to the Aborigine, especially as food species. In a later paper, he specifically stated that there are a number of ways in which totems may become associated together, 'connections in Nature, connections in myth, connections effected in historical cultural experience, etc.' (1967:154). What he has said is that there are 'many diverse principles for associating totem with social group (which are) applied haphazardly' (1956:57).

I would interpret Worsley to be saying that both the selection and distribution of totems are at least partly based on the association between species. Once one totem is selected and distributed, the selection and distribution of another is likely to be constrained by relationships in Nature, by the content of myths or by historical experience. Just which association becomes significant is unpredictable.

A different approach to the problem of the association of totems has been taken by Borsboom in his study of the Maradjiri ceremony of the Wurgigandjar clan in northern Arnhem Land. He postulated 'dreaming-clusters' as a cluster of totemic species which 'form the basis for the ceremonial activities of the clan and are the themes for their mythology, songs and dances' (1974, see 1978a:111).

> The internal relations between the species of this dreaming-cluster are based on close observation of their natural behaviour. At the same time these connections are mythologically interpreted and this combination of natural observation and mythological interpretation creates the logical background of the dreaming-cluster. (1978b:37)

Borsboom then listed four principles on which the composition of the Wurgigandjar dreaming-cluster is based.

> i) The cluster as a whole breaks down in what I shall call sub-clusters. The main connection between the dreamings of the same sub-cluster is that they share the same natural habitat...
> ii) These sub-clusters are connected because between them they cover the main types of habitat in Wurgigandjar country... Concerning this point the logic of the system becomes furthermore explicit in the constant movement between "land" and "water" themes as shown in the presentation of the song cycle and dances belonging to these dreamings.
> iii) Additional connections are created by close natural relationships between some species.
> iv) A last principle is the grouping together in dreamings associated with death... whereas the others can be considered as life symbolic dreamings as appears from the connected myths...

Borsboom has taken particular care to show that the collection of thirteen dreamings of the one clan 'do not comprise just an odd ragbag of species but that there is an intelligible connection between them' (1978b:38).

Thus, in answer to the questions regarding the nature of totemic classification, the distribution of totems may be partly random but there is no evidence to support the suggestion that it is, as Durkheim and Mauss suggested, hierarchical. Rather many totems appear to be distributed on the basis of a variety of associations.

Sharing of totems

The sharing of totems is really only another form of association between totems. Totems owned by the one social group may be associated with one another. But totems owned primarily by different social groups may nevertheless be linked in a way which expresses sharing of the totems together with a bond of relationship between the social groups concerned. Such sharing seems to be particularly applicable to clan totemism.

Extensive and complex sharing of totems between clans has been reported by Falkenberg (1962:101-13) for a number of clans in the Port Keats area of northwestern Australia. He listed numerous instances of sharing of totems. Falkenberg indicated that this sharing can be explained through the travels of totemic creatures, culture heroes as he called them. Although he gave examples of individual clan myths he did not appear to elaborate the details of sharing expressed through the myths. He pointed out that the sharing of totems between clans expressed a closeness in the relationship between those clans.

The same conclusions were reached and expressed more clearly by Turner (1974:73ff.) in his study of Groote Eylandt totemism and kinship systems. Turner (1974:73) considered that the linkages between clans were expressed through the songs and myths which related

> the travels of the various mythical beings that roamed the area in the Dreamtime. If the members of different local groups sing the same song, it is because a particular mythical being, or beings, journeyed through each of their countries.

He gave a couple of myths from each group of clans to illustrate this idea. However he pointed out that

> no one track was found to link all the local groups in any one complex. To rationalise the connections between groups not directly linked by the same mythical being(s) informants applied the basic principle 'things equal to the same thing are equal to each other' so that where group X is linked to group Y, and group Y to Z, but not X to Z, X is taken to be equivalent to Z.

Thus again sharing of totems is usually linked to the mythical travels of totemic creatures. The details of Turner's study will be discussed in Chapter 5.

Linguistic classification

Worsley (1967:156) has observed that for Groote Eylandt plants and animals 'there is yet another system of classification - a linguistic one... that is quite unconnected with totemic classification, proto-scientific classification, or any other'. The Aboriginal language spoken on Groote Eylandt has some unusual features which will be discussed in Chapter 6. Because plants and animals are classified linguistically, it seemed appropriate to explore the possibility of any type of relationship between linguistic classification and the other systems of classification.

There would appear to be three different kinds of linguistic classification of plants and animals, viz.

i) a system of noun classes where there is some form of agreement between the noun and one or more other parts of speech in a given sentence (the minimum expression of noun classes is a gender system),
ii) a system of noun classifiers where no agreement is needed, and
iii) noun incorporation where a morpheme representing one or more nouns is incorporated into other parts of speech.

Noun classes

Noun classes have been particularly noted in African languages, especially Bantu languages, and in Aboriginal languages in some parts of northern Australia (Dixon, 1968:111). In commenting on noun classes in the Basari language spoken in Senegal and Guinea in West Africa, Ferry (1974:109) has pointed out that 'noun classes are not a taxonomy in the general sense intended by the term, but a means of taking account of certain properties' (my translation). Ferry showed that the distribution of herbaceous plants among eleven noun classes is in no way associated with their folk taxonomic status although woody plants are grouped almost entirely in the one class. Herbaceous plants appeared to be assigned on the basis of use, whether as food or for some other practical use, or through association with some symbolic property.

Dixon (1968:112) has noted that the number of noun classes varies from two to over forty (in a New Guinea language). For Australian languages, Capell (1942:367) has distinguished multiple classifying languages from those with dual classification where the distinction is basically between masculine and feminine noun classes. This distinction is more commonly referred to as gender. In fact, as Ibrahim (1973:63) has noted, 'Gender can be considered as a special case of noun classification.'

In his summary of the noun classes of the Kimberley languages in northwestern Australia, Capell (1940:256–57) listed seven possible noun classes. In these languages there is agreement with other parts of speech but the nouns themselves are not marked by prefixes as is generally the case in other languages. Although at one stage Capell (1940:256) seemed to indicate a semantic basis of class membership including most animals and foodstuffs belonging to the one class, he later stated that 'it was extremely difficult to see any system in the classification' of nouns in the Kimberley languages (1956:40).

In his 1956 paper (p.41), Capell listed thirteen sets of what he suggested might be the 'original' or 'ideal' noun class prefixes together with the 'ideal scope' of class membership across northern Australian languages. One class consisted of animals and meat foods and another of vegetable foods. It is not clear how some of these prefixes (e.g. Groote Eylandt) were derived. It would seem that such a summary is somewhat speculative and not intended to be taken as fact, as Dixon (1968:115) appeared to do.

Where the number of classes is limited, the semantic basis of the noun classes may be clear but 'most often the semantic basis of noun class membership seems vague and in some ways quite random' (Dixon, 1968:119). Dixon (1968:120) has shown that for Dyirbal, a north Queensland Aboriginal language, two rules could be deduced which enable a reasonable explanation of what might otherwise appear to be a rather confused distribution of nouns among the four classes. He considered that there were certain basic concepts associated with the classes, viz.

class I	**(bayi)**: animateness; (human) masculinity
class II	**(balan)**: (human) femininity; water; fire; fighting
class III	**(balam)**: edible vegetables and fruit
class IV	**(bala)** is a residue class, dealing with everything else.

The two rules, applied in addition to these basic concepts were:

i) if some noun has characteristic X (on the basis of which its class membership would be expected to be decided) but is, through belief or myth, connected with characteristic Y, then generally it will belong to the class corresponding to Y and not that corresponding to X.

ii) if a subset of nouns has some particular important property that the rest of the set do not have, then the members of the subset may be assigned to a different class from the rest of the set, to 'mark' this property; the important property is most often 'harmfulness'.

These rules helped to explain the allocation of various plants and animals to the second noun class and accounted for most, though not all, noun class assignment in Dyirbal.

Capell and Hinch (1970:46–52) have reported six noun classes in Maung, the language spoken on Goulburn Island in northern Arnhem Land. Class 1 is most clearly masculine singular in reference to humans but it also contains most animals including fish and other sea creatures and insects as well as a few birds. Class 2 contains most of the birds and a few animals.

Tryon (1974:293) has listed from four to seven noun classes in the Daly family of languages in northern Australia. He considered that there is a semantic basis of noun class membership, viz.

Class 1: Body parts, kinship terms, natural phenomena.
Class 2: Animals hunted for meat.
Class 3: Vegetable food and plants.
Class 4: Wooden implements, trees, weapons.
Class 5: Trees (as opposed to implements, wood products).
Class 6: Male humans.
Class 7: Female humans.
Class 8: Domesticated animals.

Of the six subgroups of these languages, only three show agreement with adjectives. In the other three subgroups, noun classes may be marked by prefixes or the noun class marker may be a separate word. In either case the marker is acting as a noun classifier since there is no agreement with other parts of speech.

Heath (1978a:35–37) has reported five non–human noun classes in Ngandi, a language spoken in eastern Arnhem Land. Like Maung, there seems to be a fairly clear distribution of animals and plants, such that most terrestrial mammals, all goannas, most fish and birds are all A class. Plants are mostly GU or MA, with most edible roots being in the MA class.

Heath (1978b:49–52) has also discussed the basis of assignment of nouns to the five non–human noun classes found in Nunggubuyu, another eastern Arnhem Land language. He considered that in this language it was not very helpful to try to determine the semantic principles of noun class membership for non–human nouns. The noun class system served other purposes apart from semantics. 'Because of loose word–order, the noun–class system is important in linking cross–referring elements (e.g. adjectival nouns or demonstrative pronouns) to particular nouns, and is indirectly involved in clarifying case roles.' (1978b:50).

In his discussion of gender in the language spoken by the Tiwi on Bathurst and Melville Islands in the far north of Australia, Osborne (1974:51) stated that 'Animals whose sex cannot be determined by observation – e.g., birds, fish, reptiles and insects – have their gender established in traditional mythology.' For inanimate things, masculine gender is assigned to things which are 'small', 'straight' or 'thin' and feminine gender to those which are 'large', 'round' or 'ample'. Thus trees are normally feminine. The same features may be used as the basis of distinction between two similar animal or plant taxa, denoted by gender suffixes.

The term 'noun class' has also been applied to the Papago language in Arizona USA by Mathiot (1964:154). It is not clear from the data presented whether there is any agreement between the various noun classes and other parts of speech. The system is based on a division between mass, aggregate and

individual nouns. Mathiot (1964:158) reported that the great majority of animal names were individual nouns though some were aggregate nouns, whereas most of the plant names were aggregate nouns. None of the plant names was a strictly individual noun but some, notably trees (as opposed to bushes) and a few very distinctive plants were found in another class of mixed aggregate-individual nouns. For both plants and animals, the assignment of noun class, though based on perceptual criteria, cut across the higher order taxa of the folk biological taxonomy.

Noun classifiers

Noun classifiers are a feature of a number of southeast Asian languages. Macdonald (1967:82–83) has described noun classifiers in Indonesian as 'counter nouns' since numbers could only be used when the correct counter noun preceded the noun referring to the object being counted. There is no agreement as in noun classes but the implication is that all countable nouns can be grouped under a particular noun classifier. Macdonald pointed out that each counter noun has a meaning in its own right but its meaning is extended when it is used as a counter noun. Thus **ekor** has the specific meaning 'tail' but is used in counting all animals, birds, fish etc.; **buah** has the specific meaning 'fruit' but is applied to objects in general and particularly to roundish objects. This system is tending to fall into disuse, so it was difficult to determine how plants and invertebrate animals were classified.

A similar type of system has been reported by Thomson (1946:165–66) and more recently by Kilham (1974:52–53, 1986) for the Wik-Mungkan Aborigines of the Cape York Peninsula. The names of edible mammals, birds and fish are preceded by the noun **min** meaning 'protein, edible animals'. Plant foods are referred to as **may** and woody plants **yuk** are distinguished from vines **kuuy** and rushes and grasses **wak**. Thomson reported these nouns as classifier nouns but Kilham has noted they are not strictly obligatory.

Noun incorporation

In Australia noun incorporation has been reported for the Tiwi by Capell (1942:24, 1967:49–51) and Osborne (1974:46–50). Of the forty-five incorporated forms listed by Osborne which have noun-like meaning, more than half refer to animals and plants. Many of these distinguish between raw and cooked forms of animals or plants. The incorporated forms are in most instances quite distinct from the free form of the nouns which they represent. Capell (1967:49) called the incorporated forms 'glossemes', as suggested by Swadesh (1946:50) for a similar feature in South Greenland Eskimo.

McKay (1975:170–74, 287–309) has reported noun incorporation in Rembarrnga. In this language the incorporated form of the noun is generally the same as the free form and it is incorporated into the verb. However of the sixteen examples of nominals (nouns) which refer to plants and animals in one way or another, seven refer to part of a plant or animal, four refer to specific animals or plants and only five refer to categories which include more than one kind of plant or animal. Of these five, three refer to food categories. McKay qualified his remarks on noun incorporation by saying that his work in this area was inconclusive at the time of writing.

In Ngandi compound verb stems may be formed by incorporating a noun form (Heath, 1978a:115–19). However of the limited number of examples given, only three refer to plants or animals.

I am aware (Heath, also M. Hore, pers. comm.) that Nunggubuyu has a more extensive system of noun incorporation than Ngandi and possibly Rembarrnga but it is not yet published. A discussion of Anindilyakwa noun incorporation will be included in Chapter 6.

In a number of Indian languages in southern and southwestern USA there is what has been termed a 'classificatory verb system' in which a morpheme representing any one of a set of nouns is attached to a verb stem. This system appears to be of the same nature as noun incorporation. For the Western Apache, Basso (1968:261) has reported two morphemes representing all animal life, subdivided on the basis of whether or not the animals are 'light enough in weight to be easily lifted and transported by one man'. Plants and plant foods are treated in the same manner as other inanimate objects. Basso (1968:253) stated that 'the use of classificatory verbs is similar to that of nouns: the speaker... must decide that a specific object belongs to a particular category and label it accordingly'.

Woodbury (1975:11) has stressed the classificatory function of noun incorporation from a different perspective. At least in the Onondaga language, another American Indian language, 'the semantic component be a kind or sort (of X) is added to (the) lexical meaning' for a majority of concrete, inanimate nouns when they are incorporated into the verb.

In this section I have discussed the nature of folk classification, including biological, food, totemic and linguistic classification. I have suggested that biological and food classification are hierarchical in nature, totemic classification is non-hierarchical and based largely on association, and linguistic classification is different again and may take several forms none of which is hierarchical. I now wish to discuss the type of thinking which underlies the various kinds of folk classification.

THE BASIS OF FOLK CLASSIFICATION

On p.24–25 I drew attention to Hallpike's criticism of hierarchical classification and his suggestion that primitive classification is based on complexive rather than conceptual thinking. I have delayed discussion of Hallpike's evidence since I would maintain that he was concerned with the type of thinking on which classification is based, not with whether a classification is based on morphological or functional use. It will be helpful first to examine the types of thinking suggested by Vygotsky.

Vygotsky (1962:59) distinguished three basic phases of development in thinking. In the first phase 'the young child... puts together a number of objects in an unorganized congeries, or "heap"... consisting of disparate objects grouped together without any basis... linked by chance in the child's perception'. Throughout the first phase any grouping of objects is entirely syncretic and at the earliest stage entirely random, like drawing random numbers in a lottery.

Vygotsky (1962:61-69) considered the second phase leading to concept formation to comprise 'many variations of a type of thinking that we shall call thinking in complexes'. He identified five such variations, viz.

i) associative complex, based on similarity or contrast or proximity in space,
ii) collection complex, based on contrast, complementarity or functional cooperation,
iii) chain complex, based on consecutive joining of individual links in the chain,
iv) diffuse complex, based on somewhat fluid and indeterminate links, and
v) pseudo-concept, apparently equivalent to adult concepts but still based on association.

Vygotsky (1962:71-72) pointed out another feature of complex thinking, viz. participation, which he noted, following Levy-Bruhl, was characteristic of thinking among primitive peoples. Vygotsky stated that 'The term is applied to the relationship of partial identity or close interdependence established by primitive thought between two objects or phenomena which actually have neither contiguity nor any other recognizable connection.' He considered that (certain?) words in the languages of these peoples do not function as carriers of a concept but as "family names" for groups of concrete objects belonging together, not logically, but factually. In this way animals, for example, may be linked in the same complex as people without any logical basis. As Vygotsky (1962:61) has said,

> In a complex, the bonds between its components are concrete and factual rather than abstract and logical, just as we do not classify a person as belonging to the Petrov family because of any logical relationship between him and other bearers of the name. The question is settled for us by facts.

The third phase identified by Vygotsky (1962:76-81) leads to true concept formation based on abstraction, analysis and synthesis. Initial concepts may be thought of as 'potential concepts' where 'a trait once abstracted is not easily lost again among the other traits'. To master conceptual thinking, a person must be able to define a concept in abstract terms 'without reference to any concrete situation or impressions' and then apply the concept to a new situation, thus proceeding from the abstract back to the concrete.

Inhelder and Piaget (1964) have suggested an alternative approach to a child's developing understanding of classification. They describe the first stages as pre-operational, where a child simply forms collections of things, proceeding to a concrete operational stage, in which a child may construct a hierarchy but without a full awareness of the implied class inclusion relations, and finally to a formal operational stage where a person is able to operate on the hierarchy without reference to concrete examples. This final stage includes such operations as analysis and synthesis of new data. Although Hallpike has referred to both Vygotsky's and Piaget's theories, I have chosen not to pursue the application of Piaget's theory in this thesis since Worsley has referred to Vygotsky and also Vygotsky's theory seems more descriptively appropriate to the data in hand.

To illustrate his argument, Hallpike chose examples from his own work amongst the Tauade in Papua, from the work of Luria amongst illiterate Uzbek peasants and from the work of Cole and others amongst the Kpelle of Liberia. Hallpike's example (1979:184) from the Tauade deals with a category called ago 'whose range of meanings covers our notions of 'ancestor', 'prototype', 'wild form', 'non-human', 'source of fertility', and 'immortal' '. When the term is applied to plants and animals, they are considered immortal. Legends recount the activities of culture heroes included in this category. I agree that such a category is complexive but this is clearly symbolic classification rather than biological classification and it is the latter which is more likely to be hierarchically organised.

Luria found that illiterate Uzbek peasants were apparently unable to use 'generic' concepts in a taxonomic manner (Hallpike, 1979:187-90). For example, they wanted to include a log in the same group as various tools, claiming that the log also belonged because of its functional association with the tools. While I cannot deny the complexive classification of the illiterate Uzbek peasants, I would question Hallpike's choice of example. I would want to know how educated speakers would understand and use the same 'generic' terms. I suspect that they would have a quite different understanding of the terms. Hallpike would then argue that this is the effect of literacy. But Vygotsky's theory does not necessarily imply dependence on literacy for conceptual thinking. My most valued assistant on Groote Eylandt is illiterate but he has a phenomenal knowledge which I am certain includes a reasonable awareness of logical class inclusion relationships.

Hallpike (1979:190-91) has noted that the Kpelle do indeed classify leaves of plants (and presumably the plants themselves) on taxonomic principles, i.e. leaves of vines and leaves of trees, although a wider assortment of objects was classified on the basis of functional use.

To support his argument further Hallpike has drawn on the work of Bright and Bright amongst Indian tribes of California, of Bulmer amongst the Kalam, and of Evans-Pritchard amongst the Nuer as well as additional examples from the Konso, the Kpelle and the Tauade. Bright and Bright's suggestion of a 'sphere of influence' model of classification was discussed on p.19-21 though it was also noted that their data could be expressed hierarchically. The examples drawn from the Nuer and the Tauade (1979:213-21) deal with social relationships, based on Durkheim and Mauss's suggestion that the divisions of society provided the pattern for logical hierarchies. I agree that neither of these examples is useful to support the notion of hierarchical classification based on logical inclusion, though I do not think the absence of superordinate terms is in itself sufficient reason to deny the reality of a hierarchy.

The example from the Konso (1979:211) of the association of phenomena with one of the three realms, God, Earth and the Wild, deals with symbolic classification and, as Hallpike claimed, is not hierarchical. In discussing another Konso example, classification of animals and human beings, Hallpike (1979:206) again considered that there was a lack of hierarchical organisation. The data he has given include two binary classifications, viz. domestic/wild and edible/inedible, superimposed on the biological classification system, though without further details the domestic/wild distinction may need to be included within the biological classification to allow for the distinction between domestic

and wild animals (mammals). Categories of birds and fish are given in addition to wild animals. Thus his data could be interpreted as a shallow hierarchy, probably of three levels, in which the unique beginner is apparently unnamed.

The Seŋ or Thing chart constructed for the Kpelle is based on a very wide assortment of objects. Hallpike (1979:208) noted that it 'may well be an overformalized and artificial system, imposed to some extent by an educated Kpelle on his informants, which may mask alternative classificatory schemes'. The fact that such objects can be classified in a variety of ways should not be surprising – there is more than one way of classifying within one semantic domain, let alone within such a wide variety of items. But that does not deny the possibility that at least one or more ways of classification is hierarchical. With such an array it is scarcely surprising that 'their resulting system of classes is inevitably ambiguous and founded on shifting criteria' (1979:209). In the same paragraph, Hallpike has admitted that 'their classification will be relatively unambiguous when confined to the objective resemblances and discontinuities of natural species'.

It is interesting that Hallpike made no mention of the hierarchy reported by Berlin, Breedlove and Raven, nor of the later papers of Bulmer and his colleagues in which further details of Kalam animal classification are given. Bulmer, Menzies and Parker (1975:291) have stated that

> With a few notable exceptions... all mammals, birds and frogs known to Kalam can be placed in one or other of three well-defined taxonomic hierarchies: **yakt** "flying birds and bats"; **kmn** "game animals" or "larger furred mammals"; and **as** "frogs and small furred mammals other than house-yard rats". Each of these hierarchies includes up to three levels of internal differentiation. While Kalam also classify these creatures in many different and cross-cutting ways, there can be no doubt about the functional and cognitive saliency of these three taxonomic hierarchies. This is evident from everyday linguistic usage.

Bulmer's 1967 paper is particularly concerned with the three most 'notable exceptions', viz. pigs, dogs and cassowaries. Each of these forms a taxon on its own at the highest named level of inclusiveness. Hallpike's conclusion that Kalam taxonomy 'is not reducible to any consistent logical principles' seems to be based on the classification of these exceptions and not on the two-thirds of terminal taxa (total 415) which are subsumed within five superordinate taxa containing from 11 to 181 terminal taxa (Bulmer, 1970:1074). Thus I cannot agree with Hallpike's statement (1979:205) that 'Bulmer observes that at this upper level of the taxonomic system cultural criteria play a more important part than criteria of morphology or habitat'.

In seeking evidence to support his claim that primitive classification is based on complexive thinking rather than on conceptual thinking, Hallpike appears to have ignored the data of folk biologists which most clearly show hierarchical classification. He does not appear to have recognised that different systems of classification may be based on different types of thinking. Biological classification may reasonably be interpreted as hierarchical, based on conceptual thinking, though it may not have the depth and fine detail of structure that one expects to find in scientific classification. It is symbolic classification which may be based on complexive thinking.

Hallpike (1979:196ff.) has argued that complexive classification is based on the formation of prototypical images, not on explicit taxonomic criteria. He put forward the hypothesis that 'prototypical classification is the norm in most areas of primitive classification except for kinship and a few other specialized categories' (1979:198), in contrast to the use of hierarchical classification based on logical class inclusion. Rosch (1978:36) has stated that 'By prototypes of categories we have generally meant the clearest cases of category membership defined operationally by people's judgments of goodness of membership in the category.' In point of fact, as discussed previously on p.11, Rosch has shown that it is the basic objects, not the superordinate categories, that are the most easily imaged, at least for non-biological objects. Further work needs to be done in order to see whether prototypical images are more easily formed for folk genera than for life form categories, such as tree and bird, in situations where there is still a heavy dependence on biological knowledge.

Hallpike (1979:221) also stated that

> It seems, then, that while primitive taxonomies may embody hierarchical relations, these are typically not exhaustive or well ordered; the taxonomic systems that we have considered are dominated by imagery and by relations of 'belonging' rather than of taxonomic class membership and, as Rosch has shown, there are fundamental factors of information processing that render hierarchical taxonomies of limited utilitarian value in ordering the world.

I disagree with this. In my opinion Rosch sees prototypical images as being a significant factor in the identification of basic level objects, not as a system of classification per se. The very use of the term 'basic level' implies her acceptance of a vertical dimension of classification within a hierarchy. Certainly 'the basic level of abstraction is that level of abstraction that is appropriate for using, thinking about, or naming an object in most situations in which the object occurs' (Rosch, 1978:43). But that does not deny the reality of a hierarchy. Nor does the limited utilitarian use of superordinate terms deny the reality of a hierarchy.

In acknowledging that Rosch accepts hierarchical classification, it should also be noted that she has stated (1978:35) that

> Most, if not all, categories do not have clear-cut boundaries. To argue that basic object categories follow clusters of perceived attributes is not to say that such attribute clusters are necessarily discontinuous.

Prototypical images (of basic level objects) are based on clear-cut examples of a category, not on examples that may be borderline cases. The same must be said in defining superordinate and subordinate categories, not just in folk classification but also in scientific classification. A lung-breathing fish is not a typical example of a fish. The egg-laying, duck-billed platypus is not a typical example of a mammal.

However, in reference to hierarchical classification, Hallpike (1979:198) stated that

> logical classes (with the exception of polythetic classes used in scientific taxonomies) are clearly bounded, and all elements possessing the qualifying properties of the class have a full and equal degree of membership, so that one instance is as good as another once the rules of membership have been learned.

If polythetic classes, where members of a class do not necessarily have a single criterion of membership, can yet be considered logical, is it not possible that the categories of folk classification, whose boundaries are not always clear-cut, may also be logical? As a former high school science teacher, I am well aware of the anomalous examples of 'logical' classes: of how one teaches a list of characteristics for a particular category, i.e. 'the rules of membership', only to have a student question the rules. Regardless of whether folk or scientific classification is used, there is no doubt, at least for a native English speaker, that an emu is a bird though it is flightless and that a toadfish is a fish though it lacks scales. As Sperber (1975:16) has said, 'this type of anomaly can always be verified by a simple logical procedure' (my translation and emphasis), viz. by completing the appropriate definitions. Exactly the same problems may be encountered in classifying certain vehicles as cars or trucks (Hunn, 1975b:17-18).

I would thus suggest that, while there may be practical problems in using a hierarchical model of classification, it is nevertheless a useful model which can be seen to be in contrast to non-hierarchical models based on association and other forms of complexive thinking. The hierarchical model is based on conceptual thinking. I shall return to a discussion of these issues in the final chapter of this book.

In the following chapter I have provided the background information necessary to set this study in the context of Groote Eylandt and its people and in the wider Australian context. In chapters 3-6 I present in turn the data on folk biological, food, totemic and linguistic classification systems and discuss the nature of each system with reference to the discussion in the previous section of this chapter. The final chapter is an integrative chapter comparing and contrasting the various systems both as to their nature and as to the type of thinking on which they are based. At the end of this volume is an appendix in which I have outlined and evaluated the methods I used in my studies.

Chapter Two

BACKGROUND

In this chapter I have outlined the setting in which my studies have been carried out, the location of Groote Eylandt, its habitats and the seasonal availability of food, and the language, social organisation and settlement patterns of its people. I have then reviewed the studies which have been recorded on Groote Eylandt plant and animal classification. Finally I have briefly reviewed the wider Australian literature on plant and animal classification in order to set this study in the Australian context.

Groote Eylandt

Location

My work has been with the Aborigines on Groote Eylandt. This island, which is roughly forty by sixty kilometres, is in the Gulf of Carpentaria, approximately forty-five kilometres from the nearest mainland (Fig. 9). The land is part of the former Arnhem Land Aboriginal Reserve but is now Aboriginal owned.

Language

The Aboriginal language of Groote Eylandt and the surrounding islands is Anindilyakwa. This language is characterised by multiple noun classes, extensive prefixing and suffixing systems, and very long words. Stokes (1981) has described its phonology. It is still the first language of children and the only language spoken by some of the oldest Aborigines on the island.

Stokes' paper highlights the variation which is found in the language, both for the same speaker and from one speaker to another. The same type of variation can be found amongst speakers in both the major communities, although some variant forms tend to be found more frequently amongst those who have closer links with Nunggubuyu speakers on the adjacent mainland.

Social organisation and settlement pattern

There are approximately one thousand Aborigines on the island, nearly all of whom are native speakers of Anindilyakwa. Though these people have a strong sense of their identity as islanders in contrast to mainland peoples, they do not have a name for themselves. They have been referred to in the past as the Warnindilyakwa but this term, literally the people of the Dilyakurrkba peninsula (in the southeast of the island), should only be used with reference to the Warnindilyakwa clan. Tindale (1925a) used the name Ingura which is the name used by some mainlanders in reference to Groote Eylandt people.

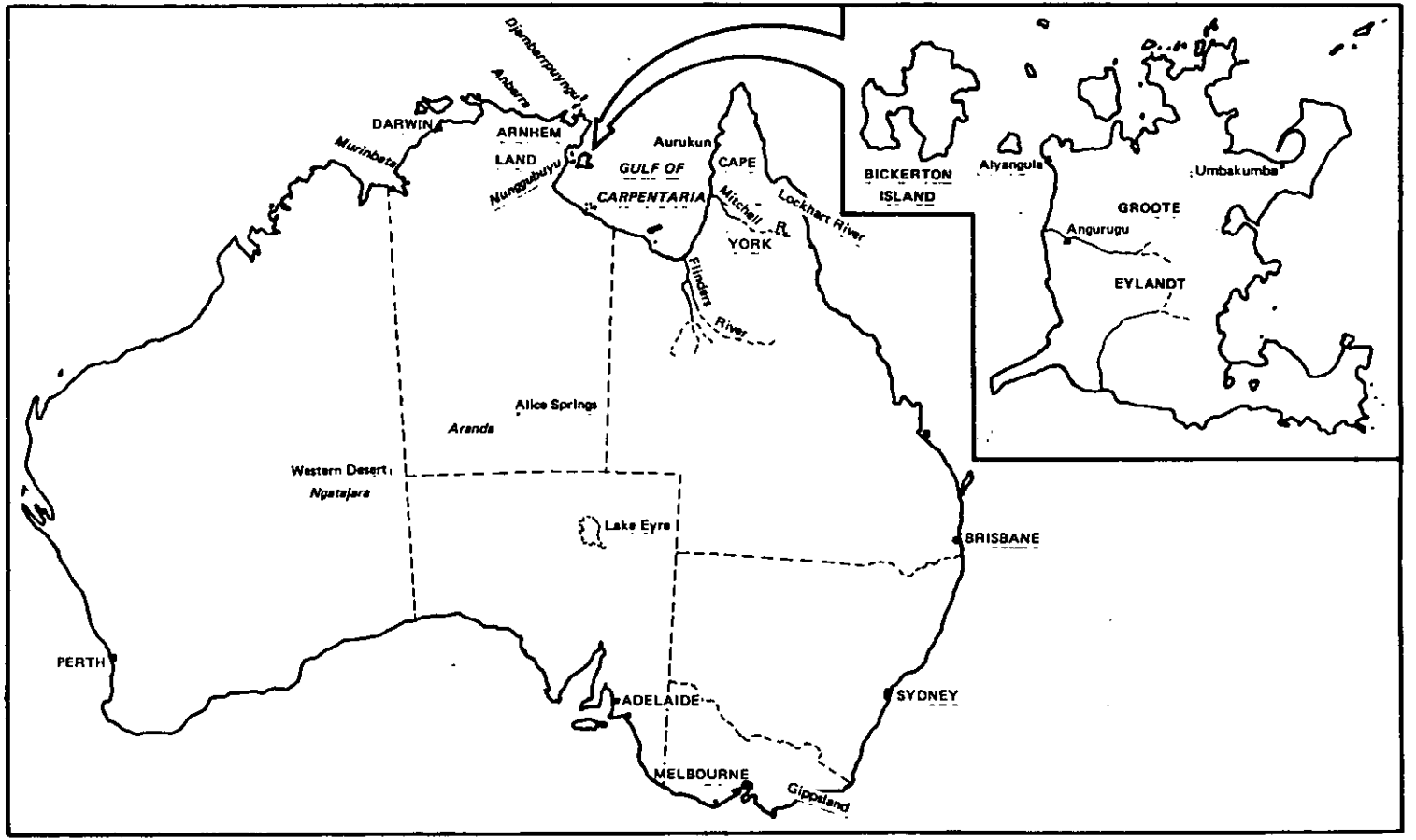

Figure 9 Map showing Groote Eylandt and surrounding islands in relation to the mainland of Australia

There are marriage links with mainland Aborigines, particularly with Nunggubuyu speakers on the adjacent mainland. More recently a few marriages have been contracted with Aborigines from the Cape York communities of Aurukun and Lockhart River.

There are fourteen clans (see Table 10) whose territories are distributed over Groote Eylandt, Bickerton Island and other smaller islands. Some clans have closer links with Bickerton than with Groote itself. These are the clans which tend to have the greater number of marriage links with Nunggubuyu speakers. The data reported in this thesis can reasonably be taken to be representative of all Aborigines whose first language is Anindilyakwa, including those whose strongest links are with Bickerton Island.

The clans, which are patrilineal, are divided into two exogamous moieties each containing seven clans. The moieties are not named but people commonly refer to **yirrenikaburra** 'we-moiety-fellows' in contrast to **wurrenikaburra** 'they-moiety-fellows'. Mountford (1956:23) mistakenly took these expressions to be moiety names (see Worsley, 1954a:83–84).

Today there are two major Aboriginal towns on the island, Angurugu on the western side of the island and Umbakumba on the northeast coast. A number of clans have established homeland centres on their clan lands. Those living in these centres generally use the shopping, school, health and other facilities in the main towns and may commute to the town for work.

Further details of clans and their territories and of the kinship and marriage system may be found in Rose (1960) and Turner (1974).

History

Aborigines have lived on Groote Eylandt for an unknown period. It is generally thought that they migrated from the mainland via the islands in between. In the seventeenth century, the island was visited by Dutch explorers, who gave it its name (literally 'great island'). However the earliest contacts with a continuing influence were from the annual visits of Makassans in search of trepang (bêche-de-mer or sea cucumbers) (Worsley, 1954a:9–18; Macknight, 1976:93–126). Macknight considered that these visits continued for approximately 200 years, ending in 1907.

In 1921 the first non-Aboriginal outsiders known to have settled on the island established a mission for Aboriginal children from the mainland who had been declared wards of the state (see Cole, 1971). Their contact with the Aborigines of the island was at first very limited. Contact intensified from 1933 through the efforts of missionaries of the Church Missionary Society (CMS). Basic schooling started and flour, sugar and tea became increasingly available. However the Aborigines of the island were still very much dependent on hunting and gathering for their survival.

In 1938 Fred Gray, who had been trepanging in eastern Arnhem Land for some years, established a settlement at Umbakumba in order to supply fresh fruit and vegetables to the Qantas flying boat base at Port Langdon. He encouraged the Aborigines of the eastern side of the island to settle at Umbakumba, but

periodical shortages of food forced them to maintain their skills as hunters and gatherers. In return for work food was prepared communally. The older men were employed in fishing and turtle hunting (see Worsley, 1954a:281–94, 310). Communal feeding continued until at least 1966.

In 1943 CMS established the present settlement on the banks of the Angurugu River. From this time on more and more families from the western part of Groote and from Bickerton Island settled in the community. Both men and women were encouraged to work and payment was made initially by rations of flour, sugar, tea, rice, ground wheat and treacle. Here, too, the older men contributed their skills in fishing and turtle hunting and their catch was shared by all. People were encouraged to go out at weekends and during school holidays to collect bush foods and had of necessity to do so on occasions when other food ran out. But dependence on hunting and gathering skills was very much reduced.

The next major external influence came from the mining operations begun in 1964 on the western side of the island by the Groote Eylandt Mining Company (GEMCo), a subsidiary of Broken Hill Proprietary Company Limited. This led to an influx of non-Aborigines, more flights to and from the mainland and more regular supply boats from Brisbane and other ports. In 1982 the mine was supporting a town of some 1200 non-Aborigines. Relationships between the management of GEMCo and the Aborigines of Groote Eylandt have always been most amicable, in contrast to relationships with mining personnel in some other areas of Australia.

Introduction of the Groote Aborigines to a cash economy was gradual, payment in cash in return for work being given initially as a supplement to food rations to allow the purchase, first of items such as knives and fish hooks and later of clothing. Aborigines did not assume full responsibility for purchasing all their own food requirements until the mid-sixties. From its very humble beginnings, the annual turnover of the Angurugu store is now more than one and a half million dollars.

The mining company trains and employs a number of Aborigines. Many others are employed by the local government councils at Angurugu and Umbakumba, by the Northern Territory Departments of Education and Health and in the community stores.

All these changes have important implications for the study described in this book. Aborigines under the age of forty cannot be expected to have anything like the environmental knowledge of their elders. As for Aborigines between forty and sixty in 1982, their knowledge seems to vary with the proportion of time they spent as young adults in the bush, but it is also affected by the interest which they and their families may have had in gaining and imparting knowledge of the environment. In 1982 there were only seven men and nine women over the age of sixty. Mrs Callon Moore (n.d.) established the probable year of birth for each Groote Eylandt resident born before 1940 by comparing their relative ages.

The rapidity and magnitude of the changes of the last fifteen or so years have provoked much thought and discussion among the Aborigines. There can be no doubt of their resilience or of their ability to adapt, but the changes have come at the cost of the knowledge and skills that were once essential for survival.

Today the men who have this knowledge are also the ones whose stabilising influence and tribal wisdom are called upon to assist their community in coping with recent change. Some unfortunately have found the pressures too great and have succumbed to the debilitating influence of alcohol. For several weeks of the year everyone is preoccupied with increased wealth flowing from mining royalties. Many families are returning to their clan territories and establishing homeland centres, partly at least to escape the pressures of living so closely together in the midst of change. It has not been easy for me to arrange to visit clan leaders at their homeland centres. Providing the convenience of such commodities as power and running water at such centres means that much time is taken up by clan leaders in consulting appropriate people for advice and assistance. From time to time the whole population becomes involved in ceremonial activities or in Aboriginal dance festivals that have brought as many as 500 visiting Aborigines from all over northern Australia.

The demands on people's time are enormous. Today hunting and gathering are almost entirely for recreation at weekends and in school holidays. Bush and sea foods are still relished but normally they are no more than a supplement to what can be bought from the shop, although families living at homeland centres may spend a greater proportion of time collecting foods, especially when they are available in abundance.

Habitats

The island has a wide range of habitats. The most extensive is the tall open forest formation typical of much of Arnhem Land. There are many dense pockets of monsoon forest, often behind the coastal sand dunes. These dunes are very variable in extent and in vegetative cover. Quartzitic sandstone outcrops are common although the highest point on the island is only about 200 metres. There are seasonal swamps and billabongs and several rivers which have never been known to run dry. Mangrove forests are found at intervals around much of the coast. (For further information see Specht, 1958b; Levitt, 1981.)

Sea habitats are also important, as they are the source of much food. Coral reefs are still very popular as fishing places. There are many places where laterite and sandstone have provided suitable habitats for rock oysters and other shellfish in the intertidal zone. Extensive sand/mud flats occur including much of the area of Angurrkwurrikba, a saltwater lake in the centre of the island.

Each of these habitats has its Anindilyakwa name, as indicated in Table 1.

Seasonal availability of food[6]

Food is sought in a particular habitat depending on the season. There are two main seasons, the wet and the dry, controlled by the northwest monsoon winds and the southeast trade winds respectively. The wet season usually begins in earnest in December and lasts until April or early May. The trade winds may begin to 'try themselves out', as the expression is in Anindilyakwa, during March

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[6] This section has been revised from a published article (Waddy, 1983a)

Anindilyakwa	English	Ecological terms used by Specht (1958b)
ARIBA	DRY LAND	
erriberriba	open forest	tall open forest, sandy fan delta edaphic complex
murungwena	monsoon forest (jungle)	monsoon forest
angwa	sand dunes	coastal dune edaphic complex
yinijirra	rocky hills	quartzite and sandstone edaphic complex
ekbulkuwurrariya	seasonal swamp	freshwater stream, swamp and marsh edaphic complex
awurukwa	billabong	• • • • • •
adalyuma	river	• • • • • •
anuma	mangrove forest	mangrove forest edaphic complex
		Comments on marine environments
MAKARDA	SALTWATER	
mukumukwa	deep sea	beyond the shallow shelf around the land
makarda	shallow sea	shallow shelf around the land, beyond the low tide mark
ayeba	coral reef	may be exposed at extreme low tide
mulirra	rock platform/ rocky outcrop	found in intertidal zone
mabulala	intertidal zone	shallow sea close inshore
yiningilya	sandbars	usually covered at high tide
ekbulkumakardumurra	sand/mud flats	more extensive areas of sand and mud exposed at high tide
mijiyelya	beach	sandy beach from high tide mark to the line of casuarina trees

Table 1 Folk classification of habitats

but they blow most consistently from May until September. It is possible to break up the year further according to various aspects of the weather or according to the availability of food. For example, the beginning of the dry season can be referred to literally as the time for yams, **akumarndakirriyerra**. A detailed chart of the seasons is shown in Figure 10.

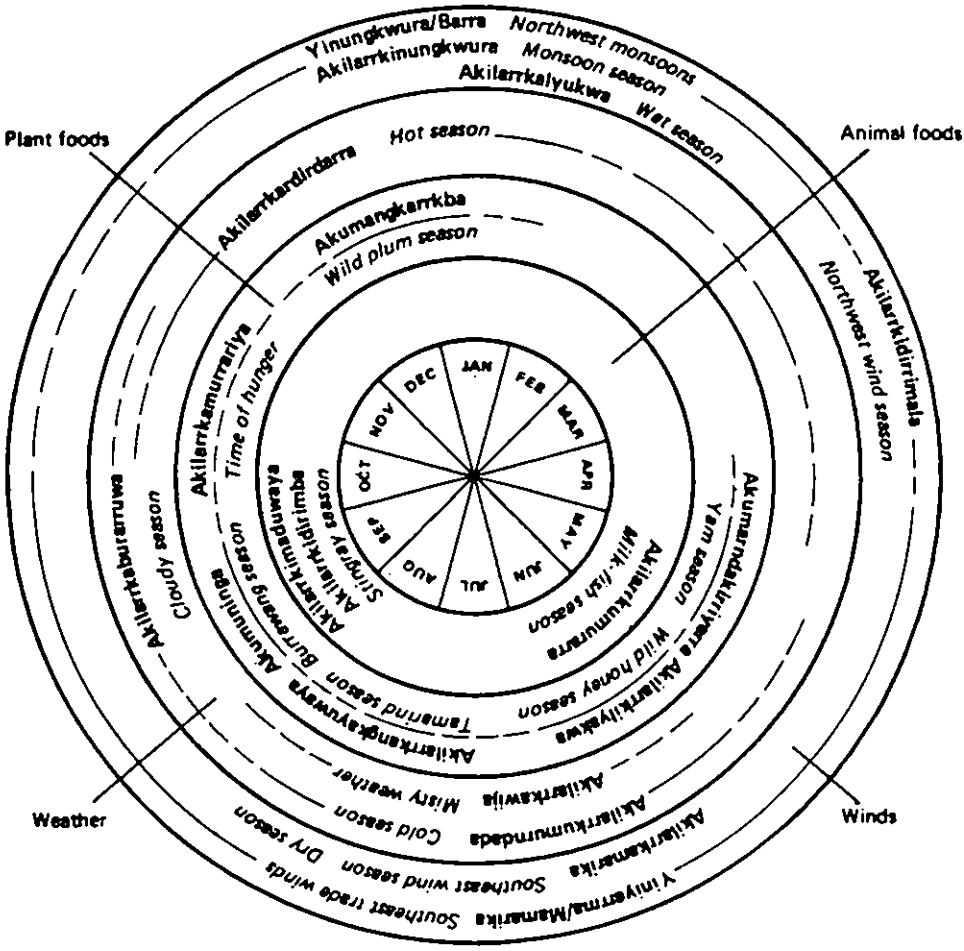

Figure 10 Chart of the seasons from a Groote Eylandt Aboriginal point of view.

Late in November or early in December, as the build-up of heat and humidity intensifies just before the wet, the bush fruits begin to ripen. For the next couple of months there is an abundance of bush fruits. The most popular of these today is the wild plum Buchanania obovata. Bush fruits are found particularly in the open forest and along the coastal dunes but some are also found in the monsoon forest.

By the beginning of the dry season the only available fruit of any consequence is the custard finger Uvaria sp. This fruit and the long yam Dioscorea transversa are both found in monsoon forests and are still sought after today. Root vegetables have always been a particularly important food source in the dry season. The round yam Dioscorea bulbifera is no longer dug because it requires processing to remove a poisonous substance (Levitt, 1981:41). Other root vegetables are found in the open forest, on the coastal dunes and in seasonal swamps and billabongs. Those found in wetter areas, such as the rushes Eleocharis dulcis and E. sp. aff. fistulosa, can still be collected later in the year during the build-up to the wet season though they are not much eaten today.

As the yam season gets under way the various wattles begin to flower. The flowering of Acacia aulacocarpa reminds people that it is time to collect the eggs of various tern species that nest on some of the off-shore islands. The flowering of other wattles is a reminder that certain fish species now have plenty of fat and are good to eat. These examples illustrate not only the importance of different habitats but also the interrelatedness of Aboriginal observations.

As the dry season progresses much of the open forest is burnt off to remove the tall grasses of the wet season. This simplifies hunting for wildlife such as bandicoots, native cats, various goannas or monitor lizards and the blue-tongued lizards, not to mention 'sugar bag', the much-prized honey found in the wild bees' nest. The tiny wild bees Trigona hockingsi nest in trees hollowed out by termites. The trees must be chopped down to extract the honey Burning off also encourages the growth of fresh grass shoots to attract wallabies, the largest land mammals on the island. As far as I can tell, the pattern of burning off is random, spreading out from population centres and accessible roads and beaches.

Later in the dry season, when the flowers of the stringybark Eucalyptus tetrodonta are falling, the fruit of the tamarind tree Tamarindus indica (introduced by the Makassans) is ripe. At about the same time the burrawang Cycas angulata is ready to be collected in certain coastal dune and open forest areas. The nuts of this cycad contain the poison, macrozamin (Riggs, 1954), which can be removed by soaking the fresh nuts in a cage of burrawang fronds in running water for from three to five nights. These nuts are then crushed and roasted in hot sand and ash before being eaten, but the details of preparation vary depending on their state (see Levitt, 1981:48-51). They are not often prepared today. Sometimes nuts used to be buried in a hole by the river and left for several months before being roasted and eaten. This was the only form of food preservation known to the Groote Eylandt people.

When the cocky apple Planchonia careya starts flowering about September it is time to go and get turtles - and their eggs - from many of the beaches around the island. Turtles - like dugong, or sea-cows - are still highly prized for their meat. Stingrays and shovelnosed rays are also sought after about this time of the year as they are considered to have plenty of fat and therefore to be good

eating. Aborigines on Groote Eylandt look for animals at a particular time of year because 'that's when they're fat!' As Worsley commented (1961:170), 'In recounting a hunting-success, one is always asked "Was it fat?" '

Review of literature on Groote Eylandt classification

The earliest scientific collection of plant specimens on Groote Eylandt was made in 1803 by the botanist, Robert Brown, a member of Flinders' expedition which was charting the Australian coastline. He did not attempt to obtain Aboriginal names. Many of his specimens were type specimens for the species. In 1981 Professor Ray Fosberg and Dr Ralph Buckley sought to collect specimens of these species from sites as near as possible to the original collecting sites. (It is of interest that the resources now available in the community as a result of the work done by Miss Levitt and myself could have been utilised in reverse, as it were. Knowing the scientific species, the Anindilyakwa name could be obtained, the map coordinates could be used to pinpoint the Anindilyakwa place name and thus my chief informant, Peter Wurrawilya, could have led Fosberg and Buckley directly to the site and located the required specimens, all in my absence.)

No further collecting of plant or animal specimens was carried out for over 100 years after Brown's visit.

Included in the first small party of non-Aborigines to settle on the island in 1921 was Norman B. Tindale, whose interest at that time was particularly in entomology. Many of the literature references to particular insects on Groote Eylandt are based on specimens collected by him (e.g. Tindale, 1923a and b; Tillyard, 1925). This has helped me in confirming identification of butterflies in particular. My own awareness of insect classification was greatly assisted by visiting the South Australian Museum and comparing my earliest specimens with specimens deposited there, many of them collected by Tindale. The scientific identifications of specimens collected by Tindale, including birds, are listed in Appendix 1.2.1 (Waddy, 1984). He made very valuable records of many aspects of the life of the Aborigines on the island at that time (Tindale, 1925a; 1926), including comments on a number of the plant and animal sources utilised by the Aborigines and their method of collecting or hunting them. He noted a few Anindilyakwa names of plants and animals and these are listed in Appendix 1.1.1 (Waddy, 1984) with the current Anindilyakwa practical orthography and with scientific identifications.

In 1921 McClennan visited Groote Eylandt and reported a list of birds seen on the island (Campbell, 1922). These are listed in Appendix 1.2.2 (Waddy, 1984) with current scientific names. He did not record any Anindilyakwa names.

In 1925 Captain Hubert Wilkins (as he then was) spent three months on the island collecting plant and animal specimens for the British Museum. Plants and animals collected by Wilkins are listed in Appendix 1.2.3 (Waddy, 1984) together with current scientific names. He did not record their Anindilyakwa names. Wilkins (1928:224) noted that birds, especially smaller species, seemed to be relatively few in number. Workers on the island attributed this to the effects of the devastating cyclone which had swept the island in 1922. He was the first person to witness and record many aspects of day-to-day living in an Aboriginal camp on Groote Eylandt (1928:250).

The anthropologist, Frederick Rose, worked on Groote Eylandt for periods of several months at a time in 1938, 1941 and 1948. His main interest was in the kinship system (Rose, 1960). Rose revisited the island (and other parts of Australia) briefly in 1965 and subsequently wrote Australia Revisited (1968), in which he made several references to aspects of hunting and gathering. He stated that 'Throughout Aboriginal Australia food is divided into the natural four categories of meat, vegetable food, fat and sweets', (1968:160), but the data on which the third and fourth categories are based are not disclosed. He included a list showing the number of different types of meat and vegetable foods obtainable on Groote Eylandt (1968:161, see also Rose, 1960:15). These data are similar but not identical to the figures obtained by Worsley, (1961:158), though Rose acknowledged Worsley. Rose (1960) also made brief mention of clan totems and related myths (see Chapter 5). A list of the Anindilyakwa plant and animal names used by Rose is given in Appendix 1.1.2 (Waddy, 1984) together with each name in the current practical orthography.

In 1948 members of the American-Australian Scientific Expedition to Arnhem Land recorded many of the scientific species present on the island and in the seas nearby. A full list is given in Appendices 1.2.4-9 (Waddy, 1984) together with current scientific name equivalents. Only Specht (1958c), recording plants, and Taylor (1964), recording fish, included Anindilyakwa as well as scientific names. Specht found 53 scientific species with Anindilyakwa names which were potential food sources. A full list of the Anindilyakwa names recorded by Specht is given in Appendix 1.1.3 (Waddy, 1984) and by Taylor in Appendix 1.1.4 (Waddy, 1984) together with each name in the current practical orthography. Discrepancies in scientific or Anindilyakwa nomenclature are also noted.

Other members of the same expedition collected data on the diet and nutritional status of Aborigines in Arnhem Land. McCarthy and McArthur (1960:180-89) observed food collecting for two weeks amongst several families on Groote Eylandt. McArthur (1960:98-110) grouped the various plant foods according to 'the type of country in which they are found', but she did not mention the way in which Aborigines classify their food. Little detail is given for animal foods.

The well-known anthropologist, Charles Mountford, was one of the leaders of the expedition and was chief editor of the four volumes of data derived from the expedition. He studied art, myth and ceremonial life on Groote Eylandt (1956:17-106). Many totemic myths are included (see Chapter 5). A list of the Anindilyakwa plant and animal names used by Mountford is given in Appendix 1.1.5 (Waddy, 1984) together with each name in the current practical orthography.

In the course of his work on the changing social structure of the Groote Eylandt people in 1952-53, the anthropologist, Peter Worsley, recorded as many Anindilyakwa names of plants and animals as he could obtain, noting in particular those which were utilised as food sources (Worsley, 1961:181-89, see also Appendix 1.1.6 and Appendix 1.3, Waddy, 1984). He also provided scientific names where possible but often could only give a rough English translation. However he did arrange his data according to the major categories perceived by Anindilyakwa speakers. These categories are given in Table 9, together with the name of each category in the current practical orthography.

Worsley commented on the apparent 'paucity of terms for the internal organs' (1961:159). He succeeded in obtaining three terms, **awa** 'liver', **mulugwa** (**mulkwa** ~ **mulukwa**) 'stomach, womb, intestines etc.' and **aṇḍoṇḍa** (**arndirnda**) 'heart or kidneys'. In fact the last of these refers only to the heart, as kidneys are **andira**, but **mulkwa** is a general term, referring to all abdominal organs. I have recorded another ten words for the internal organs of a turtle, not to mention twelve terms for specific parts of the flesh of a turtle and another seven terms referring to turtle eggs and their various states. It is difficult to find suitable English equivalents.

Worsley has also commented on Groote Eylandt totemism (1954a, 1955, 1956, 1967, see also Chapter 5), and on linguistic classification (1954b, see Chapter 6).

In 1968–69, Turner studied aspects of kinship, totemism, marriage, death and the means of existence amongst the people of Groote and Bickerton Islands. In his book he briefly referred to a number of food sources (1974:162–66, see also Appendix 1.1.7, Waddy, 1984). His comments on totemism and myths are discussed in Chapter 5.

In 1972–75, Miss Dulcie Levitt, who had been a CMS missionary on Groote Eylandt since 1951, recorded the Anindilyakwa names and uses of 400 scientific species of plants (Levitt, 1981). She was particularly interested in food and medicinal uses. Miss Levitt's book includes approximately 250 Anindilyakwa plant names.

In 1977–79, Ken Simpson observed birds on Groote Eylandt in preparation for a book to be published by BHP on the birds of the island. Simpson's records and those of other bird watchers, viz. Amiet (1957), Haselgrove (1975) and Bound (n.d.), have helped to establish a list of species which have been reliably reported on the island (see Appendices 1.2.10–12, Waddy, 1984). There is still an element of doubt for some species.

In 1979 a series of field trips over two weeks was arranged in conjunction with the Museums and Art Galleries of the Northern Territory and the Groote Eylandt Mining Company. We collected a large number of reptiles (Gow, 1981) and a number of small mammals.

Review of literature on Australian classification

For nomadic hunters and gatherers such as the Australian Aborigines the daily quest for food was a dominant aspect of life. In general food was not preserved, though seeds and other fruits were dried in the arid areas of Central Australia. So, as there was virtually no form of cultivation, Aborigines depended on their daily collecting of food to satisfy their hunger. Their diet varied with the success – or otherwise – of their efforts, and with the seasonal availability of food.

Not only were Aborigines dependent on their local environment for food, but also for all their material needs such as shelter, implements and medicines. Such dependence naturally led to an intimate knowledge of plants and animals.

Some of the earliest records of plants and animals and their Aboriginal names and uses were made by explorers such as Eyre (1845) and Mitchell (1839), but these were incidental interests. Moreover they were preoccupied with surviving in what, for them, was generally a harsh environment. Nevertheless by the 1880's many useful data had been gathered, and at the end of the decade Maiden (1889) was able to present a comprehensive catalogue of useful native plants in Australia from reports of explorers and others. He included all the Aboriginal names to which he had access.

From about this time there was an increase in the number of reports with information on Aboriginal names and uses of plants and animals. Thus Palmer (1884) recorded both scientific and Aboriginal names and uses of plants for the Mitchell and Flinders Rivers in northern Queensland. Roth (1897, 1901–10) made extensive studies amongst several tribes on Cape York Peninsula. His main aim was to obtain information from Aborigines but he also collected plant and animal specimens and had them scientifically identified. His work is particularly important because he systematically recorded the 'generic' (i.e. life form) terms for two languages as well as the 'specific' (i.e. folk generic) terms (Roth, 1901:5, 11–13; Hey, 1903:3, 7–9).

Most references in which the names of plants and animals are listed and their uses noted contain little, if any, indication of the relationships which Aborigines perceived between the various species. It was generally assumed in the past that there was a more or less one-to-one agreement between a scientific species name and its Aboriginal name. Thus obtaining the name and noting the uses of a plant were often considered to be sufficient. Roth's lists improved on this by showing that such relationships existed, though unfortunately he did not pursue the matter further.

Even such later researchers as Cleland (1932–54) and Johnston (1942–43), Crawford (1982), Levitt (1981), Meggitt (1957, 1962) and Specht (1958c) who each made extensive listings of scientific species and their Aboriginal names and uses, have not indicated relationships between species as perceived by Aborigines.

In describing foods obtained by a group of nomadic Aborigines in part of the Western desert region in 1966–67, Gould (1969:260) noted that 'The Ngatatjara distinguish between **mirka** (vegetable and non-fleshy foods) and **kuka** (meat and fleshy foods)'. Although he stated that there are more than 38 edible plant species and 47 named varieties of **kuka** including insects, he gave no indication of any other food categories from an Aboriginal perspective. Douglas (1976:59) has reported a similar division into flesh and non-flesh foods in another Western desert language. Curr's lists, based on vocabulary lists drawn from many different sources, suggest that this division was widespread in Aboriginal languages (Curr, 1887).

In summarising data obtained by others, Cribb and Cribb (1975, 1981a, 1981b), Irvine (1957) and Lawrence (1968) grouped plant species according to the part of the plant that was eaten or otherwise used. Lawrence also summarised information on animals according to the method of hunting. However there is nothing to show that any of these groupings correspond to categories perceived by Aborigines.

Botanists, such as Bailey (1889–1902) in his flora of Queensland, have added notes on Aboriginal names and uses of plants to the botanical descriptions of each species. Part I of the Handbook of the Flora and Fauna of South Australia (Cotton, 1966) is devoted entirely to background information on Aborigines and their culture, including a chapter on ecology and environment by Cleland (ibid.:111–57). The zoologist, Johnston (1943) has summarised Aboriginal names and uses of fauna in the Eyrean region of southern Australia, and Mansergh and Hercus (1981) have compiled an Aboriginal vocabulary of fauna in the Gippsland region of Victoria. Once again, the Aboriginal classification of the environment and its plants and animals in each case remains a blank.

According to the linguist and anthropologist, Strehlow (1942:65), the Aranda language, of Central Australia, has few 'generic' and many 'specialised' terms. Hercus (1966:189) has commented on this that 'these general terms are of much less importance than in the European languages'. Dixon (1980:102) has stated that 'Australian languages all have a number of generic terms'. There is a problem of terminology here which, if not recognised, can lead to confusion. In these references, 'generic' is not being used in Berlin's sense, but in the linguistic sense of a superordinate category.

Thus, using English examples to illustrate what Strehlow means, 'generic' terms would include not only cockatoo, wren and honeyeater (in Berlin's terms, folk genera) but also bird, snake and fish, (in Berlin's terms, life form taxa). Again in English, the 'specialised' terms are very often binomial expressions such as blue wren, red-backed wren and fairy wren (terms which Berlin refers to as folk species). These 'specialised' terms normally correspond to a scientific species name. The term 'specialised' has been used without respect to the cognitive status of the associated taxa within the folk classification system as a whole. This is presumably because of the expectation of one-to-one agreement with scientific species names in other folk biology systems.

In fact, English is rich in what Berlin would call folk species whereas Aranda and most other Aboriginal languages appear to have very few folk species. Most Aboriginal names appear to be folk genera and what have been called 'generic' terms are in most cases life form taxa. The number of life form taxa seems generally to be comparable to the number of English life form taxa, such as fish, bird, snake and so on. The number of folk genera in English is probably considerably less for a given local environment than that in an Aboriginal language. English speakers would find the folk generic taxon goanna (monitor lizard) sufficient for their purposes without further differentiation among the six or eight scientific species. But to an Aborigine each of these goanna species is a potential food source whose differences in behaviour and habitat one needs to be aware of in order to obtain a meal and therefore each one is assigned to a different folk generic taxon.

Hercus (1966:189) has noted that several Victorian languages have no word for lizard. In English lizard is a folk generic taxon which probably remains unaffiliated (in Berlin's sense) for most people. In Aboriginal languages each of the larger lizard, skink and goanna species will most likely be named with a folk generic term.

Dixon (1977:482) has noted that, in the Yidiny language of northern Queensland,

Generics were found to be of two distinct types.

i) Those classifying specific nouns according to the INHERENT NATURE of their referents – **bama** 'person', **maŋgum** 'frog', **ɟugi** 'tree'...
ii) Those classifying specific nouns according to the FUNCTION or USE of their referents: edible flesh food (**miŋa**), edible non-flesh food (**mayi**), drinkable liquid (**bana**)...

Thus generics of the first type will include superordinate taxa belonging to the biological classification system but superordinate taxa belonging to the food classification system would be of the second type. Dixon recognised that the use of these generics depended on the context of the situation, thus acknowledging the existence of separate domains of classification. He likened this system to the noun classifier systems of southeast Asian languages (1980:102).

Another linguist, Heath (1978b:41), has continued the use of the term 'generic' to refer to life form taxa in Nunggubuyu, a language spoken on the mainland adjacent to Groote Eylandt. He has also introduced what he has called 'quasi-generic' terms to cover those taxa which can be used in certain contexts to include more than the normal folk generic taxon. Thus in the expression, 'I am going hunting kangaroos/wallabies', the most prominent taxon can be used to refer to all kangaroo and wallaby taxa. However Heath has noted that such terms cannot be used in the expression 'all kind(s) of – ' in the same way as other 'generic' terms. Berlin (1972:65–71) has suggested that this is one way in which polysemous terms at life form and intermediate level taxa may develop.

Stanner (1960:113–18) has reported what at first sight appears to be another approach to classification of the universe. He lists nine existence classes, as he calls them, for the Murinbata Aborigines to the west of Arnhem Land. These classes include all animate and inanimate objects, a characteristic of noun classes. Vegetable foodstuffs are separated from animal flesh in two classes marked by different prefixes, but inedible parts of plants are in a separate class. Walsh (pers. comm.) has clarified that animals and plants as biological species, including those which are not eaten, are classified by the Murinbata with animal and plant foods respectively and, further, that when parts of both plants and animals are used otherwise than for food, they are referred to by the prefix belonging to the third class. Although class prefixes are characteristic of noun classes, Stanner called the classes 'existence classes' because they showed no agreement with other parts of speech. Walsh (1976:141–48) analysed these prefixes as separate words. Thus this system is akin to the system of noun classifiers in Indonesian. It is a form of linguistic classification.

Rudder (1978/79:352ff.) has applied Stanner's term 'existence class' to the biological classification of plants and animals by the Djambarrpuyngu speakers of northeast Arnhem Land. Djambarrpuyngu is a non-prefixing language, without noun classes. The twelve classes reported by Rudder are in fact equivalent to Berlin's life form taxa, e.g. **guya** 'fish', or possibly, in some instances, to his unaffiliated generics, e.g. **garkman** 'frogs'. Five of the twelve classes are subdivided into named (intermediate level) taxa. Rudder also noted a number of other ungrouped taxa, including many insect species, which appear to be unaffiliated generics, although there could be a covert taxon which would include all the insect taxa.

In addition Rudder has described 'use classes', as he called them, of which the two most important are food and a class based on medicinal and other chemical properties of plants. Djambarrpuyngu, like many other Aboriginal languages, divides food into vegetable foods and meat foods. Further subdivisions which Rudder has reported in these categories suggest that Djambarrpuyngu food classification could be interpreted as a hierarchy. There is no indication that this is so with the use class based on chemical properties.

Rudder has also identified a system of 'locality classes', indicative of the environment in which a particular plant or animal is found. This system cross-cuts the others. These locality classes parallel the classification of habitats shown in Table 1. I would interpret both Rudder's use classes and his locality classes as special purpose classifications in contrast to his existence classes which are biological classifications.

In discussing Nunggubuyu food classification Heath (1978b:44) noted the principal opposition between flesh and vegetable foods. He also gave some indication of the breakdown of classification within each category. Classification of flesh foods basically coincides with the biological classification of the animal kingdom. Classification of vegetable foods includes the intermediate level terms for eggs, turtle eggs, honey and gum (on certain wattles).

Meehan (1982a) has made a detailed analysis of the classification of shellfish by the Anbarra Aborigines of northern Arnhem Land. She has reported that there is a root word referring to all edible flesh, both plant and animal, and another term for all vegetable foods. The four animal flesh categories parallel the biological classification of the animal kingdom. Two of these categories include shellfish. As far as I am aware this is the only detailed study of Aboriginal biological and food classification that has been published. Meehan (1982a:55–56) has also noted the roughly equal distribution of the shellfish between the two moieties and the assignment of 65% of shellfish to one of four noun classes.

In 1974 the Australian Institute of Aboriginal Studies organised a symposium on ethnoclassification. This symposium, and a workshop held at the Institute two years later specifically on ethnobotany, marked a significant turning point in the study of Aboriginal systems of biological classification. Folk biology began to be recognised as a valuable field of enquiry in its own right instead of being only of limited importance, something to do in one's spare time. Heath's paper on Nunggubuyu classification was first read at the 1974 symposium. Several of the speakers at the ethnobotany workshop recognised the need to pay attention to higher order categories within Aboriginal classification systems (Douglas, 1976; Peile, 1980; Sutton, 1980), although no attempt was made to put Aboriginal classification systems within a wider framework of classification studies such as those of Bulmer and Berlin. So far as I am aware, the thesis on which this book is based was the first exhaustive study of biological classification from an Aboriginal perspective set within such a framework. It was also the first time that exhaustive studies of food and totemic classification have been related to folk biological classification.

The first chapter provided the theoretical framework within which my data has been presented. This second chapter has provided the background information required to understand the data presented. Appendix 1 outlines the various methods which I used in pursuing my studies, together with an evaluation of those

methods and lists of the Aboriginal people who assisted me. The next four chapters consider in turn the nature of folk biological, food, totemic and linguistic classification systems from a Groote Eylandt Aboriginal point of view. In each chapter the data are presented and then discussed in the light of the relevant literature reviewed in the first chapter.

Chapter Three

BIOLOGICAL CLASSIFICATION

In this chapter I have begun by discussing Anindilyakwa nomenclature. I have then presented the data on biological classification using Berlin's hierarchical model as a guide, for the plant kingdom first and then for the animal kingdom. I have discussed how these data compare with hierarchical and non-hierarchical models of classification as reviewed in the first chapter. I have considered folk classification in relation to scientific classification and finally I have discussed the development of folk classification on Groote Eylandt in comparison with the universal models presented in the first chapter.

Nomenclature

Anindilyakwa plant and animal names are characterised by their length. They may have from two to eight syllables, but most often have three to five. More than fifty canonical forms (consonant/vowel patterns) have been noted for plants and about eighty-five for animals. This contrasts with eight canonical forms of Tzeltal plant names as reported by Berlin, Breedlove and Raven (1974:88) and eighteen canonical forms for Tzeltal animal names as reported by Hunn (1977:86).

Names nearly always end with a final vowel 'a', the only exceptions being a bird name **kuwak** and several names ending in 'i' which have apparently been introduced from a mainland language and thus far have not been adapted to Anindilyakwa. Names normally begin with the vowel or consonant which marks one of the five non-personal noun classes in Anindilyakwa (see Table 22). Names beginning with 'b', 'j', 'k', 'l', 'ng' and three words beginning with 'w' are almost certainly words which have been borrowed from another language. At least one of these is of Makassan origin, viz. **jamba**, from the Makassan word **tjamba** (Cense, 1979:825), an alternative name for the tamarind.

Unlike the plant and animal names studied by Berlin, Bulmer, Conklin, Hays and Hunn, nearly all Anindilyakwa plant and animal names are single words, most of which appear to be quite unanalysable. Examples are **mabanda** 'yellow hibiscus' and **dinina** 'mosquito'. Such single word names are referred to by Berlin, Breedlove and Raven (1974:28-29) as unanalysable primary lexemes and by Conklin (1962:121) as unitary simple lexemes. English examples are cat and mouse. Higher order terms are rarely if ever used in Anindilyakwa as part of a generic name, as in the English generic names gum tree and bowerbird. Such names have been referred to by Berlin et al. as productive primary lexemes and by Conklin as composite lexemes.

Lexemes which are analysable and do not include a higher order term are called unproductive primary lexemes by Berlin et al. and unitary complex lexemes by Conklin. English examples are mock orange, oystercatcher and flathead. Conklin (1954:114-15) reported a number of compound names of two morphemes of

the type 'cow's tongue' but most Hanunoo unitary complex lexemes appeared to be binomial expressions consisting of single morpheme words. As far as I can determine from the available data, analysable primary lexemes in Tzeltal are made up of words which are themselves single morphemes. Thus in Tzeltal unproductive primary lexemes are apparently made up of two or more single morpheme words.

By contrast Anindilyakwa unproductive primary lexemes are normally single words of more than one morpheme. Examples include plant and animal names beginning with the prefixes **alungk(w)-** and **aluk(w)-** respectively, meaning 'like X'. There are several grasses of which the seed heads are likened to the tail of the brush-tailed tree-rat, **wurrendinda**, and so the grasses are called **alungkuwurrendinda** or simply **wurrendinda**. When **wurrendinda** is used in this way it is actually an example of polysemy which will be discussed later. Other examples of perceived likeness marked by a prefix are restricted to the same domain of plants or animals and so the prefix cannot be dropped without changing the meaning of the name.

A number of unproductive primary lexemes are formed from the roots of verbs describing a characteristic behaviour of an animal. This method of naming does not seem to have been applicable to Tzeltal although it is used in English, as in the oystercatcher. In Anindilyakwa such names are all single word expressions but in each case the meaning of the name is derived from the root. One example is **mamukiyaliya** based on the verb root **yaliy** meaning 'be ashamed, shy', referring to a crab species which is always found hidden under rocks. Another example is **yinumabar.darra** based on the verb root **ar.dirr** 'spear', referring to the habit of hawks, kites and falcons of swooping down on their prey as though spearing them. Further examples of primary lexemes will be given after I have commented briefly on secondary lexemes.

As noted in Chapter 1 (p.15), secondary lexemes are generally used to label folk specific taxa. They are usually at least binomial expressions which include the generic name as part of the lexeme. Conklin refers to such names as composite lexemes. Anindilyakwa has extraordinarily few folk specific taxa in comparison with other languages. Examples are given in Table 2. They include only eight optionally binomial expressions. This is the sum total of lexemes consisting of two or more words, primary or secondary, for plant and animal biological taxa collected in the whole of this study. This contrasts strongly with the data reported by Berlin, Breedlove and Raven (1974:37-41), Bulmer (e.g. 1968:347-72; 1972:481-83) and Conklin (1954:117), all of whom have reported a relatively high proportion of binomial expressions.

A characteristic of many Anindilyakwa names is that part of the word is reduplicated. Examples are **mudirridirra** 'custard finger', **alyangmilyangmurra** an ark shell species and **dumawurduwurda** the wedge-tailed eagle. In the first example, the reduplicated morpheme does not appear to be meaningful. In the second example, the morpheme **lyang** is the noun incorporated form for 'head'. However it is difficult to see any connection. In the third example, the morpheme **wurd** is the root of the verb 'climb'. Thus the name refers to the soaring habits of the eagle. A similarly constructed name is **dakilyangkilyangkuwama** 'click beetle'. The morheme **lyangkuwam** means 'nod one's head, agree'.

One of the interesting features of Anindilyakwa is its ability to form words by combining several different morphemes. The name **yilyangmulumula** 'stonefish' is formed in this way. As noted above, the morpheme **lyang** is the noun incorporated form for 'head', and the morpheme **mulumula** means 'rough or lumpy'. When combined, the morphemes are preceded by the 'y' noun class marker. Similarly, the name **wurrawurajirra** 'eastern curlew, whimbrel' is formed from the noun incorporated prefix **awura-** 'nose', the adjective root **jirra** meaning 'long' and the 'w' noun class marker. The beak of a bird is referred to as its nose and these birds are characterised by long down-curved beaks.

This feature of the language helps to explain why there are so few unproductive primary lexemes which are binomial expressions.

For the languages studied by Berlin, Bulmer, Conklin, Hays and Hunn, the boundary between unanalysable and analysable primary lexemes appears to be quite clear. In most cases one morpheme equals one word or at least the morphemes are readily discernible and have clear meanings. For a noun classifying language such as Anindilyakwa the boundary is not so clear. For example, **mabanda** 'yellow hibiscus' and **dinina** 'mosquito' belong to different noun classes but if the noun class markers, 'm' and 'd' respectively, are removed, the remainder of the word has no separate meaning. Thus the names must be considered as unanalysable primary lexemes. On the other hand there are a number of pairs such as **manda** 'great-billed heron' and **dumanda** 'reef heron - blue form' where the addition of the noun class marker is quite clear and specific. The latter might then be considered analysable but the former unanalysable. In this instance there is the complicating factor of a tree species named **anda** which appears to bear no relation whatever to the two bird species.

There are other pairs where the noun class marker is simply changed. For example, **membirrkwa** is the Cooktown ironwood and **yembirrkwa** is the Venus tusk-fish. Both these taxa are totems belonging to the same clan but the morpheme does not appear to have any meaning apart from the two nouns. Should these two be considered as analysable primary lexemes or not? I am not sure. I think it is a question which requires discussion with others who have had experience in other languages.

It is not sufficient to define analysable primary lexemes as ones which are composed of morphemes which can stand on their own, as in the English names spoonbill and oystercatcher, since noun incorporated morphemes in Anindilyakwa are generally different from the free form of the corresponding noun.

Correspondence with Dr Pierre Garnier has suggested that Anindilyakwa nomenclature is somewhat different from those in the wide variety of other languages from which he has obtained data. It would seem that Anindilyakwa names tend to be more purely descriptive, rather than figurative. There are no actual names akin to 'elephant's ear' or 'lamb's tail' or 'mother-in-law fish' or such like. Perhaps this is because the Anindilyakwa capacity for generating compound words does not include the juxtaposition of two noun forms. I am not aware of any words which are made up of morphemes which would allow a figurative meaning.

About one fifth of Anindilyakwa bird names and one or two other names are derived onomatopoeically from the call of the animal.[7] One example is **mawurububa** the striated pardalote, the call of which is said to be **mawurubub**...

mawurubub.... This contrasts with almost one third of 355 bird names which are onomatopoeic, as reported by McElhanon (1977:67) for the Selepet of Papua New Guinea, and approximately one half of Tzeltal bird names and some other animal names, as reported by Hunn (1977:84). It is worth noting that English bird and other animal names are rarely onomatopoeic.

Some names are formed by using the prefix **ning–** ~ **nungw–** meaning 'belonging to' preceded by a noun class marker. The name **yinungwakarda** 'sea-eagle' literally means 'belonging to the sea'. The word for sea is **makarda**. Sometimes a suffix **–kba** is added which also has the meaning 'belonging to'. Thus the name **warningumindungwakba** 'grey-crowned babbler' is derived from the name **yimundungwa** 'cypress pine', referring to the fact that these birds are most often found associated with cypress pines, akin to the English name 'mistletoebird'.

In summary then complex single word lexemes in Anindilakwa may be composed of a number of different types of morphemes. Morphemes with significant meaning include free noun forms without their noun class markers, incorporated nouns, adjectival roots, verb roots and affixes denoting ownership or association. In addition there are noun class markers and what should probably be termed nominalising prefixes, the latter being particularly applicable to nouns formed from verb roots. It should be noted that despite the range of possibilities there is still a high proportion of nouns which appear to be quite unanalysable.

In the light of the available data, Bulmer (pers. comm.) has suggested that it could be appropriate to put aside both Berlin and Conklin's typology and to analyse from first principles the linguistic patterns of reference to plant and animal taxa and then to see how these relate to taxonomic and other classificatory arrangements. To be able to do this satisfactorily for Anindilyakwa would require a much more comprehensive listing of noun incorporated prefixes than is currently available.

About eighty Anindilyakwa plant and animal taxa have synonyms, as can be seen from Appendix 4. In most cases a taxon has only one synonym but some taxa have two. In addition variations in pronunciation might lead to alternative spellings of names. Most of these variants are not included in the dictionary in its present form. The number of taxa having synonyms does not include the specific names for large, small or young specimens of a particular taxon where these exist.

Where synonyms occur, they often reflect different characteristics or associations of the animal or plant in question. Two terms for the honeyeaters **warnikikbadika** and **warnikiringandika** are associated with the coming of first light in the early morning. A third term, **warningumulikaduwakba**, is associated with the burrawang seeds which women used to retrieve at dawn after having put them to soak for several nights in a stream.

Sometimes a second name is derived from the call of the animal. **Yarranya** the cicada is better known by younger people as **yimurrinyinya** which is said to be based on the song of the cicada.

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[7] Parts of this section have been previously published in a modified form (Waddy, 1983b).

In many instances where the animals and plants are of totemic significance, additional names may be found in clan songs. Because of their restricted use, these names are not normally included in Appendix 4. However one example is of particular interest. **Dubudekbuda** is the normal word for both species of oystercatcher but the sooty oystercatcher may also be called **dakwurrinya**. In Warnungwamakwula clan songs, the term **akwurrinya** is used to refer to dance movements of this bird (Moyle, 1972:115).

Another reason which helps to explain the existence of some synonyms is that personal names may be derived directly from the name of an animal, often by a simple change of noun class marker. When a person dies his name may go out of circulation for some years and so may the name of the animal. A synonym is then used. This has happened for the name **yiburrilya** which refers to the whistling and square-tailed kites and the little eagle. This name has not been in use since the death of a Warnungwadarrbulangwa man who had the name Niburrilya. The synonym **yukwurrijija** is now used.

Where the names of smaller or larger specimens of a particular taxon differ from the most frequently used term, all the names for that taxon normally belong in the same noun class. This is also true for synonyms. The stingrays are an exception. In all of the nine stingray taxa where the young are differentiated, the name of the adult form belongs to the 'a' noun class but the name of the young belongs in the 'd' or 'y' noun class. There are more than twenty taxa where the young of a species or larger specimens are given recognition by the use of different names. They tend to be totemic species. Differentiation seems to be most often on the basis of size but other factors may also be significant, as in the case of young stingrays which are favoured for their 'clean' white fat in contrast to older stingrays with dark fat. Two, three or four different stages of growth of a particular taxon may be recognised. These names are included in Appendix 4 and have been glossed accordingly.

Despite the potential variety made possible by the length of Anindilyakwa names, there are more than thirty instances of polysemy, where the same name is used for two or more distinct plant and/or animal generic taxa. In some cases there appears to be a perceived likeness. Thus **dingaluwa** is the boobook owl with its down-curved flattened beak and also the hawksbill turtle. Instead of likening the turtle's bill to a hawk's bill, Anindilyakwa speakers have likened it to the boobook owl's bill. The fish taxon **wurruwarda** is so named because the fish are said to bark like **wurruwarda** 'dog' when caught. In other cases, such as the name **adamiya** representing the root vegetable Ipomoea abrupta and several small gastropod shell species, I am not aware of any perceived likeness. Since the language is spelt phonetically, there is no way of knowing at this stage whether such words have been derived from different sources and are now identical, or whether it is simply the same word which is being used for quite different applications. Words which are derived from different sources, as in the English words 'bear' and 'bare', are referred to as homonyms.

Polysemy also applies to a number of cases where the same term is used at different levels of a hierachy, denoting both a superordinate category and a subset of the category. Thus **akwalya** used freely in conversation would most likely mean 'fish' or the 'flesh of fish'. A good example of its use with the meaning 'fish' is in the phrase '**akwalyu-wa**' which might be given in answer to the question 'where are you going?' **Akwalyu-wa** literally means 'to the fish' but in English we would say

(I'm going) fishing. However in appropriate contexts **akwalya** can also mean:

i) bony fish, in contrast to cartilaginous fish,
ii) all fish, in contrast to other animals in the sea,
iii) animals in the sea, in contrast to animals on the land and winged creatures, and
iv) animals, in contrast to plants.

All of these terms have reference to the biological classification system. The same word can also mean:

i) the flesh of bony fish, in contrast to the flesh of cartilaginous fish,
ii) the flesh of fish, in contrast to the flesh of other sea animals, and
iii) flesh food, in contrast to non-flesh food.

In addition the word **akwalya** may be coupled with other words in order to specify reference to the flesh of the animals in question. Hence **adidira akwalya** specifically refers to the flesh of shellfish.

Evidence for use of the term in these different ways is given in the following examples derived mainly from stories taped by Miss Judith Stokes. (For information on informants, see the final section of Appendix 1; on stories, see Table 17.)

e.g. **numa-manga arakba akwalya nu-ngwurrkurrkwena yakina Yinungwakardi-da**
'Sea-eagle was catching (and) hunting fish now (long-toms)'
(Darugwabandja: Yinungwakarda akwa Duwankirrariya)
The word **numa-manga** includes a prefix for an 'm' class object which is understood from elsewhere in the story to be **merrukwurra** 'long-tom'. Also, the term **akwalya** is used for non-edible fish species such as puffer fish and stonefish.

e.g. **ning-ar.didarranguma akwalya arakba**
'I was always spearing fish'
(Nengbinarra: story of his early life on Dilyakurrkba[23] peninsula)
One of the most common targets for fish spears was and still is stingrays, i.e. cartilaginous as well as bony fish.

e.g. **"Awurrariyu-wiya akwalya ningkena ningku-mangumurra, na?" ni-yema Yinungwakarda. "Angwalu-wiyeka dakina yingu-mangumurra akwalya alkwu-wiya, nare-ka akwalya akina eningaba kingu-manga...**
' "You've only caught useless sea creatures, have you?" said Sea-Eagle. "She's only caught mud crabs, bait crabs, she hasn't caught any good sea creature/ fish..." '
(Darugwabandja: Yinungwakarda akwa Duwankirrariya)

e.g. **na-jungweyina akwalya amarda erriberriba yinungungwangba warnumamalya**
'they died, animals in the sea, plants, the open forest, all land animals, people'
Narragijarra: Chasm Island, given as a historical account of a ?flood, ?sea surge)

e.g. Non-edible land-dwelling animals such as tree snakes and frogs can be referred to as akwalya as well as edible animals, though this use of the word would be rare.

e.g. **"Aa, meningabe-ka mema akwalya da. Meme-ka ngawa ki-riburibikinama akwalya ena"**
' "Ah, this is good flesh food. I'll eat this fish flesh raw just as it is" '
(Darugwabandja: Yinungwakarda akwa Duwankirrariya)
As in the first example, long-tom fish are understood.

e.g. **akwa yakina yinikarrmungkwar.da yinukwalyubara, akwalya yakina akwa amungkirida akwa yilarda**
'and those little hermit crabs (they're) edible, they're flesh food and the big hermit crabs and the mudwhelk shellfish'
(Nangaringa: crabs, a short commentary on various crab species)

e.g. **"Arakba akwalya yimenda yarna yeni-ngayindena y-alyubarina..."**
'Now we two want to eat the turtle flesh'
(Darugwabandja: Manda)

Akwalya is the most complex example of polysemy. As noted above, the most common referents for **akwalya** are probably fish in general or the flesh of fish.

A different example of polysemy is the use of the term **eka** in normal conversation to mean 'tree, log, stick' and in the appropriate context to mean 'woody plants' in contrast to 'non-woody plants'. It can also be used to apply to a type of grub which I have not managed to collect as yet.

Further instances of polysemy can be found when plant and animal taxa are compared with names in non-biological domains. Thus **alabura** is both the stringybark tree and the coolamon which is made from its bark. **Yimawura** is the nautilus shell, the red emperor fish, the moon and a month. **Dingarrkwa** may refer to various grasses with awned seeds, the sea urchin with its long spines, the spines on an echidna, the stiff hairs on a dugong, the barbs on the tail of a stingray and a type of spear tipped with stingray barbs. There are other examples.

There are also a number of instances where the name of the biological taxon is closely linked with something in a non-biological domain but the names are not identical. Thus **ayangiyanga** represents several tree species, the wood of which is used to make firesticks which are called **miyanga**. Young stringybark trees are called **emenungkwa**. They are used to make **enungkwa** spears.

As far as I am aware very little has been written on plant and animal nomenclature in Aboriginal languages. In commenting on several Aboriginal languages in Victoria, Hercus (1966:191-92) noted that most names were unanalysable though there were some compound names, 'consisting of two nouns, or a noun combined with a verbal participle'. Heath (1978:47) has stated that 'Almost all Nunggubuyu flora-fauna terms are unanalysable.' He noted only six examples of composite lexemes consisting of more than one morpheme and only four examples of polysemy where the same name is used for two taxa belonging to different life forms. The low incidence of composite lexemes and of polysemy is particularly interesting when it is remembered that Nunggubuyu is the language most closely related to Anindilyakwa. Heath has listed another ten examples of polysemy where the name of the biological taxon overlaps with a term from another semantic domain, in seven instances being something derived from the taxon in question. In contrast to Anindilyakwa he found that in Nunggubuyu there is an 'abundance of male/female and growth-stage terms for various flora and fauna' (1978:52), especially juvenile/adult distinctions in birds and other animals.

Biological Classification

Unlike most languages, Anindilyakwa has terms which are used as unique beginners both for the plant kingdom, viz. **amarda**, and for the animal kingdom, viz. **akwalya**. Both these terms are used polysemously, i.e. with more than one meaning. Thus the term **amarda** is also used to refer to one of the two life form taxa, viz. non-woody plants, and it is used loosely to refer to grass or foliage in general, as illustrated by the following examples.

e.g. **enungweniyarringka angalye-ka juje-ka awilyikerre-ka nuw-albudarrinu-murreka amarda**
'the old men's camp was a long way away hidden in the plants/ bush'
(Gula: a story about the old days)
The use of this term differs from any habitat term. In this context it refers to plants in general.

e.g. **nare-ka aku-minjirrkirringka, only amarda awilyaba eka awilyaba**
'we didn't look at people, only non-woody plants/ bushes and grasses, and woody plants/ trees'
(Gula: a story about the old days)

e.g. **akwa ku-mena amarda, enungwerribirra amarda alabura, mangkarrkba, merrika, yikwa, akini-langwiya amarda ku-mena akwa ngarningka ambaka kini-dakina nakina akinuma amarda da**
'and I would take (some) leaves, any kind of leaves stringybark, wild plum, wattle, young leaves of red jungle berry, I would take those kind of leaves and I would also heat him later with those leaves'
(Nangaringa: on the method of treating seawasp stings)
There is a more specific term for leaves which would be more appropriate in other contexts.

As indicated in the previous section, the term **akwalya** is used at a number of successive levels, viz.

i) animal kingdom,
ii) animals in the sea,
iii) all fish, and
iv) bony fish.

A similar situation occurs in English where the term 'animal' may refer to the animal kingdom, as in animals and plants, or to mammals, as in animals and birds. In each case the context generally makes the meaning clear.

The Plant Kingdom: **Amarda**

There are two inclusive taxa which may be interpreted as life form taxa in the plant kingdom **amarda**. They are based on the binary opposition of woody vs. non-woody. Thus **eka** refers to all woody plants, viz. trees and shrubs, and **amarda** includes all non-woody plants, viz. grasses, sedges, rushes, herbs, vines, creepers, ferns, seaweeds and so on (Fig. 11). Worsley (1961:185) noted the term **eka** for trees but not the term **amarda**.

The only plant which does not belong unambiguously to one of the life form taxa is the cycad or burrawang, Cycas angulata. The burrawang stem is soft

rather than woody, despite its tree-like form, but it is deep-rooted like other trees. It is thus an example of what Berlin (1976:387) has termed an ambiguously affiliated generic.

Within the woody plants there is a total of 114 generic taxa. Nangurama has grouped them into eight categories, partly on the basis of similarity in form and partly on the basis of shared habitat. Three of these categories are further subdivided into three or four categories (see Appendix 5.1). One of these latter categories is named, viz. **alyukwurra** the paperbarks. The seven taxa included within **alyukwurra** (Fig. 12) all appear to have the same psychological salience as other generic taxa, such as the examples in Figure 11. Thus **alyukwurra** has been interpreted as a labelled intermediate taxon in Berlin's terms.

The non-woody plants include a total of 84 generic taxa. Nangurama has grouped these taxa into three large covert categories and one small one which includes the six seaweed taxa (see Appendix 5.1). An alternative grouping was proposed by Gula on the basis of root form (see Appendix 5.2). He divided each of

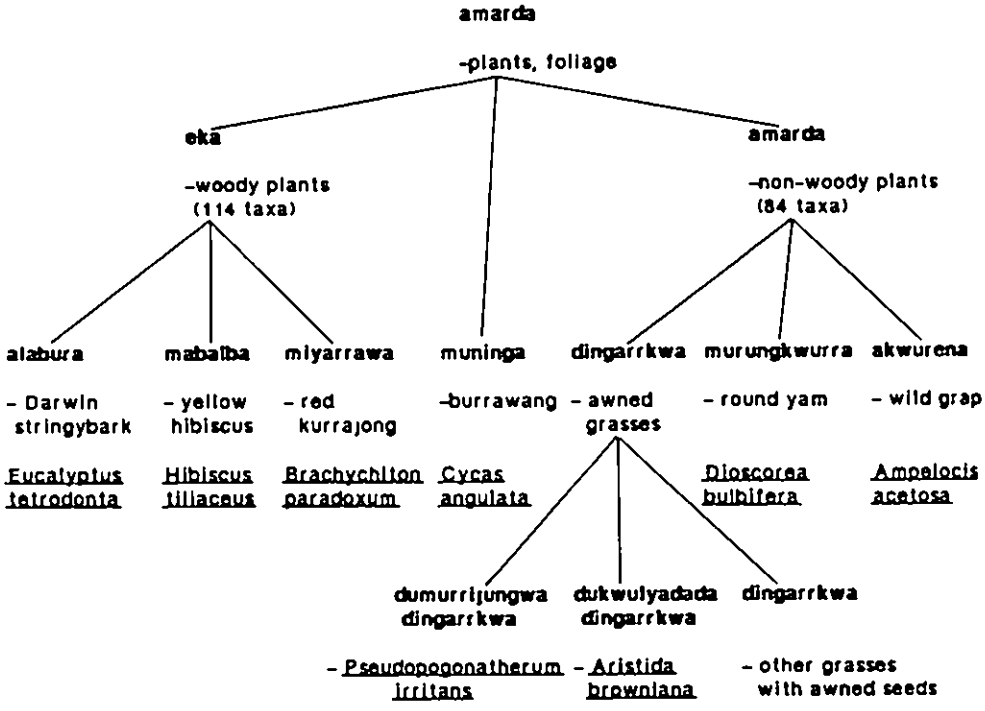

Figure 11 Biological classification in the plant kingdom from an Anindilyakwa speaker's point of view. Numbers of taxa are those designated generic by Berlin.

the two larger categories into two. The existence of these alternative categories suggests that they may not be as well-defined as the covert categories reported by Berlin, Breedlove and Raven (1968:294-96).

In comparison with the data on plants presented by Berlin, Breedlove and Raven (1974) and by Hays (1974), there are extraordinarily few labelled taxa of specific rank in Anindilyakwa. One example is in the group of grasses with awned seeds **dingarrkwa**. **Dukwulyadada dingarrkwa**, meaning 'white seeds', refers to Aristida browniana and **dumurrijungwa dingarrkwa**, meaning 'black seeds', refers to Pseudopogonatherum irritans, neither of which has particular cultural significance. This is the only example of naming of taxa associated with colour. In fact, the term **dukwulyadada** literally means 'bright, shining', in contrast to **dumurrijungwa** 'dark, dull'. Other examples of specific taxa found in the plant kingdom are big-leaved/ small-leaved (3 generic taxa) and good/ bad (of no use) (1 generic taxon).

With so few specific taxa, it is hardly surprising that there should be no varietal taxa. Besides, varietal taxa have tended to be associated with cultivated species (Berlin, Breedlove and Raven, 1974:32; Hays, 1979:265).

From Appendix 5, it will be seen that some generic taxa contain more than one scientific species. In several instances only one of two or more species is considered edible. It is thus apparent that differences between the various species may be recognised even though they are not named.

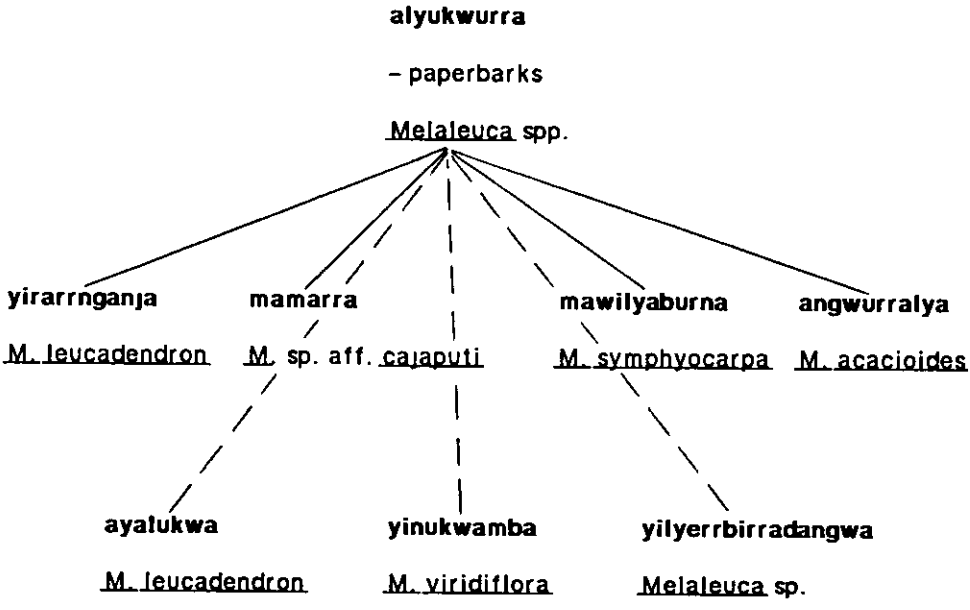

Figure 12 Terminal taxa included within the folk taxon **alyukwurra** paperbarks.

Another feature of classification in Anindilyakwa is expressed by the term **adiyerrumanja** which can best be translated as 'sibling'. This term expresses a horizontal, rather than vertical, relationship between two or more taxa and indicates a perceived likeness between them. Within biological classification, the likeness is based on similarity in form and habitat and, for animals, in behaviour. Within the plant kingdom, I have only heard it applied, by Dangganya, one of the older women, to the pair **mamukalyimbija** Canavalia maritima, a peaflower, and **maburrawilya** Ipomoea pes-caprae, a member of the Convolvulus family. These two plants grow in the same habitat, on stabilised dunes behind the beaches, and are very similar in form. Although I suspect the term could have been applied to other plants, I did not systematically explore the possibilities.

A much more common method of denoting similarity in form is through the use of the prefix **alungk(w)-**. From Appendix 4 it can be seen that there are twenty plant taxa where the names have been prefixed in this way. Nangurama considered the resultant marked taxa to be equivalent in status to the original unmarked taxa, i.e. they should be seen as generic taxa and not as specific taxa.

The Animal Kingdom: **Akwalya**

As previously noted the unique beginner for the animal kingdom is **akwalya**. I have been faced with a dilemma in interpreting the data as to the first division of the animal kingdom. Initially, in seeking to be faithful to the data given to me by Nangurama and Gula, I maintained that the first division must include the distinction between **akwalya** 'animals in the sea' and **yingungungwangba** 'animals on the land'. The naming of these two categories reflects the basic dichotomy between life in the sea and life on the land that is borne out in other areas of life for the people of Groote Eylandt. The old Anindilyakwa word for women, **warningaribumanja**, when literally translated, means 'people of the land' whereas the men are people of the sea. My questioning led me to feel there was no way I could leave out this distinction even though it was the source of a number of anomalies resulting in non-transitivity, e.g. land snails that are classified with marine molluscs. This was despite my informants' awareness of the need to stick to purely animal classification without interference from special purpose uses such as food source. To me it seemed that habitat must be accepted as a valid factor influencing folk biological classification and not something to be dismissed as interference from a special purpose classification. This perspective is illustrated in Figure 13.

It has since been suggested to me that I may be guilty of falling into the very error which I have been so concerned about in the first chapter, viz. the mixing of classification systems. It was pointed out to me that the data could be interpreted such that the first division into land and sea animals is actually a special purpose binary classification which could be applied to all animals and plants. This means that the categories **akwalya** 'animals in the sea' and **yinungungwangba** 'animals on the land' might not belong in the folk biological classification system. I can accept this criticism but in doing so I lay myself open to other criticisms, in particular not being faithful to the data as given and forcing the data to fit my preconceived theoretical perspective.

This dilemma is reflected in differing opinions about the relative status of **wurrajija** 'winged creatures and others'. Nangurama wanted this taxon to be

included within both land animals and sea animals, which would have violated normal folk taxonomic principles (based on the scientific model). This would seem to support the interpretation that the land-sea dichotomy is in fact a binary classification that has been overlaid on top of the folk biological classification. Alternatively, perhaps folk taxonomic principles might need to be reconsidered.

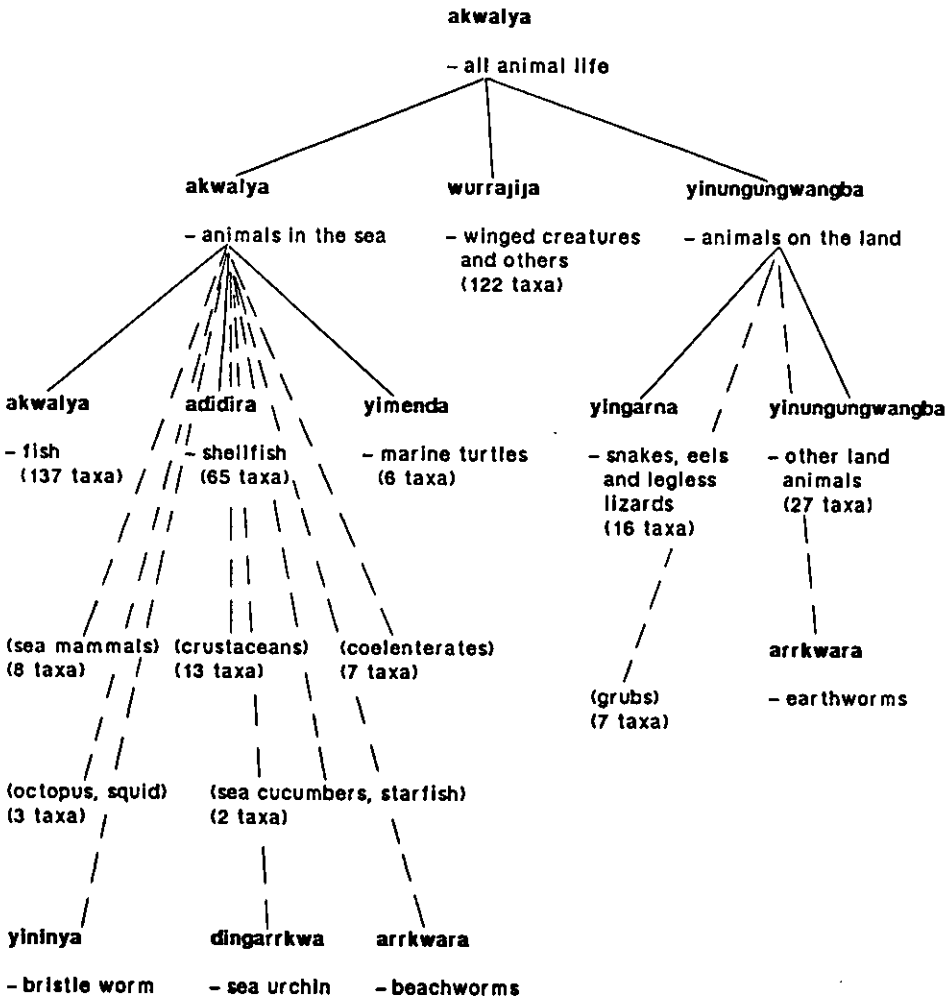

Figure 13 Biological classification of the animal kingdom from an Anindilyakwa speaker's point of view. Numbers of taxa are those designated generic by Berlin.

On the other hand, Gula, another knowledgeable man, has given **wurrajija** equal status with land and sea animals. The latter view point is followed in Figure 13, being the simpler solution of the two and believing that the easier a solution is, the more likely it is to be closer to reality. It is conceivable that the strength of the binary classification has interfered with the possibility of **wurrajija** being considered of equal status with other life form terms such as **adidira** 'shellfish' and **yingarna** 'snakes, etc.'. If the binary classification is removed from Figure 13, there remain **akwalya** 'all animal life' as a unique beginner, a set of six labelled life form taxa, another six covert categories which include from two to fourteen labelled generic taxa and three unaffiliated taxa. These are listed in Figure 14.

I have not been able to satisfactorily resolve this dilemma. I can see benefit in retaining the terms **akwalya** 'animals in the sea' and **yinungungwangba** 'animals on the land' for practical reference purposes in that they are useful terms covering distinct groups of animals. But removing these terms from the folk biological classification system would mean removing problems of non-transitivity which in turn provides the simplest interpretation of the available data. The only problem is that such a solution does not seem to be faithful to the data as given.

The primary focus of the taxon **wurrajija** appears to be birds. When the defining features of the taxon were asked for, the immediate response given was 'wings'. It is thus easy to see how most insects, flying foxes and bats are included. Both winged and non-winged forms of green tree ants in particular are easily recognised. Green tree ants crawl on one's body as do other ants and ticks, spiders and even scorpions and centipedes. So one can understand how the taxon has been extended to include almost all arthropods. Grubs that live inside trees or in the ground are an exception. There is some doubt as to whether caterpillars should be grouped with grubs or with the other arthropods. A category formed in this way, where the criteria of membership shift, is typical of the chaining referred to by Hunn (see Chapter 1, p.21).

Nangurama arranged sea birds (34 generic taxa) into two large and three small covert categories. He considered land birds (40 generic taxa) as one large covert category in contrast to six covert categories of insects (45 generic taxa) and one covert category of bats and flying foxes (3 generic taxa). A full listing of all animal taxa, including covert categories, is given in Appendix 5.1.

Although the covert complexes listed in Appendix 5.1 are linguistically unlabelled, there is some evidence substantiating their existence. In a number of instances, the name of the most common or best known member of a covert category can on occasion be applied to other members of the category. Thus I have had the black-spot tusk-fish labelled as **yembirrkwa** (the Venus tusk-fish), the best known member of this complex, rather than **yukwunimur.da**. If someone said he was going **yaraju-wa**, I would not interpret him to mean that he was only going to hunt Gould's goannas, but rather that he was going hunting for any kind of goanna. Again **yaraja** is the best known goanna. (Cf. Heath's Nunggubuyu data as reported in Chapter 2, p.60.) I also suspect that children learn these best known terms first and are allowed to apply them to similar animals, i.e. animals belonging to the same covert complex, until they are old enough to learn the differences.

Labelled life form taxa included within **akwalya** 'animals in the sea' are **akwalya** 'fish', **adidira** 'shellfish' and **yimenda** 'marine turtles'. **Akwalya** 'fish'

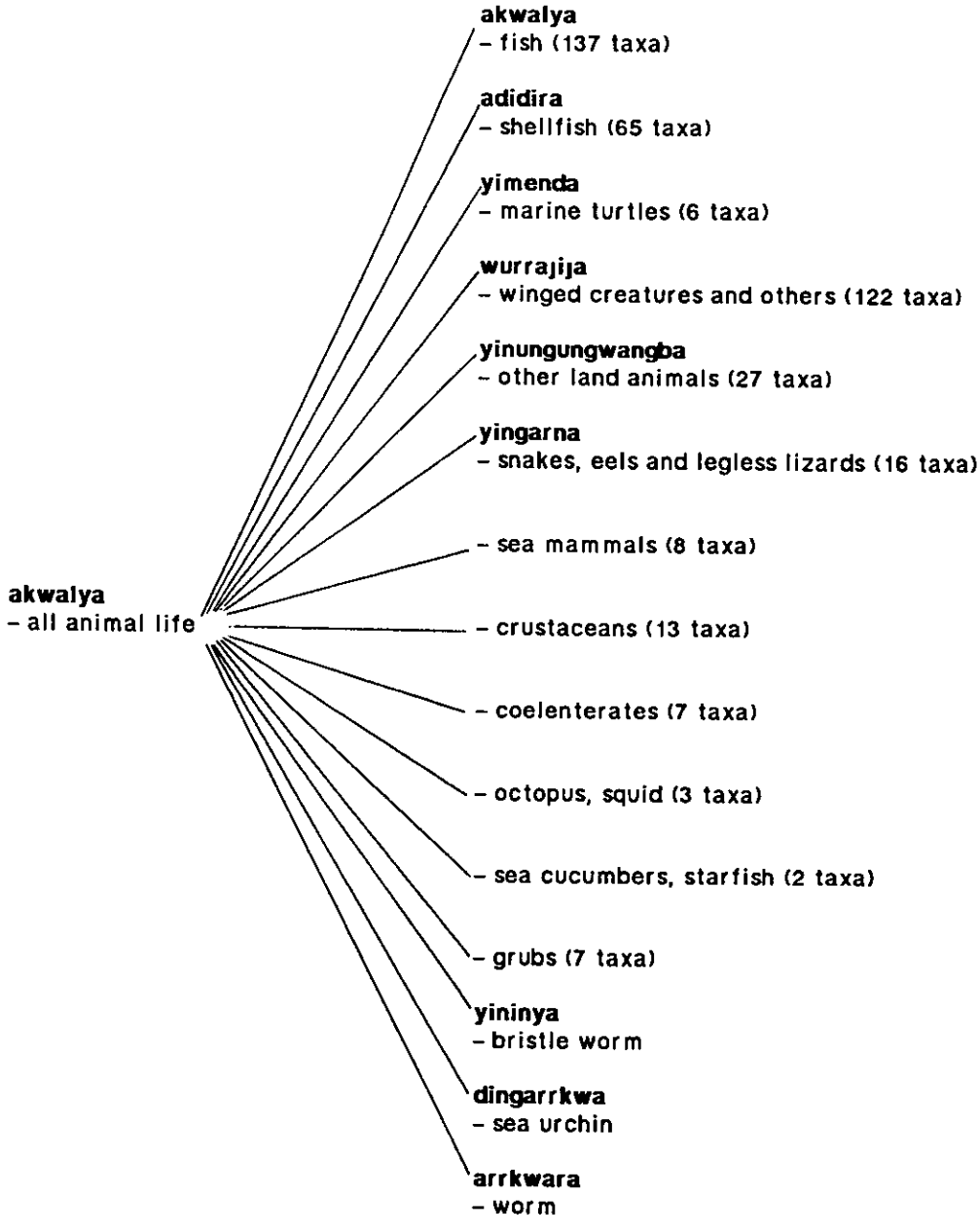

Figure 14 An alternative biological classification of the animal kingdom from an Anindilyakwa speaker's point of view. Numbers of taxa are those designated generic by Berlin.

divides into **aranjarra** which includes all the cartilaginous fish and **akwalya** which includes almost all the bony fish (113 generic taxa) (Fig. 15). **Aranjarra** is further subdivided into **mangiyuwanga** 'sharks' (9 generic taxa), an unlabelled category, which includes stingrays (11 taxa), shovelnosed rays and sawfish (3 taxa), and the generic taxon **amadengmina** 'suckerfish'. This means that, in Berlin's terms, there are labelled intermediate categories at two levels, an unusual feature in relation to other languages. Alternatively, one might consider **mangiyuwanga** 'sharks' as a generic category on the grounds that it is the best known term and the particular type of shark is not always differentiated. If this is so, then it adds evidence to support Hays conclusion that linguistic criteria cannot be considered an indication of taxonomic rank, since none of the taxa included in **mangiyuwanga** are binomially labelled. The suckerfish is actually a bony fish but is included with the cartilaginous fish apparently because its flesh is like that of other cartilaginous fish. The bony fish are subdivided into twelve categories of five or more taxa, one of which contains freshwater fish, another six categories of two or three taxa and a further twelve isolated taxa (see Appendix 5.1 for details).

The life form taxon **adidira** includes almost all members of the phylum Mollusca and also hermit crabs. The only exceptions are octopus, squid and cuttlefish. Nangurama has given five covert categories of five or more generic taxa and fifteen covert categories of one to three taxa, making a total of 65 generic taxa. These covert categories are based largely on form. Land snails (2 taxa) and freshwater mussels (1 taxon) are included in this life form and are thus examples of non-transitivity if Figure 13 is followed. When asked how he would sort the shell collection for display purposes, Nangurama immediately sorted the shells on the basis of habitat, such that each group is literally named 'shells belonging to habitat X'.

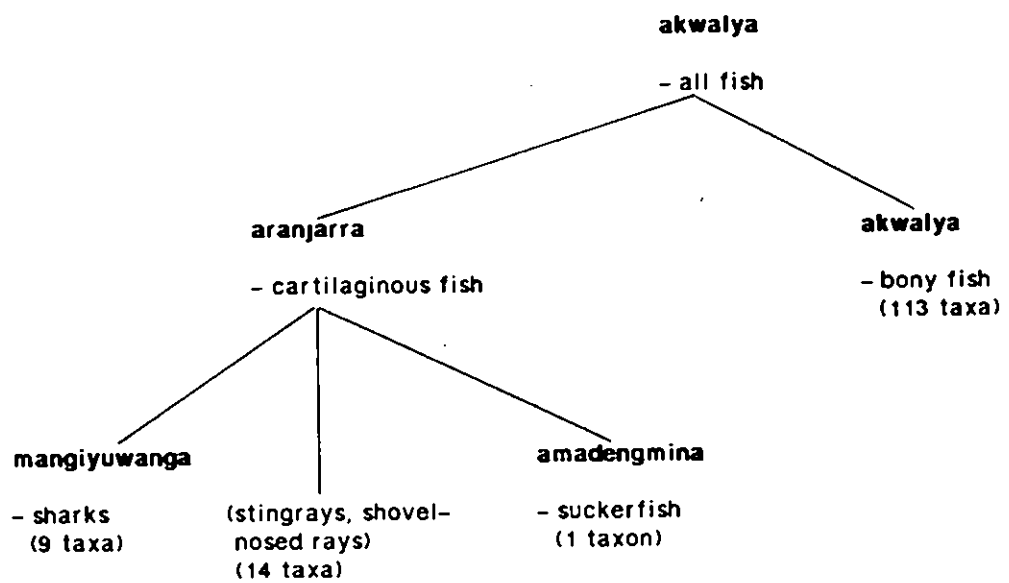

Figure 15 Labelled categories within the folk taxon **akwalya** fish.

The taxon **yimenda** 'marine turtles' is interesting because of its apparent status as a life form taxon but one which includes only five, or at the most, six generic taxa. Life form taxa tend to include a large number of generic taxa (Hunn 1977:44). In addition to the labelled taxon **yimenda** 'marine turtles' there are three significant but covert taxa which can be glossed as crustaceans, marine mammals and coelenterates. Scientific categories such as these are very distinctive and yet are limited in species diversity, or at least in readily observable species diversity in a given area such as the seas adjacent to Groote Eylandt. The existence of generic taxa, of apparently equivalent cognitive status to other generic taxa within the total system, within each of these more inclusive categories suggests that these higher level categories might be considered as life form taxa, whether named or covert. These higher level taxa would be in contrast to other labelled life form taxa. Alternatively, **yimenda** 'marine turtles' might be considered as an unaffiliated generic on the grounds that **yimenda** 'turtle' is the term learned first by children with reference to turtles. However, on that criterion one could say that children learn **akwalya** 'fish' and **wurrajija** 'bird' before most if not all generic taxa for fish and birds.

The largest covert taxon is the crustaceans. There is a labelled intermediate taxon **alkwa** which includes all the bait crabs (9 generic taxa) but not the large edible mud crab, Scylla serrata. There are three other taxa of generic rank included in the life form taxon. One of these taxa is **amilyungwurra** 'freshwater yabbies and shrimps' which is now extended to include prawns. It is another example of non-transitivity if Figure 13 is followed.

The other more significant covert taxa are marine mammals (8 generic taxa in 2 groups) and the coelenterates (7 generic taxa in 3 groups). There are another three to five categories containing one to three generic taxa and totalling 8 taxa (see Figs. 13 & 14 and Appendix 5.1).

The largest group of coelenterates is based on the fact that they are all found floating on the sea. One type of jellyfish **duwedirra** is said to 'crawl' rather than float. The sea anemones and soft corals are fixed but are recognised to be alive. The hard corals, referred to as **yerrumilya**, are considered to be inanimate and are thus not included in the biological classification. Their hard calcareous skeletons are classified as a kind of rock and they are thought of as being covered with slime **alya**, which is not strictly included within the seaweed classification.

Of the smallest categories, there was some difficulty in deciding whether octopus, squid and cuttlefish should belong with the other molluscs or be separated. The latter view seemed to prevail. According to Nangurama, **akilyengmilyengmaka** 'octopus' 'fits with **dilyimba**' but **dilyimba** is not **adidira** 'shellfish'. Squid are seen as female **dilyimba** and cuttlefish as male **dilyimba**. Cuttlefish bones, found so commonly along the beaches, 'may be **dilyimbu-langwa warijura**', i.e. the children of **dilyimba**.

The echinoderms, the sea cucumbers, starfish and sea urchins, again caused some discussion in deciding which ones fitted together. In the end, sea cucumbers, known as trepang because of the association with the Makassan traders, were grouped with starfish because they belong to the ground, and sea urchins were separated. The bristle worm, which can inflict a painful and poisonous sting, and the beachworm have also been considered as isolates.

Within **yinungungwangba** 'land animals' there is only one definite labelled life form taxon. **Yingarna** includes all snakes as well as legless lizards and eels. It is subdivided into **dingarna** 'pythons and tree snakes' (9 generic taxa) and **yingarna** which includes the remainder but especially the poisonous snakes (7 generic taxa). Sea snakes are included with pythons and tree snakes and thus provide another example of non-transitivity if Figure 13 is followed.

There is some debate as to whether the remaining land animals, i.e. four-footed land reptiles and mammals, should be polysemously labelled or not. Within this grouping there is a covert taxon of marsupials and rodents (9 generic taxa), another of goannas, lizards and the crocodile (11 generic taxa), another of skinks and geckos (4 generic taxa) and three ungrouped taxa. Although the crocodile is the saltwater species, Crocodylus porosus, it is seen as a land animal because it lays its eggs on land. The inclusion of frogs and tadpoles within this group is ambiguous. The majority of old people (i.e. pre-contact times) did not regard frogs and tadpoles as related. Otherwise the only unaffiliated generic taxon on land is **arrkwara** 'earthworms'. This taxon is also used for beachworms. In Figure 13, it has been placed within both land and sea animals because it is unaffiliated. In Figure 14 it appears as a single unaffiliated taxon which is probably closer to reality.

There was some confusion as to whether the covert category of grubs and caterpillars should be classified as **yinungungwangba** or **wurrajija**. One or two of the generic taxa appear to be soft-bodied like grubs but winged. I have not found any specimens in order to have them identified.

In listing the animals known to Groote Eylandters, Worsley (1961:181-89, see also Table 9) used the named categories **yinungungwangba** 'larger land-animals', **wurrajija** 'birds' and **wurrajija** 'insects, flying things etc.' and **akwalya** 'fish'. The last category included sharks, stingrays and other sea-animals. He apparently did not obtain the term **adidira** for shellfish, as he grouped crabs, shellfish and other marine invertebrates in a single unnamed category. He indicated one 'generic' term, i.e. **mangiyuwanga** 'shark'.

Nangurama considered that introduced animals such as cattle and goats, and other animals found on the mainland, should be included in the taxon **yinungungwangba** but only at its highest level. He did not want to group them immediately with animals native to the island. Stokes (pers.comm.) has noted that in her experience introduced animals have not been included within the term **yinungungwangba**. This lends support to the use of the term polysemously, probably referring initially to local 4-footed land mammals and reptiles and later being extended to include all land animals. The names of introduced animals have been adapted from other languages, e.g. **bulukwa** derived from the English 'bullock' and **jarrangwa** derived from the Makassan djaran 'horse' (Cense, 1979:178). There is one animal which appears to be excluded from the taxonomy, viz. the domestic dog **wurruwarda**. It is afforded an almost human status in that dogs are the only animals given personal names and they are also the only animals from the point of view of linguistic classification for which the human pronoun prefixes are used instead of the normal prefixes for inanimate nouns (see Chapter 6).

Labelled subgeneric divisions are rare in the animal kingdom, as in the plant kingdom. Binomially labelled specific taxa in the animal kingdom are limited to the 'real' one, though I have recently heard the distinction good/bad applied to sea

cucumbers. In most instances where more than one scientific species is included in the one Anindilyakwa taxon, the differences between the species are recognised though not labelled. For example, there are three doves all called **darrawurukukwa**. Geopelia humeralis, the bar-shouldered dove, is larger than the other two species. G. cuneata, the diamond dove, is about the same size as G. striata, the peaceful dove, but it is not as common as the other two species. The distinctions between the two most common species are clearly recognised, by markings as well as by size, and yet there is no indication of any labelled subdivision of the taxon. This folk taxon is one of the best known taxa today. It is also a totemic taxon.

In the case of the friarbirds, Philemon citreogularis the little friarbird is seen as the young of the other friarbird species P. argenticeps and P. buceroides. In two instances, different scientific species are labelled by the one Anindilyakwa name but the distinction is interpreted as the male and female of the one folk taxon, as was noted for cuttlefish and squid. For the taxon **duwedirra**, Cacatua galerita the sulphur-crested cockatoo is seen as the male and C. sanguinea the little corella is seen as the female.

The use of different names for younger forms of certain taxa, where the young are known to develop into the adult form, is more common. These names have not been included in the numbers of generic taxa quoted above. There is one possible instance where the so-called young and adult forms represent different scientific species. The land snails **yilamarmurraba**, probably Xanthomelon minisculum, are seen as the young of **yimurnderrma** Xanthomelon spheroideum.

There are several instances where the young of certain species are seen as different taxa from the adult form. The development of tadpoles into frogs has already been mentioned. The development of grubs and caterpillars into adult insects is also not recognised, although moths and butterflies are known to emerge from cocoons. Several juvenile specimens of fish have been placed in taxa different from the adult form without the recognition of changes in the course of development. For example, juvenile saddle-tailed sea-perch Lutjanus sanguineus have been grouped with anemone-fish and others in the taxon **dingadumungwarra** whereas adult fish of the same species have been named **yilyinjilyinja**.

As reported for plant taxa in the previous section, a number of taxa are marked by a prefix which denotes similarity in form to the unmarked taxa. In the case of animals, the prefix is **aluk(w)-** in contrast to the prefix **alungk(w)-** for plants. The number of animal taxa named in this way is not as large as the number of plant taxa. Four taxa are listed in Appendix 4, three fish and one centipede.

Discussion

Hierarchical classification

As noted at the beginning of the previous section, unique beginners are unlabelled in many folk taxonomies (Berlin, 1972:78). However, when they are labelled, Berlin has suggested that it is frequently by means of a term polysemous with some major term of lower order, generally a life form term. The Anindilyakwa unique beginners are both polysemous with life form terms, thus supporting his suggestion.

The next division of the animal kingdom from an Anindilyakwa speaker's perspective depends on the interpretation of the data. If Figure 13 is followed then the division is not in keeping with Berlin's schema. From a comparison of Figures 1 and 13, the unique beginner **akwalya** 'all animal life' is at Level 0. The life form terms assumed to be at Level 1 include **akwalya** 'fish', **adidira** 'shellfish' and **yingarna** 'snakes, eels and legless lizards', as well as the various covert categories, as discussed in the previous section. The labelled taxa agree with three of Berlin's four criteria (1976:384–85, see Chapter 1 pp.14–15 for life form taxa) but not with his first, viz. 'Life form taxa occur at the first level of the folk taxonomy and are immediately preceded by the unique beginner when the unique beginner is defined as the kingdom 'plant' or 'animal'.

As will be seen from Figure 13, there are three labelled taxa at a level intermediate between Level 0 and Level 1. The validity of these taxa has already been discussed in the previous section. It seems to me that one must be flexible enough in interpreting current theories to allow for such possibilities rather than try to squeeze the data into the theoretical mould. This is particularly important when one remembers that there are very few exhaustive studies of the animal kingdom and no others, of which I am aware, where both land and sea animals have an important place in the classification. It was pointed out in the previous section that the superordinate taxa on the land/sea contrast were the source of all instances of non-transitive relationships. Kay (1975:156–61) has suggested a modification to his mathematical formulation of taxonomic structure which allows for non-transitive relations while at the same time maintaining the hierarchical structure.

If the terms **akwalya** 'animals in the sea' and **yinungungwangba** 'animals on the land' are removed, as in Figure 14, then the first division of the animal kingdom from the unique beginner will be into Level 1 life form taxa in complete agreement with Berlin's theory.

Labelled Level 1 life form taxa have already been mentioned. In the previous section I have argued for the possibility of covert life form taxa on the grounds that they are highly distinctive categories and are thus in agreement with Berlin's fourth criterion, 'psychologically, life form taxa can be defined by a small number of biological characters'. With regard to his third criterion, the covert taxa in question are more limited in species diversity than labelled life form taxa, but this is not surprising given the more limited diversity of readily observable scientific species in the area in comparison with those of labelled life form taxa.

Generic taxa included within these covert taxa are referred to by Berlin (1976:387) as unaffiliated generics. However, in reporting their data on Tzeltal plant classification, Berlin, Breedlove and Raven (1974:415) separated unaffiliated generics into 17 'unaffiliated covert categories' and 42 'isolated unaffiliated generic taxa'. They have thus implicitly recognised the possibility of covert life form taxa. From the comments in the previous section it will be apparent that the only isolated unaffiliated generic taxa, from an Anindilyakwa speaker's perspective, are **yininya** 'bristle worm', **arrkwara** 'earthworm, beachworm' and **dingarrkwa** 'sea urchin'.

Commenting on biological classification, Hunn (1976:509) has noted that

> Defining taxonomic ranks makes possible the recognition of monotypic taxa so that we may appreciate the atypical singularity of

> a species such as the aardvark (Orycteropus afer) which occupies an order (Tubulidentata) all its own. Such taxa, to my knowledge, have not been reported in the ethnographic record...

To my mind, unaffiliated generics such as **yininya** and **dingarrkwa** are in fact monotypic generic taxa in monotypic covert life form taxa. Even though they are not formally labelled at the life form level, they are recognised as distinct groups in contrast to other life form taxa, while at the same time maintaining the generic rank of the named taxa on the basis of apparently equivalent psychological salience. Kay's (1975:164) modifications of his mathematical formulation of taxonomic structures have allowed for the possibility of monotypy. He has suggested that, whereas for the academic systematist class, order, family and species are all required in addition to the genus, for the folk systematist only the unique beginner and the folk genus are necessary. However, I would say that the life form taxon is also necessary. Since Kay's theory must allow for the lack of a label for the unique beginner, it should presumably be able to allow for the lack of a label for a life form taxon. What is essential is that the generic taxon should be labelled. Since the majority of folk genera are monotypic, there is no necessity to allow for the folk species.

The possibility of interpreting the data to give covert life form taxa is an answer to problems noted by Bulmer (1974:23) and by Berlin (1976:382). Bulmer raised the question of how to distinguish clearly between unaffiliated generics and life form taxa. Berlin found that members of the same contrast set often do not exhibit the same degree of internal variation. This was particularly noticeable for unaffiliated generics which did not appear to have the same psychological salience as the more inclusive life form taxa included in the same contrast set (Berlin et al., 1974:219). I have earlier suggested that either 'these unaffiliated generics, which may themselves include contrast sets, lack membership in a higher level contrast set or that the next higher level contrast set is one-membered' (1982a:76). One-membered contrast sets would thus be monotypic covert life form taxa. At that stage I had not considered the possibility of a polytypic covert life form taxon.

The existence of covert categories has been recognised and accepted at a level intermediate between life form taxa and generic taxa (Berlin et al., 1968; Berlin, 1974; Hays, 1976; Hunn, 1977), though Brown (1974) has disputed their validity. They are seen as a means of expressing the horizontal relationships perceived between the various generic taxa, though the groups themselves appear to be based on 'gross, visually recognised morphological similarities of the organisms involved' (Berlin, 1976:395). The alternative, of arranging all the generic taxa included in a life form taxon in an arbitrary fashion, would deny the existence of the perceived relationships. This issue is discussed further in the final chapter.

Berlin (1972:73) has noted that taxa of intermediate rank are rarely labelled, 'because they are basically unstable categories'. In the previous two sections I have reported a total of six labelled taxa which I would consider to be of intermediate rank, none of which I would consider to be unstable. These taxa are labelled by primary lexemes and each includes from seven to 113 taxa which are themselves labelled by primary lexemes. The labelled intermediate taxa reported by Berlin (1972:74–8) are taxa which have been raised in status either because of the introduction of species similar to a folk generic or because of a change in

status of a folk specific taxon. The intermediate taxa are generally labelled polysemously with one of the original folk generic taxa in each case. Only one of the Anindilyakwa intermediate taxa is labelled polysemously, viz. **akwalya** 'bony fish' and it is polysemous with higher order taxa, not with a folk generic taxon. The instability of Berlin's intermediate taxa would appear to result from the way they have been generated. Labelled Intermediates are rare probably because there is little need for groups of generic taxa to be named. I would suggest that when they are named it is generally because they form a stable well-defined group that is culturally significant in one way or another.

Hunn (1977:54) has noted three named complexes, one of which he has considered to be an intermediate taxon, viz. **c'o** 'rodents', in the life form taxon **canbalam**$_2$ 'mammal'. The other two, **can** 'snake' and **sus** 'wasp', and presumably **cay** 'fish' (1977:250) and **canul ha'**$_1$ 'water bug', (1977:254), Hunn found difficult to assign to an appropriate rank. Hunn (1977:xxi-xliv) reported seventeen covert complexes, twelve of which are composed of arthropods, and four isolated unaffiliated generics, in addition to the taxa included within the named life form taxa. Despite their relatively small numbers, it would seem reasonable to interpret the taxa **can** 'snake' (23 taxa) and **cay** 'fish' (9 taxa) as life form taxa, on the basis of their distinctiveness. However there is still considerable difficulty in trying to decide whether the various covert complexes of arthropods are any less distinctive on a morphological basis than the covert complexes of lizards, frogs and toads, tadpoles, snails and worms. That problem does not arise in Anindilyakwa since most arthropod taxa are included with birds and bats in a single life form taxon.

A problem of a slightly different nature is raised by Hays' Ndumba data. He has reported an unusually high number of folk specifics and varietals and even the existence of two sub-varietal taxa (1979:262-66). He found a number of monomial specifics which at that stage were at variance with Berlin's concept of folk specifics (see Chapter 1 p.16). It would seem reasonable to interpret several of Hays' polytypic folk generics as intermediate, or conceivably even life form, taxa. Thus **saivu** 'various Pandanus spp.' could be interpreted as an intermediate taxon. I would suggest that the unaffiliated generics **kaa'pisi** 'edible greens' and **ho'hondi** 'beans' could be interpreted as life form taxa. Both these taxa have increased their range of reference in recent years through the inclusion of introduced species so that the terms are now polysemous. They are typical of the type of labelled intermediate taxa reported by Berlin (1972:74-78). However, as Hays has pointed out to me (pers. comm.), they can scarcely be called intermediate when there is no apparent life form taxon - unless the life form taxon is considered to be covert as I have suggested above.

In discussing how plants and animals unnamed at the generic level could be included within the classification, Nangurama suggested that in most instances they should be fitted alongside the generic taxon which they most resembled or at least within the nearest covert category. They could be seen as a 'friend of X but not really X'. In each instance the animal or plant concerned is included within the appropriate life form and may be referred to by the name of that life form. For example, the unnamed Hibiscus microchlaenus is readily placed alongside H. meraukensis and H. zonatus which are both named **mamularrngkangwuramurra**. H. microchlaenus can be referred to as **eka**, in the same way as any woody plant having a folk generic name, i.e., 'it's just **eka**.' However I have not systematically sorted out all the unnamed taxa to determine the generic taxon which each most closely resembles.

It should be noted that some plants have been formally named with the sense of 'like X', viz. those with the prefix **alungk(w)-** (see Appendix 4) but those plants have full status as named generic taxa within the appropriate life form, as discussed in the previous section.

Hays (1979:260, 1983:598) has interpreted plants and animals unnamed at the generic level but included in a life form taxon, in some sense at least as a single category, polysemously labelled and in contrast with other taxa at the generic level. He has called such categories residual categories. Nangurama's suggestion of fitting each plant or animal alongside its nearest fit would indicate that he did not see a single residual category. It is as though there were many residual categories all polysemously labelled.

Hunn (1976:511) initially used the term residual category to apply to plants and animals labelled polysemously at the specific level rather than the generic level. In discussing problems encountered in using the taxonomic model, Hunn (1976:511) pointed out that the 'the residual subdivision of (the generic taxon) **pehpen** (butterfly/moth) is logically different from most taxa, i.e., it is defined by the absence of any distinctive perceptual unity'; a comment which can be equally applied to Hays' residual subdivision of life form taxa and in fact Hunn has now applied the term at this level also (1982:834).

Although there are only six Anindilyakwa taxa which seem to be clearly polytypic at the generic level, there are three different forms of polytypy, as indicated in Table 2. Two of the three forms of polytypy shown below contain monomical specifics, i.e. folk specifics designated by primary lexemes. The first form can reasonably be interpreted to include a monomial type specific, where the specific taxon is labelled polysemously with the corresponding generic taxon. Berlin (1972:59–60) has reported widespread occurrence of such taxa. In his 1976 paper, as a result of Hunn's work on residual categories, Berlin noted that type specifics may be 'those that indicate focal membership or those that indicate residual categories' (1976:391). Of the examples given, example 1a indicates focal membership and examples 1b and 1c indicate residual categories. However, in common use, the taxon **yinungkwurra** refers primarily to Grevillea pteridifolia. It is the most prominent and best known of the three grevillea species. Similarly, of the grasses having awned seeds, the giant spear grass Heteropogon triticeus would probably be considered as the focal point of the taxon. Children suck its stem like sugar cane. It is one of the most conspicuous grasses in the wet season and early dry season.

While others, such as Hunn (1977:280–88) on Tzeltal butterflies, have reported distinctions made between members of a residual category, they do not seem to have suggested that one member of a residual category may yet be the focal point of the whole generic taxon, as in example 1c, although Hays' data for the Ndumba generic taxon **som'bura** (Impatiens spp.) could be interpreted in this way (1979:263–64). In his example, the type specific may take the attributive meaning 'genuine' for precise reference in order to distinguish it from the residual category.

The second type of polytypy is marked by the use of the attributive 'real' or its equivalent. It has also been reported by Conklin (1954:131), Berlin, Breedlove and Raven (1974:42) and Hunn (1977:99). It is possible that other animal taxa could be subdivided by referring to one scientific species as the 'real' one but it

1a. generic x	x = type specific	**yilyarra** Scaevola sericea
	yx (y = big-leaved)	**yilingbirradangwa yilyarra** Guettarda speciosa
1b. generic x	x = type specific	**yinungkwurra** Grevillea pteridiifolia
	x = residual	**yinungkwurra** Grevillea parallela
	yx (y = big-leaved)	**yilingbirrradangwa yinungkwurra** Grevillea heliosperma
1c. generic x	x = ?type specific	**dingarrkwa** Heteropogon triticeus
	x = residual category	**dingarrkwa** Heteropogon contortus Coelorhachis rottboellioides Eriachne schultziana Eriachne squarrosa Germainia grandiflora Panicum mindanaense
	yx (y = white)	**dukwulyadada dingarrkwa** Aristida browniana
	zx (z = black)	**dumurrijungwa dingarrkwa** Pseudopogonatherum contortum
2a. generic x	xy (y = real)	**wurrawuminya warnumamalya** Anas superciliosa
	x = residual category	**wurrawuminya** Anas gibberifrons Dendrocygna arcuata Dendrocygna eytoni Nettatus pulchellus Tachybaptus novaehollandiae
2b. generic x	xy (y = real)	**dubudekbuda dadumamalya** Haematopus ostralegus
	x = residual, but x is also labelled by a monomial specific name	**dubudekbuda** **dakwurrinya** Haematopus fuliginosus
3. generic x	yx (y = good)	**meningabudangwa mebina** Acacia difficilis
	zx (z = bad)	**muwurrariyadangwa mebina** Acacia latescens Acacia loxocarpa Acacia oncinocarpa Acacia torulosa

Table 2 Types of polytypy in Anindilyakwa folk genera.

was difficult to be sure without more specimens being available. Example 2b has been distinguished because there is an alternative name for the specific taxon, another primary lexeme quite different from the polysemous use of the generic taxon. This is the only instance of such a distinction. The taxon **dubudekbuda** 'oystercatchers' is a totem of the Warnungwamakwula clan. The name **dakwurrinya** is used specifically in the songs of that clan.

The third type of polytypy could perhaps be considered a variation of the second, where the attributive 'good' replaces 'real'. In this instance, the Acacia species concerned is the one whose bark was used for making pubic tassels and whose gum was eaten.

Where differences between scientific species are recognised but not labelled, such as in the case of the doves belonging to the genus Geopelia, I have interpreted these subdivisions to be unlabelled specific taxa, or covert specifics following Berlin's typology. Bulmer and Dwyer would regard these subdivisions as speciemes. For Groote Eylandters either the context makes clear which member of a labelled taxon is being considered or the distinction is unimportant. As Berlin (1976:392) has said, 'subgeneric taxa are recognised (linguistically) primarily because of the close attention they receive as a result of their cultural significance'.

The Aborigines of Groote Eylandt were hunters and gatherers who relied largely on fish and turtles, some land animals and on bush fruits and roots. They ate few seeds and no leafy vegetable matter. It will be interesting to see if other hunter-gatherer societies also have such a scarcity of folk specifics. If so it would support my contention that folk specifics and folk varietals may have developed largely in societies where agriculture plays a significant role in the economy and there is a subsequent need to make finer distinctions within a taxon. This seems to be a corollary of Berlin, Breedlove and Raven's finding that the proportion of folk specifics is much higher among cultivated and protected plants than among other plants (Berlin et al. 1974:99). Hunn (n.d.:3) has in fact reported a very low percentage of folk specifics in Sahaptin biological classification by the Yakima Indians, a hunter-gatherer society.

The lack of labelled subdivided taxa and the fact that labelled subdivisions are so rarely used, even if they exist, in this folk classification schema makes it relatively easy to determine the 'natural' categories at the lower levels.

'Natural' categories of this kind are all represented by simple primary lexemes and appear to be of equivalent psychological salience, thus supporting Berlin's concept of a folk genus but, as I have indicated from my previous arguments, we need to be wary of such agreement. Perhaps this agreement does no more than reflect a widespread general pattern of relationship between nomenclature and taxonomy (Bulmer, pers. comm.).

Whether the term folk genus or folk species or specieme or anything else is applied to the basic units as perceived by Groote Eylandt Aborigines, there seems to be an equivalent cognitive status based on apparently equivalent degrees of cognitive perception. They do not normally worry about the finer details of discrimination between any subdivisions of the taxon. I would suggest that the basic unit which they themselves 'see' is the labelled undivided category.

I wonder whether subdivisions of taxa need only be referred to in the context of some special purpose, yet at the same time are available for inclusion in the general purpose biological classification. If so, it would give additional substance to Berlin's concept of folk genus. It is this basic labelled 'natural' category which I see as the potential unit of agreed perception of discontinuity and cognitive status. I think this is what Berlin, Hunn, Hays and I have all been groping towards. Just how we can objectively define it in a manner satisfactory to all remains a problem.

Thus far in this section I have applied Berlin's model of hierarchical classification to the Groote Eylandt data and found labelled life form and generic taxa as expected. I have found covert taxa intermediate between these life form and generic taxa, though these taxa may not be quite as distinctive as some of those reported by Berlin and Hunn. I have also found residual categories, both those at generic level which are included in a life form taxon and those at specific level included in a generic taxon.

Table 3 summarises the number of taxa and names for Groote Eylandt plants and animals with reference to Berlin's levels.

My interpretation of the data has led me to find several unusual features in Groote Eylandt folk taxonomy, viz.

i) labelled unique beginners
ii) the possibility of labelled semi-unique beginners
iii) two levels intermediate between life form and generic taxa

Category	Number of labelled taxa	Number of unlabelled taxa
Unique beginner	2	
Semi-unique beginner	2(0)[a]	
Life form	5(4)[a]	3
Intermediate	6(5)[a]	
Generic	613[b](600)[a,b]	
Specific	15(30)	
Varietal	0	
Total	643(641)	

[a] Depending on interpretation – number in brackets follows Figure 14
[b] Includes unaffiliated generics

Table 3 Numbers of plant and animal taxa in relation to Berlin's categories.

iv) six labelled intermediate taxa
v) very few labelled specific taxa (but the ones that there are illustrate various types of polytypy), and
vi) no varietal taxa

In addition I have suggested that

i) covert groups of labelled generic taxa, which are not included in a labelled life form taxon but which nevertheless form a highly distinctive category, should be considered as covert life form taxa rather than each generic taxon being regarded as an unaffiliated generic,
ii) the term unaffiliated generic taxon be restricted in its use to isolated taxa which are not considered to belong to any life form taxon, labelled or covert, and
iii) residual categories may not necessarily be a single category, albeit lacking in perceptual unity, but rather a whole series of categories which can be distinguished by phrases such as 'a friend of X' and yet are formally named only by the name of the superordinate taxon.

I have not attempted to apply Bulmer's and Dwyer's models because I do not consider there is anything to be gained by doing so. To apply Bulmer's model to the animal data would mean that, in addition to the first two levels of labelled taxa, terminal taxa could be at as many as five or even six different levels, if unnamed speciemes are included, but with no terminal taxa at the first or second levels. To apply Dwyer's model to the same data would again mean as many as eight levels but with many unnamed speciemes at the lowest level in addition to named speciemes which would be equivalent to Berlin's generic taxa.

Non-hierarchical classification

In this section I intend to comment in turn on each of the non-hierarchical models discussed in Chapter 1 pp.19-24 in the light of the Groote Eylandt data.

In reporting the data I have already drawn attention to a number of non-transitive relationships which can all be attributed to the contrast between land and sea animals included within the unique beginner for the animal kingdom. The existence of non-transitive relationships in a hierarchy was one of the main difficulties which led Randall to suggest an alternative non-hierarchical model. I agree with Randall's implication that the total hierarchy may be generated by an informant as required but I would not consider this sufficient reason to discard the hierarchical model.

Randall suggested that folk taxa are stored in the memory simply as a series of (direct) contrast sets, as defined by Kay (1971:877). Each contrast set represents perfectly valid relationships. If the contrast sets remain free to be manipulated as required rather than fixed within a hierachy, then such sets could readily be ranked by vertically overlapping set inclusion relationships to produce a hierarchical classification. Non-transitive relationships (for example, a land snail is a mollusc but not a sea animal) are then explained as inclusion of non-typical members of a set by virtue of form or behaviour. Apparent change in status of a folk taxon, a difficulty noted by Dwyer (1976:438), would be explained by the

formation of an additional contrast set at a higher level. I would take this to include polysemy of folk taxa, though I don't think that was what Dwyer intended.

If folk taxa are arranged in contrast sets according to purpose, then only those sets required for the purpose would be called on to generate a hierarchical classification. This would appear to me to provide the flexibility noted by Bulmer (1974:24), where a hierarchy expands or contracts according to context, and the potential for overlap between, say, biological and food hierarchies, as will be discussed in the next chapter.

I have not attempted to apply Randall's non-hierarchical model to the Groote Eylandt data since it involves mixing categories from different classification systems which I do not consider to be helpful.

To apply Bright and Bright's sphere of influence model to my data would present considerable difficulties because of the degree of polysemy of the term **akwalya**, from the unique beginner animal kingdom, through animals in the sea, to fish and finally to the intermediate taxon of bony fish. To represent this would result in spheres within spheres within spheres which would amount to a hierarchy. The possible advantage of conveying horizontal relationships of likeness using Bright and Bright's model can be overcome by accepting Hunn's notion of chaining.

To apply Friedberg's network model would mean mixing classification systems and stating horizontal relationships which could be at the expense of obscuring the superordinate categories identified.

Grimes' approach to classification is more concerned with horizontal relationships than with vertical and I have not attempted to apply it.

Two factors stand out in discussing these non-hierarchical models, viz. (i) there has been a mixing of classification systems, and (ii) horizontal relationships have been conveyed rather than vertical relationships. These models have been suggested as alternatives to hierarchical models. While they may convey some meaningful relationships for a particular society, they are unsatisfactory models to explain the relationships between superordinate taxa and their included taxa. It is difficult to escape the fact that there are such relationships. I agree with Hays in saying, as noted in Chapter 1 p.14, that a hierarchical classification can be constructed for every society. He had in mind biological classification systems. A further comment on the usefulness of non-hierarchical models will be made in the final chapter.

Folk vs. scientific classification

When Berlin, Breedlove and Raven reported their Tzeltal data on plants, they compared the folk classification system with the scientific system by calculating the proportion of folk generic taxa in one-to-one correspondence with scientific species (1974:101). As noted in Chapter 1 p.25, Hunn considered that this measure did not adequately express the intuitive feeling that there was a very high degree of correspondence with the scientific system as a whole.

Hunn (1977:67–69) devised a formula for calculating a coefficient of dissimarility, D, as a measure of the difference between folk and scientific classification systems. The coefficient, D, is the proportion of taxa not in one–to–one correspondence with any scientific taxon. An unweighted coefficent, D, can be derived by determining the degree of dissimilarity, d, for each folk taxon and calculating the total number of taxa of degree one or more in proportion to the total number of folk taxa in the taxonomy.

$$D = \frac{\#T^1 + \#T^2 + \ldots + \#T^n}{\#T}$$

# indicates the number of members of the set T^d of all folk taxa of degree d, and T is the set of all folk taxa of whatever degree. Both the coefficient, D, and the degree of dissimilarity, d, are zero when there is one–to–one correspondence between a folk taxon and a scientific taxon, regardless of whether the scientific taxon represents a whole class, an order, a family, a genus or a species and whether there are one or many members of the particular scientific taxon.

The value of the degree of dissimilarity depends on the number of levels of the scientific hierarchy one has to ascend from the lowest scientific taxon which is differentiated by a particular folk taxon to the first scientific taxon in which all members of that folk taxon are included. Examples are given in Table 4. The value of d can be reduced if there is only one member of a particular scientific taxon in the local environment, represented by double lines in the examples in Table 4. The distribution of the degree of dissimilarity, d, for Anindilyakwa taxa is given in Table 5.

The maximum value of the unweighted coefficient, D, is one, indicating that no folk taxon corresponds exactly to any scientific taxon. This measure does not take into account the value of the degree of dissimilarity. A weighted coefficient of dissimilarity, D', can be derived from the unweighted measure by multiplying the number of taxa of each degree by the value of the degree itself.

$$D' = \frac{1(\#T^1) + 2(\#T^2) + \ldots + n(\#T^n)}{\#T}$$

This measure can vary from zero to what might be a very high value of the order of ten which would indicate that organisms had been randomly assigned to folk taxa.

A more useful measure for comparative purposes is a normalised coefficient, D" (i.e. one that varies between 0 and 1). For each folk taxon where the degree of dissimilarity, d, is greater than zero, there will be a potential maximum value of d which will equal the number of levels of the scientific hierarchy one has to ascend from the lowest scientific taxon which is differentiated by a particular folk taxon to the taxon which includes all members of the domain or subdomain in question. In calculating the normalised coefficient, the actual degree of dissimilarity, d, is expressed as a proportion of the potential maximum value of d. Thus the coefficient, D", takes into account the level at which folk taxa are differentiated within the scientific taxonomy. For example, lumping of a scientific species and another genus in the same family indicates a greater degree of similarity than

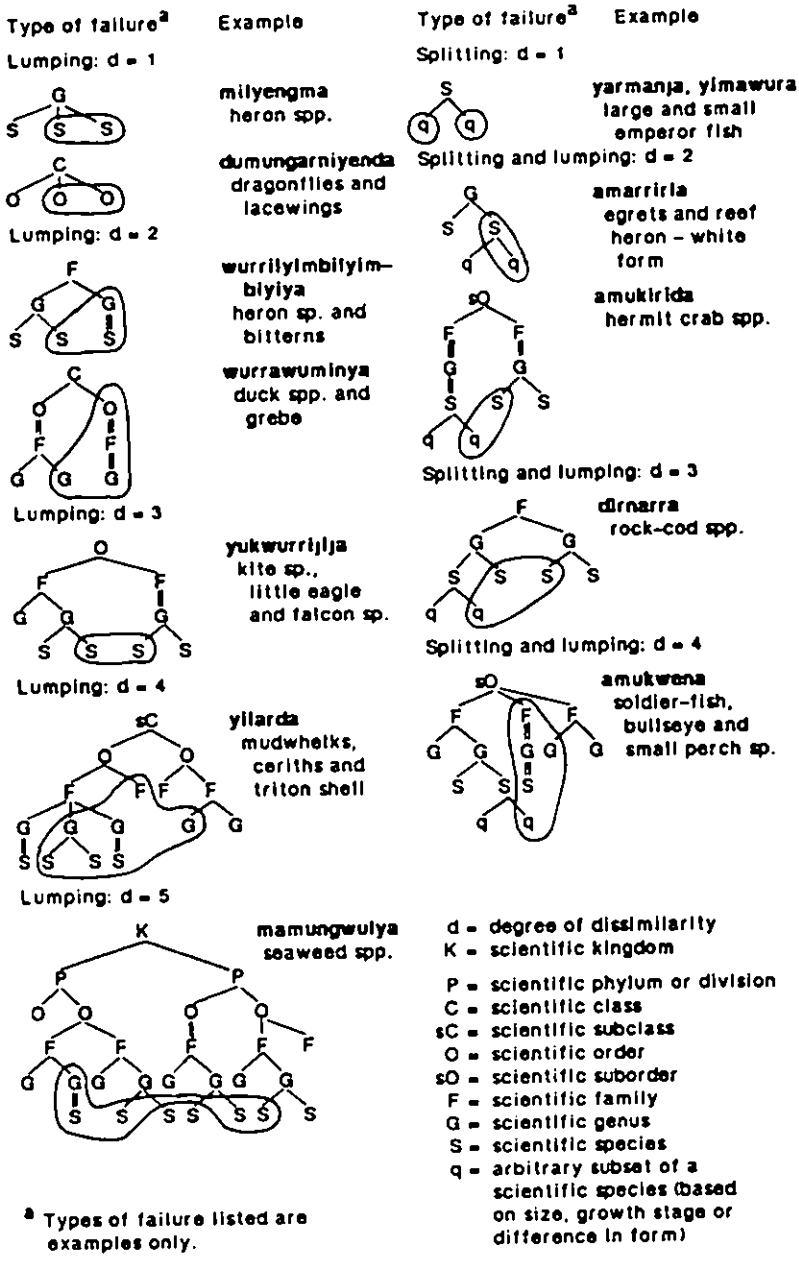

Table 4 Types of failure to correspond to a single scientific taxon.

Type of folk taxa	Degree of dissimilarity, d									
	0	1	2	3	4	5	6	7	?[c]	Totals
Suprageneric[a]										
plants	1				1	1				3
animals	8	5	4	3	1	3		1		25
Generic[b]										
plants	138	13	22	15		2			8	198
animals	236	47	49	24	18	2	2		30	408
Total taxa	383	65	75	42	20	8	2	1	38	634[d]

[a] Includes all named suprageneric taxa + covert life form taxa.
[b] Includes nine specific taxa.
[c] The degree of dissimilarity, d, cannot be calculated because the taxa are not adequately defined.
[d] Six specific and three other taxa inadvertently omitted.

Table 5 Distribution of degree of dissimilarity, d, of Anindilyakwa plant and animal taxa.

lumping of two orders from different classes in the same phylum. In each case the actual degree of dissimilarity may only be two.

There is one point which none of the measures seems to take into account. There are several occasions in Anindilyakwa classification where a single species from a completely different taxon is lumped with what would otherwise be a folk taxon with low degree of dissimilarity. I have been unable to suggest a solution to this difficulty.

The three coefficients of dissimilarity have been calculated for the plant kingdom and for each of the three major folk divisions of the animal kingdom. The values of D, D' and D" are given in Table 6.

Hunn (1977:69) suggested that 'the ultimate significance of these numbers depends... on subsequent comparisons with coefficients calculated according to this technique for comparable domains from other cultures.' In Table 7 I have expressed the coefficients D and D" as percentages and compared them with the results obtained by Hunn. The figures are not directly comparable because I have used the Anindilyakwa folk taxa which are different from the Tzeltal taxa, particularly in the category 'animals in the sea'. (The Tzeltal figure in this case represents the data for all animals apart from birds and mammals.) Nevertheless it is clearly apparent that the values of each measure for the Anindilyakwa data are of the same order as those for the Tzeltal data. For Anindilyakwa animal

	Coefficient of dissimilarity[b]			Total Taxa
	D*	D'	D	#T
akwalya 'animals in the sea' (17 taxa excluded)[a]	0.14	1.02	0.45	218
wurrajija 'winged creatures and others' (7 taxa excluded)[a]	0.11	0.60	0.29	139
yinungungwangba '4-footed land mammals and reptiles' (6 taxa excluded)[a]	0.06	0.20	0.14	44
Total animal taxa	0.12	0.79	0.34	401
amarda 'plants' (8 taxa excluded)[a]	0.10	0.59	0.27	192

[a] These taxa are excluded because they are inadequately defined.
[b] D = proportion of taxa not in one-to-one correspondence with scientific taxa of any rank.
D' = D weighted by degree of dissimilarity, d.
D* = D' normalised by expressing degree of dissimilarity as a proportion of maximal dissimilarity. D* may be interpreted as a proportion of maximal dissimilarity.

Table 6 Correspondence of Anindilyakwa animal taxa to the scientific system measured by Hunn's coefficients of dissimilarity.

classification the weighted and normalised index (D*) indicates that about 12% of the potential dissimilarity exists, in comparison with about 8% for Tzeltal animal classification. The same index for Anindilyakwa plant classification is about 10%.

Berlin's index is also noted for comparative purposes. Using this index, the number of folk taxa showing one-to-one correspondence with scientific species is relatively low, especially for **wurrajija** 'winged creatures' (43%) and **akwalya** 'animals of the sea' (45%), but there is a high level of agreement with the system as a whole using Hunn's coefficients (89% and 86% respectively for D*). I would agree with Hunn that his coefficients are a much better expression of the intuitive feeling of agreement between the two systems, which as he said, firmly supports 'Bulmer's intuition of a "conceptual correspondence" of the "hard core" of folk and scientific taxa (Bulmer, 1970:1076)' (Hunn, 1977:82).

Ellen (1978:151) has suggested an index of differentiation derived by dividing the number of folk terminal taxa by the number of scientific species included in the corresponding set of terminal taxa. The usefulness of this index is limited to indicating over-differentiation, where there are more folk taxa than scientific species, or under-differentiation, where certain folk taxa represent more than one

	Berlin's index: Percentage of folk generics one-to-one with scientific species	(1-D) 100: Percentage of folk taxa one-to-one with scientific taxa	(1-D*)100: Percentage of maximal degree of system correspondence
akwalya 'animals in the sea	45 (27)[a]	55 (41)	86 (89)
wurrajija 'winged creatures and others'	43 (62)	71 (79)	89 (96)
yinungungwangba '4-footed land mammals and reptiles'	73 (73)	86 (78)	94 (95)
Total animal taxa	53 (44)	66 (69)	88 (92)
amarda 'plants'	65 (61)	74	90

[a] Figures in brackets represent percentages for the same indexes as calculated by Hunn for Tzeltal categories (1977:82). It should be noted that the Tzeltal animal categories are not directly equivalent to the Anindilyakwa categories.

Table 7 Comparison of various indexes of folk-scientific system correspondence.

scientific species. Where the number of terminal taxa and the number of scientific taxa are the same, this does not necessarily indicate one-to-one correspondence between folk taxa and scientific taxa, as evidenced by Bulmer and Menzies' data on Karam game mammals (1972:487) where splitting of some taxa is balanced by lumping of other taxa. Like Berlin's index, this measure makes no allowance for the possibility that several species may all belong to one genus or that there may be one-to-one correspondence with a higher level scientific taxon.

There has been much discussion in the literature as to the reasons for under- and over-differentiation of folk taxa with respect to the scientific classification system. I have raised some of the relevant points in my discussion on pp.11-13 of the perception of the basic units of folk classification. Berlin, Breedlove and Raven (1974:103) considered that they have demonstrated a clear correlation between the relative degree of correspondence of folk taxa to scientific species and the cultural utility of those species. Bulmer (1970:1086) questioned their correlation and raised a whole series of questions which he felt needed to be answered for cases of under-differentiation in particular, questions related to the ease of recognition of some scientific species, their relative abundance in a particular area and so on. The criteria used for assessing the cultural significance of plants used by the Tzeltal are not relevant for the Groote Eylandt data since they were selected for an agriculturally-based society. As Hays (1974:200) and

Hunn (1977:81) have indicated, the same criteria are not particularly helpful in assessing the cultural significance of animals, even in the same society. Although Hays (n.d.) has made suggestions for an alternative assessment of cultural significance, as noted on p.12, I have not pursued the matter because Hays' ideas need to be further developed and I did not feel this area was directly relevant to the main line of argument in this study.

Development of biological classification

The data presented in this chapter provide a challenge to the universal sequences of development suggested by Berlin and Brown. Anindilyakwa biological classification, as interpreted above, has labelled generic and life form terms as expected according to Berlin's theory. It has a few labelled specific taxa, fewer than the number reported for many other languages, and a few labelled intermediate taxa, more than those generally reported. It has no varietal taxa and yet it has labelled unique beginners. Perhaps specific taxa need to be shifted in line with intermediate taxa and varietal taxa in line with unique beginners (see p.26). There are also labelled intermediates at more than one level, as indicated in Figure 15, and the possibility of an additional level between the unique beginner and the life form level in the animal kingdom.

Turning to Brown's life form categories, it will be seen that there are taxa which fit a number of his universal categories. They are presented in Table 8 with appropriate comments.

When the plant terms are compared to Figure 11 it will be seen that there is no difficulty in equating Brown's life form categories with Berlin's taxa of life form rank. However there are problems with the animal terms. The FISH term actually agrees perfectly with Brown's criteria if the meaning of 'fish' only is taken and not the meaning of 'animals in the sea'. When the animal terms in Table 7 are compared with the terms in Figure 13 it becomes apparent that other

Life form categories		Comments
Brown	Anindilyakwa	
TREE	**eka**	includes BUSH
GRERB	**amarda**	includes VINE and GRASS
FISH	**akwalya**	taken to include only fish
BIRD	**wurrajija**	includes WUG i.e. insects, spiders, ticks, scorpions etc.
SNAKE	**yingarna**	includes eels and legless lizards
MAMMAL	**yinungungwangba**	includes 4-footed land mammals and reptiles + SNAKE

Table 8 Anindilyakwa equivalents of Brown's life form categories.

marine life form taxa are not accounted for in Brown's suggested categories. In particular there is no provision for the distinctive shellfish category. To suggest that the FISH term should be **akwalya** with the meaning of animals in the sea would mean that the category becomes based on habitat and not on form, but this would be unacceptable to Brown.

The BIRD term incorporates creatures normally included in a WUG term but, as Brown suggested in his defining criteria, the focus of the term appears to be BIRD rather than WUG. This is supported by the fact that I asked ten people, five men and five women in the 20–40 age bracket, to list for me the first ten **wurrajija** that came to mind. None of them listed any insects and only two included one or two flying mammals. This was despite the fact that two of those asked had just inspected my Groote Eylandt insect collection.

The SNAKE term fits very well with Brown's criteria but it is also apparently included within the MAMMAL term. It may be recalled from p.79 that there was some confusion as to whether the term **yinungungwangba** should be applied polysemously to just the 4-footed land animals including reptiles.

To return to the problem of life forms which are unaccounted for in Brown's schema, it would seem to me that Brown has taken only those life forms which are found in the widest variety of habitats. Marine life form terms will be best developed only in the languages of societies which live near the sea. Brown (1977:330; 1979b:804) has reported that the number of labelled life form categories in a language is indicative of the social complexity of the society where social complexity is viewed in terms of political integration, social stratification and technological elaboration. The number of life form categories increases with increasing social complexity. Now it seems to me that, by ignoring marine life form terms, the predictive value of Brown's study is considerably weakened. I would suggest that there may be a far greater predictive value if the starting point was the environment. It seems reasonable to suggest that, in a society dependent on the sea, there should be life form terms at least for shellfish as well as for fish. These terms may be lacking in an arid or mountainous environment. Terms for vines are much more probable in a rainforest environment than in an arid environment. Bulmer (1974:11) has pointed out 'the absolute necessity of taking an ecological perspective in one's attempts to describe and interpret systems of folk-classification of plants and animals.'

Riley (1980:849) criticised Brown's suggested sequence on the grounds that it may be the environment that constrains the development of life form terms rather than 'evolutionary considerations of cognition'. Brown (1981b:399) replied that he had considered environmental factors and did not see any conclusive evidence that they were significant in determining the sequence of development of life form terms. MAMMAL and WUG terms could still be absent in environments where such animals were present in abundance. I do not want to criticise Brown's sequence of development of life form terms. Rather I suggest that it could well be extended to give a wider predictive value than is at present possible by increasing the number of potential life form categories.

Chapter Four

FOOD CLASSIFICATION

In this chapter I have considered the classification of plants and animals as edible or inedible. I have then presented the data on their classification as foods, including the classification of introduced foods. I have then discussed restrictions on the eating of certain foods. I have considered classification of food in relation to the concept of what constitutes a meal and in comparison with folk biological classification.

Edible vs. inedible

The binary classification edible/inedible may be applied to the plant and animal kingdoms to produce a list of foods considered to be edible by Groote Eylandt Aborigines. One of the standard questions I asked in eliciting data on animals using the questionnaire was **akalyalyubara?** 'is it edible?' Edible taxa are listed in Appendix 6. Edible animals are listed in the same sequence as that given for the biological classification in Appendix 5.1. Edible plants are listed alphabetically under each of the categories found in the classification of foods.

In his list of Anindilyakwa plant and animal taxa, Worsley (1961:181-189) marked all those considered to be edible. His list is given in Appendix 1.3 in my thesis (Waddy, 1984) in the same format as Appendix 6, to allow direct comparison.

Further comments on edibility will be made as the various categories of food are discussed, and again when totemic classification is considered in relation to food classification on pp. 139-41.

Classification of foods[8]

Tindale (1925a:76) reported that 'the general name for food (in Anindilyakwa) was "**anunga**" or "**unina**" '. Worsley (1961:162) found 'no general word for "food" ' in Anindilyakwa, but a 'fundamental distinction' of 'animal' or flesh food, **akwalya**, and 'vegetable' or, more strictly, non-flesh food, **aninga**. Turner (1974:167) also found this. Current useage of the term **aninga** suggests increasing use with the meaning 'food in general' in addition to its basic meaning. Worsley considered the use of the term **akwalya** meaning 'flesh food' to be colloquial since he believed the true meaning of the word to be 'fish' or 'animals in the sea'. I would interpret the use of the same word akwalya to indicate overlap between two areas of classification, the one referring to the biological world as a whole and the other to that part of the biological world which is considered edible. Because Aboriginal interest in the animal world was so related to food it is not surprising that there is some overlap of terms.

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[8] Much of the material in this chapter is included in Waddy, in press.

While a distinction between plant and animal foods was reported by previous workers, no further categorising of food was noted. I have found, however, that **akwalya** 'flesh food' and **aninga** 'non-flesh food', can be subdivided.

Flesh food: **Akwalya**

Figure 16 shows the basic subdivisions of animals as food within the animal kingdom. Comparison with Figure 13 shows that the distinction, at least on paper, is largely a linguistic exercise of adding the term **akwalya** after the biological term. Thus **adidira akwalya** is 'shellfish', i.e. edible flesh that comes from shells.

Figure 16 also shows the number of taxa which are potentially edible, including those which are no longer eaten today and those which were only eaten

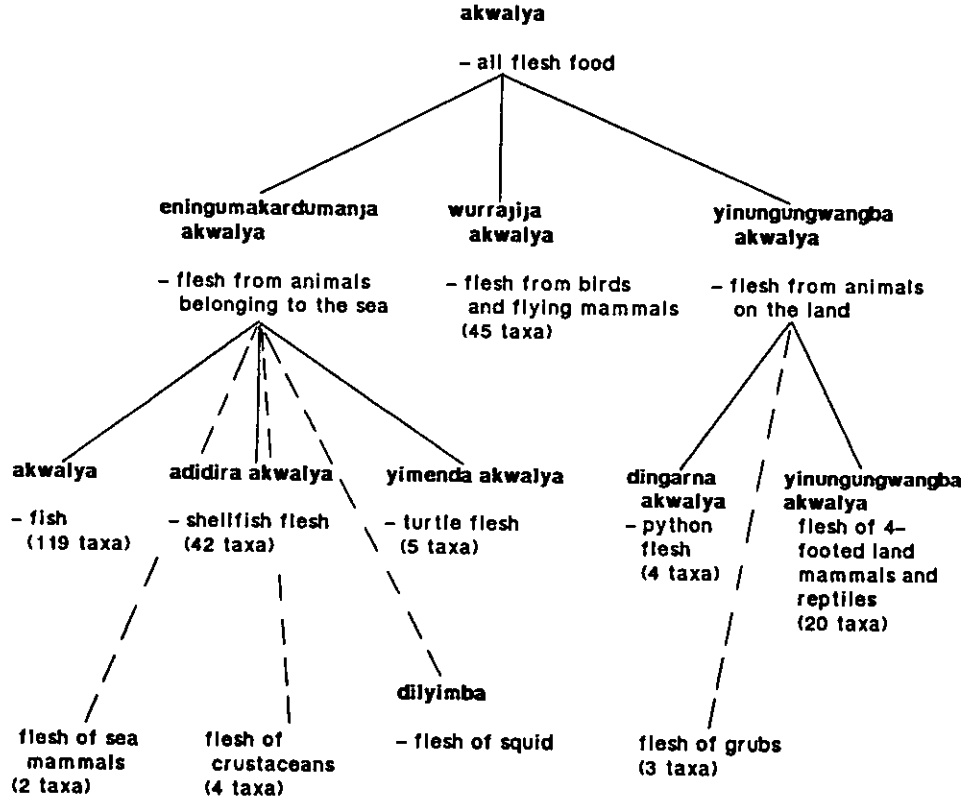

Figure 16 Classification of **akwalya** 'flesh food', indicating the numbers of Anindilyakwa taxa considered to be edible.

	Anindilyakwa names		No. of 'edible kinds' i.e. Anindilyakwa taxa		
	Worsley, 1961:161-9	current orthography	Worsley	corrected[a]	Wadd
Land-animals (including reptiles)	yinugwanba	yinungungwangba	19[b]	15	24
Birds (sea and land)	wufadjidja	wurrajija	76	63	44
Marine animals (fish, dugong, stingrays, dolphins, etc.)	augwalja	akwalya	98	87	127
Plants and trees	ega (trees)	eka	83	69	93
Crabs and shellfish etc. (crustaceans)		adidira (+ others)	39	35	44

[a] See text for explanation
[b] Worsley's original figure was 79 but this appears to be a typographical error

Table 9 Number of 'edible kinds' of animals and plants recorded by Worsley (1961:158). The Anindilyakwa names obtained by him for the categories into which these 'edible kinds' were grouped are also shown.

by old people or children. (For details, see Appendix 6.) For comparison these same numbers are given in Table 9 alongside Worsley's summary of food sources (1961:158). While Worsley indicated that his data were highly likely to be incomplete, he apparently did not bargain on so many synonyms being available for the one Anindilyakwa taxon. A revised figure has been given beside his data, calculated by comparing his lists of species with current lists where identifications are now available. A few very small species of fish, the small bait crabs and mammals found only on the mainland have also been deleted from Worsley's 'edible kinds'. It should be noted that Worsley has grouped marine mammals, turtles and squid with fish, thus using **akwalya** in the sense of all (edible) marine animals (see p.73), although crabs and shellfish have been grouped separately.

Akwalya 'fish' may be further subdivided into several levels, as indicated in Figure 17 which shows the divisions within the food classification system. This figure may be compared with Figure 15 which shows the biological classification of the same taxa. As in the biological classification, the first division is essentially into cartilaginous and bony fish. The cartilaginous fish **aranjarra** are normally cooked on a blazing hot fire, the flesh chewed and formed into balls, covered with fat from the fish and then kneaded into flat cakes and baked in the ashes (Tindale, 1925a:84). The flesh must be washed, normally with saltwater, after cooking. Flesh prepared in this way is called **amadukwarra**. On the other

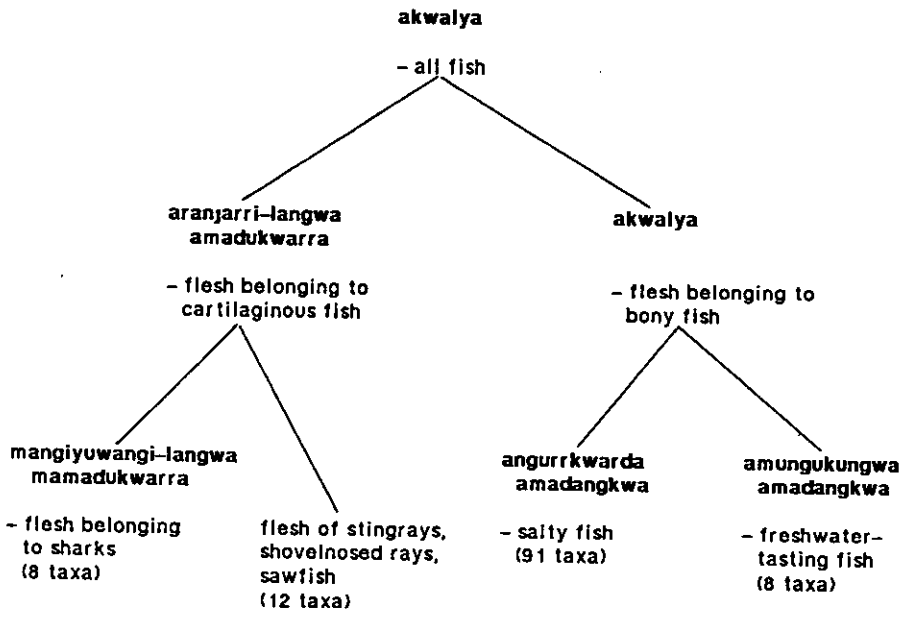

Figure 17 Labelled food categories within **akwalya** 'fish', indicating the numbers of Anindilyakwa taxa considered to be edible.

hand, bony fish, again **akwalya**, are normally baked in the hot sand and ashes and eaten without further preparation, although if a large number of fish are caught at one time they may be cooked with the aid of hot stones in a simple form of earth oven. The term **amadangkwa** used for the flesh of bony fish is also the word for the flesh of animals and of humans.

Within the biological category of cartilaginous fish are sharks **mangiyuwanga** and a covert category comprising stingrays, shovelnosed rays and sawfish. In considering this latter group as food, a distinction is made between young stingrays and older rays. The latter are said to have black **amalya** 'fat' and are not generally eaten. Young stingrays have white, or 'clean' **amalya** and are collectively termed **yukwulyenja**. They are still eaten today. Shovelnosed rays and sawfish are not included within this term but again it is younger ones which are favoured.

The bony fish may be differentiated on the basis of taste according to whether they belong to saltwater or freshwater. The flesh of saltwater fish is referred to as **angurrkwarda amadangkwa** 'salty flesh' and that of freshwater fish as **amungukungwa amadangkwa** 'freshwater-tasting flesh'. For the saltwater fish, further grouping is possible on the basis of form as indicated on p.77 but the resultant groups are unnamed (see Appendix 5.1).

Again as indicated on p.78, shellfish may be grouped into covert categories or according to habitat but I have not found any food-related criteria for grouping them.

As well as the named higher level taxa which include flesh obtained from the sea, there are two small covert taxa, viz. flesh of sea mammals and flesh of crustaceans. Because of the distinctive nature of the members of these covert taxa, the named taxa cannot simply be considered as unaffiliated generics, as noted on p.78. The smaller bait crabs are not considered edible, at least by Nangurama. It is possible that children may still catch and eat the smaller species.

The category **wurrajija akwalya** applies to 'the flesh of winged creatures', including birds, flying mammals and insects. As indicated on p.75, the birds can be grouped initially much as in English we distinguish seabirds from land birds. Further subdivisions can be made on the basis of form and habitat but not on food-related criteria. The number of edible taxa shown in Table 9 includes those birds the eggs of which are eaten but not necessarily the flesh. There is a major discrepancy between Worsley's and my data which I have been unable to resolve completely. Nangurama, who remembered Worsley's visit, could not recall some 24 of the birds marked edible by Worsley as ever being eaten, either their flesh or their eggs. The birds concerned are included in Appendix 1.3 in Waddy, 1984. It may be that some of these birds or their eggs were eaten occasionally by some people in the past. Perhaps children may have eaten some of the smallest ones.

Of the flying mammals, flying foxes are caught and eaten today, as in the past, but again it seems that bats are not eaten and may only have been eaten by children in the old days. The only insects that are specifically eaten are green tree ants in the flying form, and then it is only the large abdomens that are eaten. Native bees, Trigona hockingsi, may be consumed when eating honey since the honey is not strained. Insects and their larvae appear to be more significant as food in inland areas (see, for example, Gould, 1969:260).

Within the category of land animals, the snakes **yingarna** (see Figure 13) may be subdivided into **dingarna** 'pythons and tree snakes' and **yingarna** which includes the remainder but especially the poisonous snakes. Only the pythons are considered edible, although they are not normally eaten today.

Within the category of **yinungungwangba** '4-footed land animals', wallabies and other small mammals are eaten, though they have never constituted a major portion of the diet. Small mammals, goannas and freshwater turtles are most frequently caught by the women. Lizards are caught and eaten by children. The crocodile is only occasionally eaten. Four taxa of grubs have been considered edible though they are not generally eaten today.

Eggs, including bird, lizard and turtle eggs, are somewhat of an anomaly within the food classification system. Some people have considered that they must belong with **akwalya** 'flesh food', knowing full well what hatches from the eggs. But Nangurama recalled one of the old people telling him when he was young that eggs belong with **aninga** 'non-flesh food'. The word for egg **yinumamuwa** and the term for fruit **amamamuwa aninga** are both derived from the same word **amamuwa** which means small round thing. It is of interest that birds' eggs are considered to be non-flesh food by the Ngatatjara (Gould, 1969:261), and

by Nunggubuyu speakers (Heath, 1978b:44) but as flesh food by Djambarrpuyngu speakers (Rudder, 1978/9:355), Yidiny speakers (Dixon, 1977:489) and in the Western desert (Douglas, 1976:59). Generally, if the eggs are eaten so is the flesh. For six bird taxa, only the eggs are eaten and these were included in the total number of edible birds.

Non-flesh food: **Aninga**

Figure 18 shows the categories of non-flesh food as perceived by Groote Eylandt Aborigines. The numbers of taxa shown in each category can be compared with Worsley's total of 83 shown in Table 9. The great majority of edible plants have a one-to-one correspondence with scientific species. However the list of edible species recorded by Worsley includes five Anindilyakwa synonyms, three names which refer to specific parts of a plant, three plants whose flowers provided a source of nectar or pollen for bees rather than people, and several other anomalies (see Appendix 1.3, Waddy, 1984, for details). The number of taxa shown in Figure 18 includes three of which both fruit and root may be eaten. Some of the edible roots were eaten only when no other food was available.

The major category is fruit. This category is basically divided into fleshy fruits and edible seeds. The latter can be subdivided into woody nuts containing seeds and dry pods containing seeds, though these groups are unnamed. The flesh of seeds may be referred to as **amadangkwa**, the same word as is used for the flesh of animals and humans. The large woody nuts of the pandanus palm and the coconut are considered to be a separate sub-category because 'you throw away the skin and find the food inside', as Nangurama explained. The cycad nuts form another subcategory because there are no flowers before the nuts. The latter are also the only fruits which must be processed before eating.

Nangurama considered that all fruits belonged to dry land, i.e. to monsoon and open forest, sandstone outcrops and coastal sand dunes. In his opinion the blue waterlily, Nymphaea gigantea, is anomalous because it produces edible seeds and yet it grows in billabongs. The habitat data which Miss Levitt and I have gathered suggests that three taxa, **alungkwalyalyirra** Eugenia armstrongii and Melastoma polyanthum, **alungkwamarda** Carallia brachiata and **marrangkwurra** Dillenia alata, always grow beside rivers or billabongs, indicating that the Anindilyakwa habitats **adalyuma** 'river' and **awurukwa** 'billabong' are interpreted in a much narrower sense than one might expect from an ecological viewpoint. Another six trees are sometimes found beside rivers or in areas subject to seasonal swamping but are more often found in drier areas. All other edible fruits, including seeds, are found growing in the drier habitats mentioned on p.51.

Most fleshy fruits and all edible seeds apart from the waterlily are found growing on woody plants. Nine fleshy fruits are found growing on non-woody plants, all of which are vines or creepers.

Root vegetables can be grouped on the basis of habitat into those found in freshwater swamps and billabongs (12 taxa) and those found on dry land, the same division as is made for the non-woody plants (see Appendix 6). Only three trees are considered to have edible roots. Root vegetables do not appear to be grouped on the basis of food-related criteria. Growing shoots of young palm trees are also eaten.

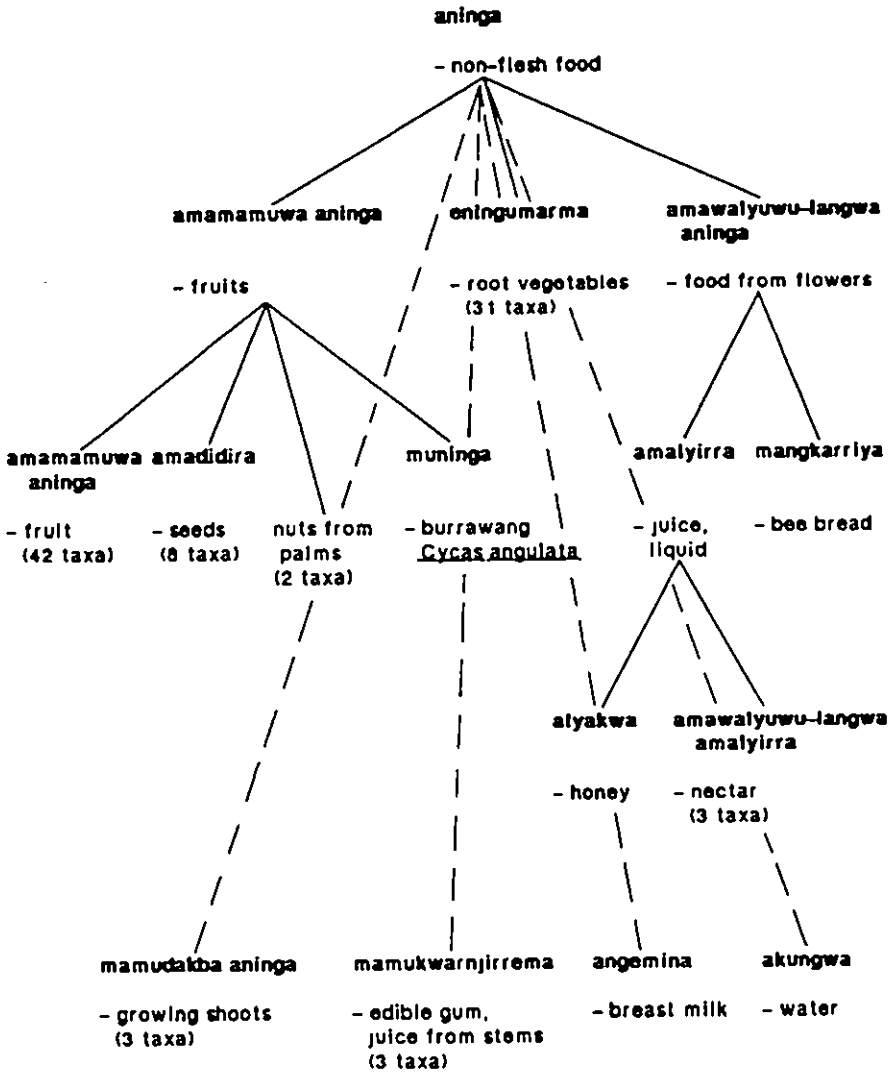

Figure 18 Classification of aninga 'non-flesh food', indicating the numbers of Anindilyakwa taxa considered to be edible.

Apart from fruit the only other category which is generally subdivided is food derived directly from flowers. The initial distinction is between firm yellow bee bread, derived from pollen, and juice or liquids. Liquid foods include :

Figure 18 Classification of aninga 'non-flesh food', indicating the numbers of Anindilyakwa taxa considered to be edible.

Apart from fruit the only other category which is generally subdivided is food derived directly from flowers. The initial distinction is between firm yellow bee bread, derived from pollen, and juice or liquids. Liquid foods include nectar

and the highly prized wild honey. The nectar from flowers such as Grevillea pteridiifolia can be shaken on to the open hand or into a container in the early morning and drunk.

The gum of several taxa, including the wild peach Terminalia carpentariae and one of the wattles, may be eaten. Grouped with these taxa is the giant spear grass Heteropogon triticeus the stems of which may be sucked like sugar-cane. It should be noted that the stem of the blue waterlily was also eaten occasionally, although it did not seem to fit in this category. This is the only record of any green vegetable matter being eaten in the days before other vegetables were introduced.

Milk is also considered as a non-flesh food. In discussing the various categories of food one day with one of the older men, I asked, 'What about water? Where does it fit in?' '**Aninga**,' said he and proceeded to elaborate. In the old days fish of one kind or another were obtainable year round. But after eating fish, the question could still be asked, '**Eba aninga**?', 'Is there any non-flesh food?' Something was needed as a contrast to the fish. If there was no other bush food available, 'you could always get water'. Water was something which could satisfy the need. And so water is classified as **aninga** with other non-flesh foods.

Introduced foods

The adaptability of the Aborigines on Groote Eylandt is seen in their ability to incorporate introduced things into their classification systems. Fruits such as apples, oranges, bananas and mangoes are easily fitted in with bush fruits. Carrots and potatoes are readily incorporated with other root vegetables.

In English we recognise peas and beans as vegetables. However to an Anindilyakwa speaker they are **amamamuwa aninga** which is food developed from flowers.

Cereals provide an interesting case. Rice still has its grains and so it fits with seeds. In fact any cereal food having small more or less round particles can be fitted with seeds. But what about flour and therefore damper, today's staple item of diet? Nangurama suggested it should still fit with seeds because he had seen on television how wheat was processed into flour, but Gula said he felt flour would have to go in a class on its own because it no longer had round particles.

Sugar can be fitted into the category including edible gum because sugar is recognised as coming from the stem of a plant. Milk products can easily be grouped with milk. Cordial and other soft drinks can be included with water, although orange juice was considered to belong with fruit by one of the men because it came from oranges.

What about tea? Again the men have become aware through television or other films of the origin of tea leaves. But there is a problem here because, as will be noted from Figure 18, there is no category where the leaves of plants are eaten. Grass is wallaby food! No leafy green vegetables were eaten on the island, the only possible exception being the stem of the waterlily. In fact in the past there was a lack of interest in the introduction of leafy green vegetables, such as cabbage and spinach, apparently for this very reason: leaves were not a category

for human consumption! The term **aninga** can still be used to apply to non-flesh food eaten by animals. To return to the question of tea, it seems that it should be fitted with other introduced foods derived from the leaves of plants, thus forming a new category.

Introduced types of meat do not present any great difficulty since the categories are already there. Beef, lamb and pork fit with other land mammals and chicken fits with birds. Fish and other flesh foods from the sea are in fact more highly categorised in Anindilyakwa than they are in English.

Food restrictions

I have only found one indication to suggest that Groote Eylandt food classification is affected by whether or not the animal or plant has any totemic significance. The one example is the scrubfowl, Megapodius freycinet. Neither the flesh nor the eggs of this bird are now eaten, though they were apparently both eaten in earlier days. Tindale (1925a:13) reported that the eggs appeared to be freely eaten but that the old men would not allow the killing of the birds. However, Turner (1974:163) reported two instances of men saying they do not eat their totems. It seems likely that further restrictions have been introduced through increased contact with neighbouring tribes from the mainland.

There are a few restrictions on certain mammal flesh during one of the ceremonies and on certain turtle flesh and possibly some other flesh for pregnant women and young children. The flesh of the hawksbill turtle, Eretmochelys imbricata, is not eaten by pregnant women and young children, apparently because it is known to make them ill rather than because of a taboo as such. McArthur (1960:124-5) found that there was considerable variation amongst informants as to what foods were tabooed following circumcision and in association with pregnancy.

The only other restriction of which I am aware is that placed on the eating of certain fish. Several fish such as red bass, Lutjanus bohar, and Chinaman fish, Symphorus nematophorus, may be eaten only by old men. If young men eat them they are said to go prematurely grey. One wonders if it is more than coincidence that several of these fish are considered by scientific experts to be poisonous and/or to be carriers of ciguatera poisoning, though there is no apparent awareness by the Aborigines that these fish will make one sick. Roth (1908:76) reported a similar restriction on young people eating certain fish (not the same species) in the Tully River area, 'its disregard entailing the culprit's hair turning prematurely grey'.

Discussion

Food classification

Food classification is related to our attitudes to food. For example, the English food category 'vegetable' is defined by the Shorter Oxford dictionary (1973) as an edible herb or root which is commonly eaten with meat. This definition carries considerable weight, so that to most people tomatoes would be considered a vegetable along with cabbages and potatoes. Education has led to a

general emphasis on the value of foods within English food classification, such that meat is a source of protein, cereals a source of carbohydrates and so on. English-speaking people generally expect a meal to consist of a variety of foods, with at least one item from each of the food categories, taking the value of the food into consideration.

Groote Eylandt Aborigines look for the contrasting satisfaction of foods from their two basic categories, flesh and non-flesh foods. If there is plenty of fish they may be 'hungry' for 'sugar-bag'. If there are plenty of yams they may be 'hungry' for shellfish. They do not look for variety of foods at any one time but rather for flesh food and non-flesh food. In fact, there is a verb root **abuwaly** which means 'hungry for flesh food'. Similar observations have been made by Dentan (1968:28) for the Semai of Malaya and by Meehan (1982b:115) for the Anbarra of northern Arnhem Land. Dentan has stated that for the Semai,

> a "real meal" consists of meat, fish, fowl, or fungus, plus a starchy food like rice or tapioca. A man who has not had meat, fish, fowl, or fungus recently will say, with complete seriousness, "I haven't eaten for days."

Meehan has reported four categories of animal flesh:

mindjak – flesh of land and sea mammals, birds and reptiles;
djidjidja – flesh of edible fish, including sharks and rays;
kapara – the flesh of bivalves found in open sea-shell beds;
ngal – a category that includes flesh of crustacea , insects and some shellfish, including those from mangroves.

There is an additional cross-cutting division of animal flesh into ' "white" or "clean" flesh, exemplified by fish, shellfish and goanna, and "red" flesh or "flesh with blood inside", such as that derived from wallabies and buffaloes.' Plant food is in a different category.

> The Anbarra prefer a diet that contains ample quantities of all the different food categories. If forced to eat white meat for too many days, they complain, saying they are tired of **djidjidja** (fish) and want red meat. If they have lots of flour, yams or spike rush, **balidja**, they say how much they wish to have "beef", meaning any kind of white or red animal flesh. (Meehan, 1982b:115)

On Groote Eylandt in the past, the choice of food was generally limited by the success of the hunters and gatherers in finding what was seasonally available. They were not as concerned about whether the food was raw or cooked, hot or cold or sweet or sour, as about what food was available. They did not appear to be concerned about the relative value of foods nor about eating at a specific time of day, nor about the order in which different foods should be eaten. They ate when they were hungry – and as the food became available!

For the Palawan of the Philippines, Macdonald and Macdonald (1974:35) have noted that, during the period of the year when rice is unavailable, they complain of hunger even though there is an ample supply of root and green vegetables. A meal for the Palawan ideally consists of rice accompanied by either meat, green vegetable or root vegetable and by salt or spices. However in this instance it is

not the contrast which is so important but the presence of rice. Although root vegetables may be substituted in its absence, rice is considered the only 'true' basic food, 'the symbol of satisfaction of (one's) needs'.

Worsley (1961:178) has stated that the Aborigines of Groote Eylandt 'have an objective classification - land-animals, flying things etc. - and a subjective one dictated by their primary concern with these species - division into food- and non-food'. To the extent that personal preference will always dictate what is considered to be food, I can agree with Worsley that Groote Eylandt food classification is subjective whereas biological classification is at least relatively-speaking objective. However I cannot agree with Worsley that either food classification or biological classification is in any sense 'rough-and-ready' (Worsley, 1961:159,178). In point of fact it is the binary classification edible/inedible which is subjective. The classification of foods per se is quite objective.

The Aborigines of Groote Eylandt have developed a sophisticated system of food classification based initially on the distinction between flesh and non-flesh foods. The classification of flesh foods **akwalya** closely parallels that of animals within the animal kingdom and is based largely on distinctions in form. The classification of non-flesh foods **aninga** focuses more on the nature of the food source. Thus non-flesh foods are subdivided into those developed from flowers, i.e. fruits, those from the ground, i.e. root vegetables, those derived from pollen and nectar, those derived from growing shoots, those derived from stems and in addition milk and water. Two of these categories are further subdivided. Additional categories such as food derived from leaves are being accepted today. Each category can be expanded to include appropriate introduced foods in addition to traditional food sources.

Plants had a much wider variety of functions than did animals within Aboriginal culture. They were identified largely on the basis of vegetative characteristics rather than on the form of their edible fruit which was available for only a short time each year. Plants were thus classified on the basis of form into those with woody stems **eka** and those with non-woody stems **amarda**, as noted in the previous chapter. If an animal is edible almost every part is eaten. But only certain parts of plants are edible. Thus in classifying plant foods the focus is on the part which is edible, e.g. fruit or root. A similar situation is found in Djambarrpuyngu where there is overlap between biological and food classification within the animal kingdom, but within the plant kingdom biological classification is based largely on form and food classification on the part that is eaten (Rudder, 1978/79:354). In Nunggubuyu there is again overlap between biological and food classification within the animal kingdom, but Heath (1978b:44) has given insufficient detail to establish the basis of food classification within the plant kingdom.

Food vs. biological classification

The practical details of comparison of the food and biological classification systems have already been discussed earlier in this chapter. However it is worth noting that some of the labels applied to taxa in the food classification system are different from those in the biological system. In most instances the same label can be taken to apply to the biological taxon, the plant or animal as a whole, and

to the food taxon, regardless of the part which is eaten. In a few instances the part of the plant which is eaten is specifically labelled. Thus **mangkurrkwa** is the pandanus palm as a tree but **mulawurangka** is the large woody nut of the pandanus and the edible kernels are called **mungalika**. In one of the few instances where more than one part of the plant may be eaten, the edible parts are labelled differently. Thus the vine and the fruit of the wild grape, Ampelocissus acetosa, are called **akwurena** but the root is called **mijabura**. Other examples may be found in Appendix 6.

In the case of the cycad, whose nuts must be processed before eating, the name **muninga** is used to refer to the plant as a whole and also to a specific state of the nuts. A number of other names have been listed by Levitt (1981:49–51) for nuts in varying states of freshness which call for different methods of preparation.

Since the food classification system is hierarchical, its nature may readily be compared with the biological hierarchies. The immediate question is what should be regarded as the unique beginner – is it an unlabelled taxon, 'food'? Or are there two domains of food paralleling the plant and animal kingdoms? In English there is no difficulty in deciding that there is one domain of food with categories such as meat, fruit and cereals as taxa at Level 1. But in Anindilyakwa it would seem that the Level 1 taxa of flesh foods should parallel the life form taxa of the biological taxonomy. There is little difference in diversity of species or in defining characteristics although they are no longer labelled by simple primary lexemes. The flesh food taxa at this level are labelled by compound lexemes, of the type referred to by Berlin (Berlin et al., 1974:31) as productive primary lexemes, where the name of the superordinate taxon is included. Thus **adidira akwalya** refers to the flesh of shellfish where **adidira** is the biological life form and **akwalya** is the superordinate taxon referring to all animal flesh.

If it is accepted that Anindilyakwa classification of flesh foods is a subset of Anindilyakwa biological classification, this seems to be a reasonable interpretation of the data. Several of the non-flesh food categories are also productive primary lexemes but at least one, viz. **eningumarma** 'root vegetables' is a simple primary lexeme. Interpreting the data in this way, Figure 18 indicates another three labelled intermediate taxa, in addition to the six noted in Chapter 3.

If it is claimed that there should be a single domain of food, then the unique beginner in Anindilyakwa appears to have been unlabelled (see p.97), although there is some evidence to suggest that the meaning of **aninga** is currently being extended to include all food. For example, the answer to the question **ngambuwa?** 'where are you going?' might be **aninga-wa** 'to eat' (literally 'to food'). This can be compared with **akwalyu-wa** 'fishing' (literally 'to fish'). The same construction is used for hunting any kind of animal. The extended use of **aninga** in this way has probably been influenced by increasing use of English. With a single domain of food, it would then seem necessary to suggest an additional intermediate level if the folk generic taxa are to maintain the same rank as in the biological system. If the generic taxa were dropped to the level of specific taxa in the food classification system, one would then be in the position of having a large number of specific taxa all labelled by simple primary lexemes.

Support for a single domain of food where the unique beginner is unlabelled is given by the Anindilyakwa verbs meaning 'eat'. There are three verb roots which are considered as synonyms, one **alyubar** being in common use, the other two, **eyij** and **j**, tending to be used only by older people.

Rudder (1978/79:355) has reported a single labelled taxon **maranhu** meaning 'food' in Djambarrpuyngu. Again there is a division into vegetable and meat foods and the subdivision of **gonyil** 'meat foods' closely parallels the life form and intermediate level taxa of the biological taxonomy. However in this instance **gonyil** appears to belong only to the food classification system and not to the biological system. There is no labelled taxon given in the biological classification system which could be interpreted as a unique beginner in the animal kingdom.

Chapter Five

TOTEMIC CLASSIFICATION

When I was eliciting information on various animals using questionnaires, the question seeking to establish the relationship between one species and another (see p.210ff.) seemed to present a problem. I found that the same term **adiyerrumanja** 'sibling' could be used to describe both the relationship between two taxa which were similar in form and the relationship between two taxa which were totems of the same clan. The totemic relationship seemed to cut across any biological relationships already established. It became apparent that there were significant relationships between plants and animals as totems and that discussion of the classification of plants and animals by a Groote Eylandt Aborigine would be incomplete without an examination of the ordering of plants and animals as totems.

Although Worsley (1954a, 1955, 1956, 1967) does not explicitly say so, it is clear that his discussion of Groote Eylandt totemism is restricted to clan totemism. I have found no evidence of any other form of totemism among the Groote Eylandt Aborigines. Kauffman (1978:125) implied the possibility of conception totemism but he did not support this statement in any way. Thus in order to understand their totemic system some comments must be made on the various clans, and this is where the chapter begins.

However, I should stress that much of the ground work for this chapter has been done by the linguist at Angurugu, Miss Judith Stokes. During the thirty years and more that she has spent on the island, she has added to the information on clans, their totems, their songs and their land published in turn by Worsley, Mountford, Rose and Turner. Miss Stokes was present with me as I checked a number of the totem lists with the various clan leaders. My main contributions were to add to the list of known totems, to clarify the sharing of totems between clans and to clarify the relationship of totemic classification to the biological and food taxonomies.

Having established the list of clans, I have presented the basic data on classification of plants and animals as totems in the form of a list of totems belonging to each clan. An integral part of the totemic classification system is the sharing of totems among clans. To understand the complexities of this sharing, it has been necessary to discuss clans and their myths, and clans and their land. I then discuss the list of totems in relation to other classification systems before considering Groote Eylandt totemic classification in the light of the issues raised in Chapter 1.

Clans

In Chapter 2 I said that there are fourteen named clans divided equally between two unnamed moieties. These clans are listed in Table 10. Most of the names on the list are still in general use.

However there is little agreement between the clan names and the surnames of my Aboriginal assistants, as listed on pp.229–31. For most written purposes, and thus generally in relation to non–Aborigines, the members of each clan use a surname. These names, which were chosen during the 1950's to comply with government requests, are listed in Table 10 alongside the clan names. Many of the surnames are derived from one of the clan totems, e.g. Mamarika 'southeast trade wind'. Before surnames were adopted, people referred to themselves as the people of a particular area or of a particular totem. It may be noted that the first four clans in Moiety 1 are grouped together under the name Wurrakwakwa. This name was chosen as the surname of members of one of the clans without it being realised that in fact it applied to all four clans.

Each clan can be referred to by a number of names, as becomes apparent from certain songs (Stokes and Aboriginal Advisers, 1981:13,30). Most of these names refer to one of the areas belonging to the clan. For example, the name Warnungwijarrakba literally means 'the people of Jarrakba'[41,9]. The proliferation and variety of names (including surnames) is a source of confusion when using the writings of previous researchers.

Moiety 1		Moiety 2	
Clan name	Surname[a]	Clan name	Surname[a]
Wurrakwakwa[b]			
Wurringkilyangba	Wurragwagwa	Warnindilyakwa	Mamarika
Warnungangurrkwurrikba	Yantarrnga	Warnungwamakwula	Amagula
Wurrumaminyamanja	Maminyamanja	Warnungangkwurrakba	Wurramara
Warnungwamadada	Lalara	Warnungwamulangwa	Bara Bara
		Wurraliliyanga	Wurramarrba
Warnungawerrikba	Wurrawilya	Warnungwamakarjirrakba	Wurramarrba
Warnungwijarrakba	Jaragba	Warnungangwurrerra[c]	Durila
Warnungwadarrbulangwa	Wurrabadalamba/ Bara		

[a] spelling as originally provided for government rolls
[b] name of group of four clans in Moiety 1
[c] no longer in common use – surname used in text

Table 10 Groote Eylandt clan names and surnames in current use.

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[9] Throughout this chapter these numbers indicate location shown on the endpiece map.

Locality	current spelling[a]	probable clan name
Bartalumbu	Bartalumba[67,b]	Warnungwadarrbulangwa
Angoroko	Angurugu[3,b]	?Wurrumaminyamanja
Yetiba	Yedikba[6]	Warnungawerrikba
Talakurupa	Dilyakurrkba[23]	Warnindilyakwa and Warnungwamakwula
Amakurupa	Angurrkwurrikba[26]	Warnungangurrkwurrikba
Pbara-pbara	Barrubarra[50]	Warnungwamulangwa

[a] spelling obtained in consultation with linguist Judith Stokes
[b] spelling of established place names has not been altered

Table 11 Localities of local groups recognised by Tindale (1925a:64) and their probable clan names.

Tindale (1925b:64) mentioned 'at least six local groups or sub-tribes: two larger and four smaller ones'. He did not give proper names of groups but found that they were named after the main locality in which their members lived. These localities are listed in Table 11 together with what, on the basis of more recent information, are the probable clan names. The two larger groups noted by Tindale were Bartalumbu and Talakurupa, belonging to opposite moieties. He did not mention totemism.

In his 1941 work, Rose (1960:16) recognised 'eleven main local totemic groups or clans'. He found the same two larger clans as Tindale. Like Tindale he gave localities but not proper names of clans. The eleven clans are listed in Table 12 together with the probable clan names.

Worsley (1954a:83) reported 'twelve clans... with six clans in each (moiety) - an equal arrangement which... has no special significance'. He recorded clan names which agree very closely with those in use today, as may be seen from Table 13.

Worsley noted a Wurrakwakwa group of clans but considered it to consist essentially of only two clans, the Warnungangurrkwurrikba and the Wurrumaminyamanja. He noted that the Wurringkilyangba and the Warnungwamadada were 'sometimes loosely referred to by this... name' (1954a:85) but listed them separately.

Worsley noted that the Warnindilyakwa clan included two other groups: the Warnungwamakwula and the extinct Wurrumurrkwulya. (I was told Warnungumurrkwulya is the preferred name.) I have been told that the latter group should be more closely aligned with the Warnungangkwurrakba clan. When a clan dies out, its territories are taken over by the clan most closely linked with

Locality	current spelling	Main totem(s)	current spelling	English	current English name	probable clan name
djaragba	Jarrakba[41]	**demboru**	**dimburru**	North wind	north wind	Warnungwijarrakba
anjwurugurlgba	Angurrkwurrikba[26]	**jandaña, wuruweba**	**Yandarrnga**[a] **wurruweba**	Central Hill Parrot	Central Hill red-winged parrot	Warninganguurrkwurrikba
jadigba	Yedikba[6]	**jinunjagada**	**yinungwakarda**	Eagle	white-bellied sea-eagle	Warnungawerrikba
badalumba	Bartalumba[67]	**bara**	**barra**	North West Wind	northwest monsoon wind	Warnungwadarrbulangwa
Bickerton Island		**dauwalja, wuruweba**	**duwalya wurruweba**	Curlew Parrot	bush stone curlew red-winged parrot	Warnungwamadada
dalimbo	Dalimbu[25]	**mamariga & anjandiljuba**	**mamarika angandilyuba**	South east wind & Bark canoe	southeast trade wind bark canoe	Warnindilyakwa
Woodah Island		**midjanja**	**mijiyanga**	Sailing boat	ship	Durila
umbakumba	Umbakumba[31]	**midjanja**	**mijiyanga**	Sailing boat	ship	?Warnungwamakarjirrakba
Bickerton Island		**midjanja**	**mijiyanga**	Sailing boat	ship	Wurraliliyanga
BARABATTA (amulanjwa)	Barrubarra[50] (Amulangwa)[55]	**midjanja**	**mijiyanga**	Sailing boat	ship	Warnungwamulangwa
Bickerton Island		**inigaʔga**	**yinikarrka**	A bird	hawk/kite/falcon	Warnungangurrkwurrakba

[a] Place names and personal names are not typed in bold face.

Table 12 Localities and main totems of clans according to Rose (1960: 16).

Clan	current spelling	Name of clan territory	current spelling	Location
MOIETY 1				
1. WaṇuŋaDaṟbalaŋwa	Warnungwadarrbulangwa	Badalumba	Bartalumba[67]	N.W. Groote, incl. Winchelsea I.
2. WaṇuŋaDjaragba	Warnungwijarrakba	Djaragba	Jarrakba[41]	N. Groote, incl. Eirene Archipelago
3. WuraGwaugwa (incl. WaṇuŋAŋwurugurigba and WaṇuŋAmaminjaŋmadja)	Wurrakwakwa Warningangurrkwurrikba Wurrumaminyamanja	Aŋwurugurigba Aŋuṟ̄gwa	Angurrkwurrikba[26] Angurrkwa[3] (= Angurugu)	Central and east-central Groote West-central Groote
4. WaṇuŋAmadada	Warnungwamadada	-----		West Bickerton I. (and mainland opposite Amadada
5. WurEŋgiljaŋba	Wurringkilyangba	-----		North Bickerton I.
6. WaṇuŋAwerigba	Warnungawerrikba	Awerigba (Jadigba)	Awerrikba (Yedikba)[6]	S.W. Groote
MOIETY 2				
7. Waṇidiljaugwa (incl. WaṇuŋAmagula & WuraMurugwilja)	Warnindilyakwa Warnungwamakwula (Warnungumurrkwulya)	Dalimbo (Diljagurugba)	Dalimbu[25] (Dilyakurrkba)	S.E. Groote, incl. area of Amagula River
8. WaṇuŋAmulaŋwa	Warnungwamulangwa	Chasm I. (= Barrubarra) Amulaŋwa	Chasm Island[50] Amulangwa[55]	The small mainland strip opposite Chasm I. is known as Amulangwa
9. WaṇuŋAmagadjiragba	Warnungwamakarjirrakba	Amagadjiragba	Amakarjirrakba[34]	N.E. arm of Groote
10. WaṇuŋAŋwurerigba (Durili)	(Warnungangwurrerra) Durila	Aŋwurerigba	Angwurrerrikba[86]	Woodah I.
11. WuraMaṟba	Wurramarrba	-----		South Bickerton I.
12. WuraMura	Wurramara	-----		South-central Bickerton I.

Table 13 Clan names and names and locations of clan territories according to Worsley (1954a:86–7).

it, which must be a clan in the same moiety. The territory of the Warnungumurrkwulya was taken over by the Warnungangkwurrakba clan and not the Warnindilyakwa clan. However, as Turner (1974:70–72) has noted, there is a close link through kinship terms between each of these groups.

The clan names and surnames given by Turner (1974:5–8) are listed in Table 14 together with the spellings in current use. Turner referred to clans as local groups. This term is misleading because exogamy means that a group living in an area will always include members of the other moiety (and hence from other clans). Like Worsley, he treated the Warnungwamakwula as a distinct group within Warnindilyakwa, though he noted that some Aborigines considered the two to be separate groups related ' "like brothers" by the travels of mythical beings'. I have shown them as separate groups in Table 10, partly because their territories are distinguished and partly because their members use distinct surnames (Amagula and Mamarika, respectively). Totemically, however, they are regarded as one group.

Turner listed the four Wurrakwakwa clans separately. He differed from Worsley in his application of the name Wurrakwakwa. The Wurrumaminyamanja clan is not mentioned specifically in Worsley's 1955 paper because it is included in the name WuraGwaugwa. According to Turner's informants, 'the name Wuragwagwa could not be applied to the Wuramaminjamandja as it referred collectively only to those local groups whose territories were located on the path believed to have been travelled by the mythical being 'Central Hill'. Turner therefore treated this complex as comprising just the three clans. My reasons for agreeing with Worsley on the inclusion of the Wurrumaminyamanja clan will be made clear in the final section of this chapter.

Although Turner did not list the Durila clan with the other Groote Eylandt clans, he recognised that the Durili, as he called them, were linked to Groote Eylandt clans through intermarriage and residence on the island. Although their links with Woodah Island and the adjacent mainland remain strong, they have strong mythological links with Groote clans and their territories, links which appear to set them apart from other mainland clans such as Murrungun, Ngalmi and Mirniyowan. Though members of these latter clans also live on Groote and the first language of many is Anindilyakwa, they are regarded basically as Nunggubuyu clans. They do not own any land on Groote or Bickerton but the Durila own a small pocket of land in the southeast of Groote Eylandt.

In addition, Turner (1974:72) drew attention to linkages between certain clans. For example, he ascertained that ideally an ego applies kin terms to members of other clans in such a way that the total society is divided (from ego's point of view) into four groups of clans. The rationale for these groups of clans, which are the same for each ego, is that members of each group can sing the same song.

One of the groups of clans in Moiety 1 is the four clans belonging to the Wurrakwakwa group. In this context Turner agreed that these four clans belong to one group with the remaining clans forming the second group. In Moiety 2, the first three clans listed in Table 10 form one group and the remaining four belong to the second group.

Local group	current spelling	Surname	current spelling
1. Waṇuŋauŋgeragba	Warningangkwurakba	Wuřamara	Wurramara
2. Wuřaliljaŋa	Wurralillyanga	Wuřamařba	Wurramarrba
3. Wuřäŋgiljaŋba	Wurringkilyangba	Wuřagwagwa	Wurragwagwa
4. Waṇuŋwadařbalaŋwa	Warnungwadarrbulangwa	Wuřabaḍelumba (used at Angurugu)	Wurrabadalamba
		Bařa (used at Umbakumba)	Bara
5. Waṇuŋamadada	Warnungwamadada	Lalara	Lalara
6. Waṇindiljaugwa	Warnindilyakwa		
(a) Waṇindiljaugwa	Warnindilyakwa	Mamariga (used at Umbakumba)	Mamarika
(b) Waṇuŋamagula	Warnungwamakwula	Amagula (used at Angurugu)	Amagula
7. Waṇuŋwamalaŋwa	Warnungwamulangwa	Bara Bara	Bara Bara
8. Waṇuŋamagadjeragba	Warnungwamakarjirrakba	Wuřamařba	Wurramarrba
9. Waṇuŋaŋwurugwerigba	Warnungangurrkwurrikba	Jandařŋa	Yantarrnga
10. Wuřamaminjamandja	Wurrumaminyamanja	Maminjamandja	Maminyamanja
11. Waṇuŋwudjaragba	Warnungwijarrakba	Djaragba	Jaragba
12. Waṇuŋawurigba	Warnungawerrikba	Wuřawilja	Wurrawilya
13. Waṇuŋmurugulja	Warnungumurrkwulya	(group extinct)	

Table 14 Clan names and local groups according to Turner (1974:5–8).

Although the two moieties are unnamed, they have been generally referred to in the literature as Moiety 1 and Moiety 2. This numbering is not necessarily consistent. Miss Stokes and I have followed Worsley's earlier use. Both Turner (1980:39) and Kauffman (1978:101) have recently reversed the numbering of the two moieties as given by Worsley, although Turner followed Worsley in his thesis (Turner, 1974:88, see also Appendix 1.4.4 in Waddy, 1984).

Kauffman (1978:62–65) listed all the clans represented on Groote Eylandt in his thesis on Groote Eylandt clan structure and organisation. He compared his list of clan names with the data obtained by Worsley, Rose and Tindale, as I have just done. However he took the grouping of clans which is used in the distribution of clan grants from the mining royalties held by the Groote Eylandt Aboriginal Trust and suggested that this arrangement of clans represents processes of fission and

fusion between various clans. The grouping of clans is given in Table 15 together with the spellings in current use.

The distinction between Amagula and Mamarika clans has already been noted. The distinction between Bara and Wurrabadalamba is based on the use of different surnames and on residence in different communities, viz. Umbakumba and Angurugu respectively. Again there is no distinction totemically. Further comments will be made in the final section of this chapter.

Clans	current spelling
Amagula	Amagula
Mamarika	Mamarika
Bara Bara (incl. Wunambi)	Bara Bara (incl. Wanambi)
Wurramarrba (incl. Durrilla Wanungamagajirragba)	Wurramarrba (incl. Durila Warnungwamakarjirrakba)
Wurramara (incl. Nundirribala)	Wurramara (incl. Nundhirribala)
Nunggumadbarr (incl. Mirniyowan/ Nunggarrgalu)	Nunggumadbarr (incl. Mirniyowan/ Nunggarrgalu)
Maminyamanja (incl. Wurrawilya)	Maminyamanja (incl. Wurrawilya)
Yantarrnga (incl. Wuragwagwa-Wurringilyangba)	Yantarrnga (incl. Wurragwagwa-Wurringkilyangba)
Bara (incl. Jaragba)	Bara (incl. Jaragba)
Wurrabadalamba (incl. Murungun)	Wurrabadalamba (incl. Murrungun)
Lalara (incl. Ngalmi)	Lalara (incl. Ngalmi)

Table 15 Clans as funded by the Groote Eylandt Aboriginal Trust in 1977, according to Kauffman (1978:65)

Clans and their totems: the distribution of totems

The clan totems are listed in Table 16. The lists were initially compiled from every known reference (published or unpublished) to Groote Eylandt totems, and from the answers to the questionnaires used in eliciting data. Then every list was checked with one or more leaders of the appropriate clan. Additional totems came to light as my understanding of the myths increased. Many species mentioned seemingly incidentally in myths turned out to be clan totems.

It should be noted that the list of totems includes natural features, such as prominent rocks and rivers, and natural phenomena, such as wind and rain, in addition to plant and animal species.

In gathering his data, Rose (1960:212-18) focused on totems and their associated myths in relation to the clan's locality. Mountford (1956:61-100) was interested in the totems as they appear in painting, song and myth. He noted place names when mentioned by his informants, but gave no indication of the clans. Worsley (1954a:90) tabulated the totems of each clan, after first noting the clan territories. He then discussed the totems and outlined some of the associated myths. Turner (1974:72-93) gave his attention to myths linking the various clans and their territories. All the totems he recorded are principal totems of Bickerton 'local groups'.

To ensure accurate comparison of data, the names of the totems given by each of these workers were listed in my thesis (1984, Appendix 1.4), together with current spellings and the clan names. I added comments wherever there was disagreement about the allocation of a totem to a clan.

It became apparent that, although some totems are owned exclusively by one clan, most are shared among clans in a complex pattern. Some of the shared totems are shared equally by the clans concerned. For example, the Wurringkilyangba, Warnungangurrkwurrikba and Wurrumaminyamanja clans share one set of totems equally, and the Warnindilyakwa and Warnungwamakwula clans another set. In other instances however, a shared totem is said to belong first to one or more clans but also to other clans. This was particularly evident among Moiety 2 clans. Most sharing of totems occurs between clans in one of the four groups of clans noted by Turner, but some sharing occurs between clans of the two groups in the one moiety. Because of the complexity of sharing, many clan totems mentioned in the remainder of this chapter have only been referred to the clan which is listed first in Table 16, often without additional comment.

Turner's suggestion that the sharing of totems is usually linked to the mythical travels of totemic creatures has already been noted on p.36. Worsley (1954a:101) had earlier noted that the points where these creatures paused in their travels may be in clan territories other than that where the totem found its final resting place. The points where the creature merely paused were in territories of clans claiming some association with the totem, but the final resting place appeared to be in the territory of the clan claiming the closest association with the totem. Nevertheless Worsley doubted that 'there (was) any point in trying to distinguish which clan is the 'real' owner of the totem'. I found however that every clan leader with whom I spoke readily made the distinction between totems which they say are shared equally by several clans and those which they say belong first to one clan and then are shared unequally with others. Considering that more

MOIETY 1

Warnungwamadada, shared also with other Wurrakwakwa clans

duwalya	bush stone-curlew	Burhinus magnirostris
dakwungaringara		
wurrenjenjinyirra	kingfisher - any kind	Ceyx spp.[a]
jirridirdi		Halcyon spp.
yingakiya	pied goose	Anseranas semipalmata
yimabalya		
mikirra	spike rush	Eleocharis dulcis
wurrawumbinya	black duck	Anas superciliosa
	grey teal	Anas gibberifrons
	water whistling duck	Dendrocygna arcuata
	grass whistling duck	Dendrocygna eytoni
	green pygmy goose	Nettatus pulchellus
	little grebe (Aust.)	Tachybaptus novaehollandiae
mambinya	dusky moorhen	Gallinula tenebrosa
mamura	Burdekin duck	Tadorna radjah
wurrilarrkwarba		
angwurrirda	pied butcherbird	Cracticus nigrogularis
	Australian magpie	Gymnorhina tibicen
dubulkuma	Merten's water goanna	Varanus mertensi
	Merten's water monitor	
yangkamarnindangwa	western brown snake	Pseudonaja nuchalis
?yungwingma		
yeyerrindangwa	king brown snake	Pseudechis australis
yilerrbenda		

Warnungangurrkwurrikba, Wurringkilyangba and Wurrumaminyamanja, shared also with Warnungwamadada

Yandarrnga	Central Hill	
wurruweba	red-winged parrot	Aprosmictus erythropterus
mayirrmilya	red-collared lorikeet	Trichoglossus rubritorquis
malyirrmilya		
majija		
dumawurdumurda	wedge-tailed eagle	Aquila audax
yuweba	meat ant	Iridomyrmex sp.
wurringma	cockroach - any kind	Blattodea
wurrungwingma		
yimaya	ground beetle - any kind	Carabidae
yinumaninga	red wild apple	Syzygium suborbiculare
mabanda	yellow hibiscus	Hibiscus tiliaceus
milyurrkwa	yarl tree	
yilerrba	Livlston palm	Livistona inermis
marnba	palms over 2m	
mamukiyaliya	crab - 'the shy one'	Myomenippe fornasinii
dadikakwakwa	cone shell	Conus mustellinus
	cone shell	Conus coronatus
	cone shell	Conus millaris
	cone shell	Conus suturatus

Table 16 Groote Eylandt clan totems

Yinuma	track of sawfish, from sediment flow of Angurugu R. to sediment flow of Salt Lake	
Ebirrikbawiya	reef near mouth of Angurugu River	
yukwurrirrindangwa	sawfish	Pristis spp.
yilyanga	common shovelnosed ray	Rhinobatos armatus
yinungwabarra	big ones	
yinungwulyilya		
amaduwaya	type of stingray	
yimaduwaya	young ones	
amarbirra	prob. cowtail ray	Dasyatis sephen
yimarbirra	young ones	
aralarra	type of stingray	
daralarra	young ones	
amarnindangwa	spotted eagle-ray	Aetobatus narinari
dumarnindangwa	young ones	
angurrkbungurrkbirra	prob. devil ray	Manta alfredi
arrba	long-tailed ray	Himantura uarnak
darrba	young ones	

Warnungawerrikba

yinungwakarda	white-breasted sea-eagle	Haliaeetus leucogaster
yingakarda		
yinungwakingaka		
yirrbiyiyindangwa	immature birds (not fledglings)	
merrukwurra	black-finned long-tom	Belone ?melanota or Belone ?maris-rubri
		Belone ?gavialoides
	prob. black-spot long-tom	Belone strongylura
wujilukwa	barred long-tom	Ablennes hians
alyangarra	snub-nosed garfish	Arrhamphus sclerolepis
	short-nosed garfish	Hyporhamphus quoyi
	grooved razor-fish	Centriscus scutatus
akwurerra	black-barred garfish	Hemiramphus far
	prob. three-by-two garfish	Hemiramphus robustus
miyalkwa	starfish - any kind	Stelleroidea
miyanga	firesticks	
duwankirrariya	osprey	Pandion haliaetus
Diduwa	Castle Rock	
Dadirringka		
yimurnda	head louse	Pediculus humanus capitus
dadikawilya	plain-coloured cone shells	Conidae
dadikalyakwa		
dumarringamurra	cricket	Teleogryllus commodus
dumamukwarbarramurra	tree cricket	Madasumma affinis
dumurnjirrirra	mole cricket	Gryllotalpa sp.
		Hadrogryllacris sp.
dumaminjarrminjarrma	grasshopper - any kind	Acrididae
		Pyrgomorphidae
		Tettigoniidae

Table 16 Groote Eylandt clan totems

marringa	night, sleep	
awija	mist	
yelyiya	little red flying fox	Pteropus scapulatus
yilyikarrmur.da		
wurramalkwa	black flying fox	Pteropus alecto gouldii
murungwena	jungle	
	monsoon forest	
yilyakwa	bee	Trigona (Tetragona) hocklngsi
angaluwa	prob. scale insect	
enindurrkwa	swamp banksia	Banksia dentata
mularrngkwa	white berry bush	Securinega virosa
dijaruwa	friarbird	Philemon spp.
mabiyirra	type of smooth spear	

Warnungwadarrbulangwa, shared also with Warnungwijarrakba

yinungkwura	northwest monsoon wind	
barra		
dukwururrkwa	brolga	Grus rubicundus
derrengbirra	Sarus crane	Grus antigone
dilyirrmarra		
dajinungkwa	echidna	Tachyglossus aculeatus
dijinungkwa	spiny ant-eater	
dinungkwulangwa	dugong	Dugong dugon
mawurrira	seagrass	Enhalus acoroides
makabaramurra	white-spotted shovelnosed ray	Rhynchobatus djiddensis
mangbarna	young ones	
menikarrmungkwar.da	very small ones	
mungwarra	hammerhead shark	Sphyrna lewini
dirrkba	masked plover (N. Aust.)	Vanellus miles
mamarra	small-leaved paperbark	Melaleuca sp. aff. cajuputi
mularrkba		
dangirnderra	red-tailed black cockatoo	Calyptorhynchus magnificus
dumarnkinungkwura	woodswallow	Artamus spp.
wurramurajirra	whimbrel	Numenius spp.
wurranyungwunyamurra	eastern curlew	Numenius madagascarlensis
dukwuja	black-faced cuckoo-shrike	Coracina novaehollandiae
	white-bellied cuckoo-shrike	Coracina papuensis hypoleuca
yingwa	Torresian crow	Corvus orru
wurramukwa	evil spirits	
dambul	ceremonial stick with feathered string	
dinina	mosquito	Aedes spp.
	mosquito	Tripteroides sp.
dumaja	mosquito	Anopheles bancroftii
dalyukwurramurra		
yibuwa	long-finned mullet	Liza strongylocephalus
marrakwa	sea-fan	
merruwa	current	
mabilya	tide	

Table 16 Groote Eylandt clan totems

dangwurnda	hooked spear	
malka	hooked spear	
yalka		

Warnungwijarrakba, shared also with Warnungwadarrbulangwa

dimburru	north wind	
dirrimala		
lungkwurrma		
yiningburna	mythical snake	
yimarndakuwaba	northern blue-tongued	Tiliqua scincoides
kwurrirda kwurrirda	lizard	intermedia
yukurrkwa	tawny frogmouth	Podargus strigoides
yukwurakwura	nightjar	Caprimulgus spp.
membirrkwa	Cooktown ironwood	Erythrophleum
mardarra		chlorostachys
makwurra	fish spear	
mungarrkikba	2-piece hooked spear	
kunkwurna	prob. turrum - 125-175cm	Carangoides
		fulvoguttatus
yilekbiyerra	?rake-gilled mackerel	Rastrelliger kanagurta
	?trevally sp.	
yembirrkwa	prob. Venus tusk-fish	Choerodon venustus
yimilyilyarra		
yinikambangena	young ones	
yinungwenimburna	blue tusk-fish	Choerodon cyanodus
yukwunimur.da	black-spot tusk-fish	Choerodon schoenleinii
yukwunimilya		
dingarrkwa	sea urchin - any kind	Diadema setosum
damaburna	prob. coral rock-cod	Epinephelus corallicola
	prob. coronation trout	Variola louti
	prob. coral trout	Plectropoma maculatum
	footballer trout	
	prob. blue-spotted rock-cod	Cephalopholis cyanostigma
amungkwa	tricky snapper	Lethrinus frenatus
	red-finned emperor	Lethrinus laticaudus
	spangled emperor	Lethrinus nebulosus
karawarra	prob. long-nosed emperor	Lethrinella miniata
	prob. sweetlip emperor	Lethrinus chrysostomus
yijarra	common tern	Sterna hirundo
	lesser crested tern	Sterna bengalensis
	roseate tern	Sterna dougalli
	black-naped tern	Sterna sumatrana
	gull-billed tern	Gelochelidon nilotica
yilyambarra	Caspian tern	Hydroprogne caspia
	crested tern	Sterna bergii
dumabiyandangwa	brown booby	Sula leucogaster
yinibirra	lesser frigatebird	Fregata ariel
dengbajamurra	beach stone-curlew	Burhinus neglectus
wurrawiyemba	warrior	
yinungwurnda	cicatrice	

Table 16 Groote Eylandt clan totems

MOIETY 2

Warnindilyakwa and Warnungwamakwula

mamarlka yiniyerrma	southeast trade winds	
marlja	tar-vine	Boerhavia diffusa
dakwulyingarrijanga	star	
duwarruwarra	evening star, i.e. Venus	
Dilyakurrkba	southeast peninsula of Groote Eylandt	
yirumba yiningawerruwa	silver gull	Larus novaehollandiae
yikba	pheasant coucal	Centropus phasianinus
dubudekbuda	pied oystercatcher	Haematopus ostralegus
dakwurrinya dubudekbuda	sooty oystercatcher	Haematopus fuliginosus
yalyuwarra	sugar glider	Petaurus breviceps
wurrumiyabiya wurriyemba	praying mantis	Phasmatidae
wurrumaburrkwaja	stick insect	Eurycnema goliath
alabura emenungkwa	stringybark	Eucalyptus tetrodonta
mamalerrbirra	hooked spear	
mungarrambilya	hooked spear	
amureba	stringybark sheets	
ajamurnda	stringybark coolamon	
ekwa	stringybark coolamon	
angandilyuba alamukwa	stringybark canoe	
yinikarrbiyama	caterpillars, especially with **enungkwa** (spears)	
yimurarra	milk-fish	Chanos chanos
yeka	prob. bonefish	Albula vulpes
alkirra	oxeye herring	Megalops cyprinoides
	Hamilton's anchovy	Thryssa hamiltoni
yilyangbilyangbada	prob. flat-tailed mullet	Liza dussumieri
	prob. sea mullet	Mugil cephalus
yibarungkwa	prob.	Allanetta mugiloides
birrija	mullet	Valamugil buchanani
	prob. blue-tailed mullet	Valamugil sehell
dadikarrijijakba dadungwangwarikba	olive shell	Oliva oliva
	(Arabic cowry - young (ones)	Cypraea arabica)
	(air-breathing ear shell	Elloblum auriajudae)
dadikalyarruwarra shells	some volutes and cone Conidae	Volutidae
dungkwurra	bridled tern	Sterna anaethetus
	common noddy	Anous stolidus
warnungwenimbalubu warnungkwarra	dingo	Canis familiaris

Table 16 Groote Eylandt clan totems

Warnindilyakwa, Warnungwamakwula and Warnungwamakarjirrakba

wurrenumalyukwa	purple tusk-fish	Choerodon cephalotes
wurralyukwa		
wurruburrkba	seven sisters and Orion's	
wurrubirrimba	belt	
birrimburrnga		

Warnindilyakwa, Warnungwamakwula, Warnungwamakarjirrakba and Durila

yimuwarraka	green turtle	Chelonia mydas
yilarrkira	very large green turtle	
mamawura	sun	
maninga	siphonophore (white disc	Porpita sp.
minyangma	with blue tentacles)	
marrkarnyerra	?similar to **maninga**	Velella sp.
maminderrma		
mamungwulya	types of seaweed	Dictyota dichotoma var. intricata
		Corallopsis urvillei
		Gracilaria sp.
		Sargassum peronii
	prob. broad-leaved species	Sargassum sp.
	prob. included	Eucheuma muricatum
		Eucheuma serra
		Sarconema filiforme
minimbaja	types of seaweed	Spyridia filamentosa
		Amphiroa fragillissima
		Hypnea sp.
	prob. included	Gracilaria edulis
		Gracilaria verrucosa
		Acanthophora spicifera
	prob. included	Laurencia papillosa
		Laurencia obtusa var. majuscula
	prob. included	Tolypiocladia glomerulata
	prob. fine-leaved species	Sargassum sp.
		Hydroclathrus clathratus
		Halophila spinulosa
		prob. Nellia oculata
muwara	type of seaweed	Chlorocladus australasicus
muwara	float used on turtle harpoon	
milyurrkwa	calm sea	
arngkirra	phosphorescence	

Warnindilyakwa, Warnungwamakwula, Warnungwamulangwa and Warnungwamakarjirrakba, shared also with Warnungangkwurrakba, Wurraliliyanga and Durila

ajiringka

Table 16 Groote Eylandt clan totems

Warnungangkwurrakba

yinikaburra	scrub-fowl	Megapodius freycinet
yukulbanda	barramundi	Lates calcarifer
	sand bass	Psammoperca waigiensis
ajarrkarla	young ones	
Malirrba	rocky outcrop on Bickerton Island	

Warnungangkwurrakba, Warnindilyakwa and Warnungwamakwula

yinikarrka	brown goshawk	Accipiter fasciatus
yinumabar.darra	collared sparrowhawk	Accipiter cirrhocephalus
	grey goshawk	Accipiter novaehollandiae
	crested hawk	Aviceda subcrista
	spotted harrier	Circus assimilis
	black-shouldered kite	Elanus notatus
	brown falcon	Falco berigora
	nankeen kestrel	Falco cenchroides
	little falcon	Falco longipennis
	peregrine falcon	Falco peregrinus
	black kite	Milvus migrans
	owlet nightjar	Aegotheles cristatus
yabangwa	mythical python/sea snake	
duwurruwllya		
duwalja	water python	Liasis mackloti
kwundirra	olive python	Liasis olivaceus
demebumurra		
dumadbarruwara		
Makwulyarra	Amakwula River	
Mungukwa		
wurrangalya	?freshwater spirits	
kuwak	Indian koel	Eudynamys scolopacea

Warnungangkwurrakba, Warnindilyakwa and Warnungwamakwula, shared also with Warnungwamulangwa

dilaburnda	frog - any kind	Leptodactylidae
dilyaburnda		Hylidae
arja		
dadingakwungukba		
akungwa	freshwater	
yelyukwa	rain	
angalya	place, land	
malarra	stone	

Table 16 Groote Eylandt clan totems

Warnungwamulangwa, shared also with Wurralilyanga, Warnungwamakarjirrakba, and Durila

Barrubarra	Chasm Island	
dinginjabena	prob. spinner dolphin	Stenella cf. longirostris
	prob. bottlenosed dolphin	Tursiops truncatus
dilerrirungwa	prob. grey dolphin	Grampus griseus
dirrirruwa	very large dolphin	
dumurekingiradangwa	Indopacific humpback dolphin	Sousa chinensis
aringkawa	prob. snubfin dolphin	Orcaella brevirostris
yerrumilya	hard corals	
dambukwurnumurra	brahminy kite	Hallastur indus
mungarniyenda	false trumpet shell	Syrinx aruanus
mungarnungkwarna	spider shell	Lambis truncata
mungadumarna	spindle cowry	Volva volva
yingadumarna	volute shell	Cymbiola sophiae

Warnungwamulangwa, shared also with Warnungangkwurrakba

yukwurna	baler shell	Melo amphora
yimundungwa	cypress pine	Callitris intratropica
miyeja	paddle	

Wurralilliyanga, shared also with Warnungwamulangwa, Warnungwamakarjirrakba and Durila

mijiyanga	ship	
dumbala	sail	
Meningumakaja	Makassan man	
jangajanga	domestic fowl	
yingakbarrnga	short cut-leaved palm	Ptychosperma elegans
kalkwa	coconut	Cocos nucifera
dadikumawarrkuwarrka dakuwarrkuwarrka	spider - any kind	
marndakirriyerra	long yam	Dioscorea transversa
murungkwurra	round yam	Dioscorea bulbifera
dumungarniyenda	dragonfly - any kind	Odonata
	lacewing - any kind	Neuroptera
	damselfly	Osmylops sp.
		Nososticta fraterna
mamukilyikarrkuwuruma	aeroplane	

Table 16 Groote Eylandt clan totems

Warnungwamakarjirrakba, shared also with Warnungwamulangwa, Wurraliliyanga and Durlla

darrawurukukwa	peaceful dove	Geopelia striata
	bar-shouldered dove	Geopelia humeralis
	diamond dove	Geopelia cuneata
wurrumiliyelya	Burney vine	Malaisia scandens
	fire vine	
	crow ash	
merra	rope, string	
yimurralya	green tree ant	Oecophylla smaragdina
dumanda	reef heron - blue form	Egretta sacra

Durlla, shared also with Warnungwamulangwa, Wurraliliyanga and Warnungwamakarjirrakba

angwura	falling star, fire	
angwarra	smoke	
amarnina	ashes	
yuwala	mythical snake	
dingkawa	mangrove heron	Butorides striatus
yuwarjerra	skink	Carlia spp.
	skink	Cryptoblepharus spp.
	skink	Menetia greyii
	skink	Notoscincus spp.
amarndirra	grass-leaved convolvulus	Ipomoea graminea

Durlla, Warnindilyakwa and Warnungwamakwula

bankwuja	prob. tiger shark	Galeocerdo cuvieri
	prob. whale shark	Rhiniodon typus
yimeyebirrikba	young ones	
yiyebirrikba	young ones	
yikalyamurra	young ones	
amekekilyuwa	Queensland halibut	Psettodes erumei
	?black pomfret	Parastromatus niger

[a] Details of scientific species have been simplified where possible and appropriate in this table. See Appendix IV for full details.

Table 16 Groote Eylandt clan totems

than two hundred totems are involved, there has been a very high level of agreement (80–90%) between clan leaders in relation to sharing of totems.

To establish a person's totemic affiliation, one asks, 'What is your song **emeba**?' or 'What do you sing?' The answer will be one of the more important totems belonging to his particular clan or the group of clans to which he belongs. However the same clan song may refer to other species which he would also call totems.

All of these totems may be referred to as **alawudawarra** or **amalawudawarra**. The prefix **am–** means 'belonging specifically to'. Worsley (1954a:107) noted that the word **alawudawarra** refers primarily to a story or myth but it may be used to refer to 'string-figures, paintings, and any object, especially small objects, of an intriguing or attractive nature'. I have occasionally been told that **alawudawarra** is the story and **amalawudawarra** is the totem (in reference to a particular totemic animal). Rose (1960:212) stated that 'On Groote Eylandt, a totem to the aborigine's mind is that **alauwudawara** about which he makes songs.'

One of the chief functions of the totems is to express the unity and identity of the clan or group of clans. I pointed out at the beginning of this chapter that the term for sibling could be used to express the relationship between two totems belonging to the same clan(s). In fact the same term can be extended to all members of the clan(s) which own two such totems. There is a strong sense of relationship between clan members and their totems. Personal names of clan members are derived from the activities of totemic creatures as expressed in clan songs (Stokes, 1975). Thus names are a further means of identity with the totem. Rose (1960:212) claimed that 'one of the chief functions of the totems is to provide songs for the camp fire at night'. Singing around the campfire, whether for pleasure or as part of a ceremony, is an expression of unity and identity.

Rose (1960:212) also noted that 'Totems are as a rule traced through the father but this is only because it is the father or the elder clan brother who teaches the **alauwudawara** to the younger men or youths.' Because the totems belong to the clan and clan membership is patrilineal, then totemic affiliation is also patrilineal. Ownership of totems is not conferred by the teaching of clan songs. Rose may have been misled by a son learning to sing the song of a different totem from his father, whether one belonging to the same clan or one shared with another clan. A man normally only sings about those totems which his clan owns or about those which his clan shares with another clan.

Clans and their myths: the basis of sharing of totems

Each writer on Groote Eylandt totemism has referred to myths associated with totems. As noted in the previous section, the term **alawudawarra** may be translated as myth or story, but this term is also commonly used to refer to the totems of a clan. In fact most, though by no means all, totems feature in myths, some more prominently than others. Some totems are included in more than one myth. However not all myths are about totemic creatures. Only those myths which refer to specific totems may be owned by a clan or group of clans, in the same way as the totem is owned.

In this book, I am using the term 'myth' in the broad sense used by Hiatt (1975:3), 'to mean a traditional narrative which in part describes things that do not occur'. I am concerned only with those myths which are part of the ordinary oral literature of the Aborigines of Groote Eylandt and not with any myths of ceremonial significance. My concern has been to understand the way in which myths may explain the distribution and association of totems among the clans.

A list of Anindilyakwa myths is given in Table 17. This list includes all the myths of which I am aware, both totemic and non-totemic. It seemed appropriate to see the totemic myths in relation to the total corpus of myths rather than in isolation. Totemic myths are readily indicated by their clan ownership since non-totemic myths are not owned.

I have found it helpful to distinguish six areas of interest which the myths may be said to cover. These six areas are:

i) explaining the origins of natural features through the activities of totemic beings, often involving the travels of those beings,
ii) explaining the origins of natural phenomena,
iii) explaining the origins of animal features,
iv) explaining the origins of introduced items (e.g. ships),
v) describing the naming of places, and
vi) relating to the behaviour of people.

Myths dealing with the last issue do not normally belong to any particular clan. Myths covering the third area, explaining the nature of animals, do not necessarily belong to a particular clan, even if one of the animals is a totem. Myths in each of the other categories normally belong to a particular clan or group of clans. Myths covering the fifth area are often incorporated into myths covering the first area.

It is often difficult to determine if there is one myth or several, especially with longer myths. Often one part is given and then another, and only later does one realise all the parts are connected.

Most of the myths reported by Rose (1960:216–18) and Mountford (1956:62–101) belong to the first category. Although Worsley (1954a:91–103) did not give a great deal of detail for most myths, those outlined by him again deal mainly with the first issue. Turner (1974:73–87) concentrated on those myths from the first category which linked the various clans together.

Worsley (1954a:102–03) was puzzled that there should be what he called 'single' totems, i.e. totems 'which have no myth or traditional places associated with them, and where all trace of its origin or mythical validation appears to have been lost'. He thought them to 'have generally been borrowed from mainlanders', but did not say why. While it is possible that all totems are derived from the mainland, in the sense that humans came from there, it seems to me that a fairly clear distinction is made between what belongs to the mainland clans and what belongs to Groote Eylandt clans. A number of apparent instances of single totems have turned out to be linked with a myth or even to be significant characters in myths linking several areas together. The travels of **Darrawurukukwa** the Dove and **Bankwuja** the Tiger shark are two examples of the latter.

Anindilyakwa name	English name	Clan ownership	Reference	Type	Other animal and plant species of significance in story
Angandilyuba	Bark canoe	Warnindilyakwa and Warnungwamakwula	Worsley, 1954a:102 Rose, 1960:216	4	stringybark
Bankwuja	Tiger shark	Warnindilyakwa and others	Worsley,1954a:102 Mountford, 1956:82 Rose, 1960:216	1	dolphin, dove Queensland halibut
Dakuwarrkuwarrka	Spider	Wurramarrba	Stokes, 1972:27-8	1	long yams
Damarukwa	Whirligig beetle				
Dambukwurnumurra akwa Yukwurna	Brahminy kite and Baler shell	Warnungwamulangwa	Mountford, 1956:88	1	?Nebiramurra
Dambul	see **Wurramukwa**				
Dangarninyarrumina (Dingindebumina)	Old woman in the moon		Stokes, n.d.	1	**marruwayija** 'rush' + ?tamarind tree
Darrawurukukwa	Dove	Warnungwamakarjirrakba	Mountford, 1956:69 Rose, 1960:216 Turner, 1974:76-7, 1980:40	1,3,5	spider, long and round yams
Diduwa (Dadirringka)	Castle Rock	Warnungawerrikba	Turner, 1974:79, 1980:41	1	head louse, Emerald River
Dilaburnda	Frog	Warnungangkwurrakba and others	Mountford, 1956:65	1	freshwater
Dingaluwa	Hawksbill turtle				

Table 17 Summary of Anindilyakwa myths

Anindilyakwa name	English name	Clan ownership	Reference	Type	Other animal and plant species of significance in story
Dingarrbiya akwa Yimarndakunaba	Crocodile and Blue-tongued lizard		Moody, 1951 Stokes, n.d.	(2),3	
Dinginjabena	Dolphin	Warnungwamulangwa	Stokes, 1972:28	1	spider shell, Chasm Island, dove
Dingirnarra	Mythical woman	Warnungwamakarjirrakba		1	
Dingkawa akwa Manda	Mangrove heron and Great-billed heron	Durila		?6	
Dinungkwulangwa	Dugong	Warnungwadarrbulangwa	Mountford, 1956:65	1	
Dinungkwulangwa akwa Dajinungkwa	Dugong and Echidna	Warnungwadarrbulangwa	Worsley, 1954a:102 Rose, 1960:216 Stokes, 1972:23-4	3	
Dirimba akwa Mangkarrkba	Thorny or rough-skinned ray and wild plums			?2	
Dubudekbudi-kiya	Pied oystercatchers	Warnindilyakwa and others		1,?6	crow, sugar glider
Dukwururrkwa	Brolga	Warnungwadarrbulangwa	Stokes, n.d.	1,3,5	
Dumakbula	Pelican			?	
Dumaminjarrminjarrma	Grasshopper	Warnungawerrikba			mosquito
Dumarringamurra	Cricket	Warnungawerrikba			

Table 17 Summary of Anindilyakwa myths (continued)

Anindilyakwa name	English name	Clan ownership	Reference	Type	Other animal and plant species of significance in story
Dumekalya or Nimimba	Jabiru or Blind man		Stokes, n.d.	6	
Duwalja	Water python	Warnungangkwurrakba and others	Cole, 1973:28	5	
Duwedirra akwa Yibilyubilya	Little corellas and Lightning			3	
Duwurruwilya Yabangwa	Mythical snake	Warnungangkwurrakba and others	Worsley, 1954a:92 Rose, 1960:216 Stokes, n.d. Turner, 1980:40	1	(**duwurrengwurra** 'sea snake'), Amakwula River
Jejabun	Mythical man	Warnungwamakwula	Moody, 1951 Mountford, 1956:92 Cole, 1973:29 Turner, 1980:42	1,3	burrawang
Karriyaburaka	Karriyaburaka		Stokes, n.d.	6	
Kuwak	Koel	Warnungangkwurrakba and others		?	
Mamawura akwa Yimuwarraka	Sun and Green turtle	Warnindilyakwa and others		?	
Nijiyanga	Ship	Wurralilijanga	Worsley, 1954a:97-9 Mountford, 1956:98 Rose, 1960:217 Turner, 1974:75, 1980:40	4	

Table 17 Summary of Anindilyakwa myths (continued)

Anindilyakwa name	English name	Clan ownership	Reference	Type	Other animal and plant species of significance in story
Mungwarra	Hammerhead shark	Warnungwadarrbulangwa	Mountford, 1956:86	1	
Neblramurra **akwa** Ningayawuma	Two mythical men	Warnungwijarrakba	Mountford, 1956:63	1	**kunkwurna** 'turrum'
Nubardubarda	Nubardubarda		Moody, 1951 Stokes, n.d.	6	
Warnikikbadika	Honeyeater				burrawang nuts
Wurramukwa/ Dambul	Evil spirits/ Hollow log coffin	Warnungwadarrbulangwa	Mountford, 1956:63 Turner, 1974:79-81 1980:42	?6	
Yandarrnga	Central Hill	Wurringkilyangba and others	Worsley, 1954a:91-2 Mountford, 1956:62 Rose, 1960:217 Turner, 1974:82-6, 1980:41	1	red-winged parrot, stingrays and shovelnosed rays, sawfish, hibiscus, etc.
Yaraja akwa Yimarndakuwaba	Goanna and Blue-tongued lizard			3	
Yembirrkwa	prob. Vénus tusk-fish	Warnungwijarrakba	Mountford, 1956:84	1	
Yiburada akwa Wurruwarda	Wallaby and Dog			2,?6	burrawang
Yilyakwa	Sugar-bag	Warnungawerrikba	Mountford, 1956:89-90	?1	(?increase ceremony only)

Table 17 Summary of Anindilyakwa myths (continued)

Anindilyakwa name	English name	Clan ownership	Reference	Type	Other animal and plant species of significance in story
(Yi)Mawura	Nautilus shell (?man)		Moody, 1951 Stokes, n.d.	?6	
Yimurralya	Green tree ant	Warnungwamakarjirrakba			
Yimuwarraka	Green turtle	Warnindilyakwa and others	Mountford, 1956:71-2 Rose, 1960:216 Cole, 1973:29	1	
Yimuwarraka akwa Dinungkwulangwa	Green turtle and Dugong			3	**merrija** 'kurrajong'
Yingwa	Crow	Warnungwadarrbulangwa	Mountford, 1956:73 Stokes, n.d.	1	connected to **Dubudekbudi-kiya**
Yinikarrka	Brown goshawk Black-shouldered kite	Warnungangkwurrakba and others	Worsley, 1954a:93,103 Mountford, 1956:71-2 Rose, 1960:217 Stokes, 1972:28 Turner, 1980:40	1	
Yiningburna	Mythical snake	Warnungwijarrakba	Mountford, 1956:79 Stokes, 1972:25-6 Cole, 1973:26-7	1	
Yinungkwura	Northwest wind	Warnungwadarrbulangwa	Turner, 1980:42	2	
Yinungwakarda	Sea-eagle	Warnungawerrikba	Mountford, 1956:67-8 Turner, 1974:77-9 1980:41	1	

Table 17 Summary of Anindilyakwa myths (continued)

Anindilyakwa name	English name	Clan ownership	Reference	Type	Other animal and plant species of significance in story
Yinungwakarda akwa Duwankirrariya	Sea-eagle and Osprey	Warnungawerrikba	Worsley, 1954a:93 Rose, 1960:217 Stokes, 1971(1):7-12	1,3,5	**merrukwurra** 'long-tom'
Yirumba akwa Yikba	Seagull and Pheasant coucal	Warnindilyakwa and others	Stokes, 1972:226-7	2,3	southeast wind, rain
Yukurrkwa akwa Yukwurakwura	Frogmouth and Nightjar	Warnungwijarrakba		3,?4	**membirrkwa** 'ironwood'
Yukwurna	Baler shell	Warnungwamulangwa		1	cypress pine
Yukwurrirrindangwa	Sawfish	Wurringkilyangba and others	Worsley, 1954a:92 Mountford, 1956:75 Rose, 1960:218 Stokes, 1972:26 Turner, 1974:86-7, 1980:41	1,5	stingrays, shovelnosed rays
Yuwala	Mythical snake	Durlla		1,3	mangrove heron, skinks, grass-leaved convolvulus

Table 17 Summary of Anindilyakwa myths (continued)

Clans and their land: an expression of totemic identity

The activities of the various totemic beings mentioned in the songs and myths occurred at particular places which may be referred to as totemic sites. These places are normally within the territory of the clan that owns the song or myth. As Peterson (1972:29) has said, 'the attachment of totems to locality is fundamental to Australian totemism'. The songs, the myths, the totems and the land are all closely intertwined. Together they express the identity of the clan.[10] This is why the localities and place names given by early workers could so readily be equated with a clan name, even when no totems were mentioned.

A problem, for Rose and Worsley in particular, was that certain clans appeared to lay claim to more than one area. Rose (1960:17) noted apparent confusion over the locality of some Aborigines of the Warnindilyakwa clan, some giving 'as their locality amagula or murugwilja' when their totems were the same as the Dalimbu Bay group.

Worsley (1954a:89) noted that the Warnungwijarrakba

> have a certain peculiarity in that they have claims to special connections with a small area on the central south coast in addition to their northern territory. This area, Jiŋagumandja (Yingakumanja), is said to be associated with the clan, not by virtue of residence, etc. but because of mythological links through the totemic myth of the Porpoise.

The area around Yingakumanja[15] is still recognised by some as belonging to the Warnungwijarrakba, but it is said that two or three generations ago the Wurrumaminyamanja were given full access to food resources and responsibility in caring for this land, so that today it is regarded by many as Wurrumaminyamanja country.

The totemic myth of the Porpoise (dolphin) belongs to the Warnungwamulangwa clan in Moiety 2, and not to the Warnungwijarrakba clan in Moiety 1. The dolphin is said to have travelled underground to the lake, Angurrkburna,[17] in the southeast of Groote. There is a tract of land in this area which belongs to the Warnungwamulangwa. Adjacent to this area is another area which is still owned by the Warnungwijarrakba, including certain offshore islands. One of these islands, Arnengwurra,[18] is connected with the Warnungwijarrakba mythical snake, **yiningburna**. Other sites in this area are connected with the totems, **yukurrkwa** the frogmouth and **yukwurakwura** the nightjar. Thus the Warnungwijarrakba have mythological links with other areas of land on the south coast but not through the myth of the Porpoise.

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[10] Morphy (1977:7) has pointed out that art is also a significant medium for expressing the relationship between man and land, at least for the Yolngu of northeast Arnhem Land. I have not explored how totems are expressed in Groote Eylandt art. However, knowing the totems and the myths I was recently able to identify correctly the totems portrayed in all but one of fifteen or so paintings representing a number of different clans.

The assumption underlying Rose and Worsley's comments is that clans should have only one territory, although Rose (1960:214) did note that totems may be associated with more than one locality. In fact, there is a highly complex distribution of clan territories. It reflects the complex pattern of sharing of totems which in turn reflects interrelationships between clans.

For example, the Warnungwamulangwa totems include baler shell, cypress pine and paddle. The site associated with these totems is Ambudirra[61] on Bickerton Island. There is a small pocket of land there which belongs to the Warnungwamulangwa in what is otherwise Warnungangkwurrakba territory. Baler shell travelled from this place to Yukwurnumanja[56] 'the place of baler shell' in Northwest Bay which is part of the main Warnungwamulangwa territory on Groote Eylandt. In the same stretch of territory, near Finch Island[52], is another small pocket of land, this time belonging to the Warnungangkwurrakba clan who own the totems frog, freshwater, rain, place and stone (shared equally with Warnindilyakwa and Warnungwamakwula). Frog called out from Yingardangumanja[54] 'the place where (frog) called out'. The Warnungwamulangwa share baler shell, cypress pine and paddle with the Warnungangkwurrakba and the Warnungangkwurrakba share frog and its associated totems with the Warnungwamulangwa. The Warnungwamulangwa have full access to the Warnungangkwurrakba land associated with frog and vice versa for the Warnungwamulangwa land associated with baler shell. In fact, Nerrachunga, a former leader of the Warnungwamulangwa clan, established a homeland centre at Dirrangmurumanja[53] which is part of the Warnungangkwurrakba territory associated with frog.

Much of the finer detail of the distribution of clan territories did not become apparent until the later stages of field work. When using the questionnaire to elicit information about each animal taxon, wherever possible I obtained place names which were of some significance for the animal in question. Many of these place names were mentioned in myths. Initially I was not concerned about exact location. About 1969 Miss Stokes elicited most of the place names around the coast of the island from old people who were able to list the names in order, much as we might list the names of stations along a railway line. We knew that these names needed to be checked against the actual sites.

In March 1981 I had the opportunity to travel by boat right around Groote and all the offshore islands to the south, east and north. Some six hundred or more place names were obtained and/or checked in this way, at intervals of about one kilometre or less. Working on place names gave me the opportunity to check the boundaries of clan territories[11] (Waddy, 1984:244), as mapped previously by Miss Stokes. There were only two significant discrepancies concerning points on the coast and these were caused by mislocation of place names rather than discrepancies in clan ownership. One of these involved Wurringkilyangba territory on the northern coast of the island between Bartalumba[67] and Amalyikba[61] and the other involved Warnungwijarrakba territory on the south coast of the island towards the southeast. I have not had the opportunity as yet to check the place names around Bickerton Island, except in discussion with appropriate clan leaders. Turner (1974:4–5) listed ninety-three place names around the coast of

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[11] For various reasons it has been considered inadvisable to include a map showing clan boundaries in this book.

Bickerton Island and marked clan boundaries on the coast. While the general distribution of clan territories has been verified, at least four areas, involving one, two or three place names, seem to belong to clans other than those shown by Turner, though this may indicate a shift in ownership or disputed ownership of which I did not become aware. For the names that I have checked, there would appear to be some discrepancies between my own and Turner's transcription of names.

As I continued checking totems and myths in mid-1981 and again in mid-1982, I began to understand more clearly the relationship between place names mentioned in totemic myths and clan territories. When place names associated with a totem appeared to be in the territory of a clan other than that which owned the totem, in many cases there was a small pocket of land at that place belonging to the same clan as the totem, as in the example above.

While the points on the coast can be agreed upon, the boundaries on land are by no means definite, firstly, because I have not had the opportunity to check them and secondly, because the focus of land ownership is centred on areas of totemic significance; the boundaries do not seem to be so important. Having said that, it would appear from working with Nangurama that clan boundaries on the whole tend to follow watershed boundaries rather than creek boundaries, a point apparently not appreciated by Kauffman (1978:70) who noted that 'territories extend across geographical boundaries such as rivers'.

It is of interest that the west coast of the island belongs almost entirely to clans of Moiety 1, whereas the east coast of the island, particularly the northeast and southeast portions, are owned by Moiety 2 clans. This is in agreement with the distribution of the two main winds as totems. Nangurama commented on the way the links between the Moiety 1 clans are further expressed through contiguous tracts of land. Such a pattern of ownership contrasts with that found by Williams (1982:137–38) for clans at Yirrkala in northeast Arnhem Land where ideally clans from opposite moieties own contiguous tracts of land.

In agreement with Worsley (1954a:86), the northwest area of Groote around Bartalumba is now considered to belong to the Warnungwadarrbulangwa rather than to the Warnungwijarrakba, whom Turner (1974:6) claimed to be the rightful owners, although the exchange of land between these two groups, referred to by Turner, is still recognised as historical fact. The Warnungwadarrbulangwa still own land on Bickerton Island also. This exchange of land appears to be different from the situation given above of the Warnungwijarrakba land being cared for by the Wurrumaminyamanja clan. The land along the Angurugu River is now considered to belong to the Warnungwamadada clan rather than to the Wurrumaminyamanja clan who were the original owners. Nangurama recorded on tape his recollections of the agreement made by some of his immediate forbears. (He spent part of his early years in the care of a Wurrumaminyamanja man, his mother's second husband.)

The significance of the clan territories to each clan should be clearly apparent. As people travel over their clan territories they are reminded of the activities of the totemic beings of their clan. Their clan totems are their brothers. In a real sense they are identified with their land. As they sing about their totems there is a sense of identity between the singer, the totem and the land (see Stokes and Aboriginal Advisers, 1981). The resultant sense of awareness

and identity as a person, as one who is proud to show me his land, has come through to me very strongly on several occasions in my travels around the island.

Totems and other classifications

In the list of over two hundred clan totems in Table 16 there are 21 (10%) plant and 125 (61%) animal Anindilyakwa taxa recognised as totemic species on Groote Eylandt. The remaining 57 (29%) totems include natural features, natural phenomena and manufactured items. This number is considerably greater than the seventy or more totems reported by Worsley (1954a:111).

Worsley (1954a:91) classified the totems under three headings:

i) those which are either natural features of the topography of the Islands, or natural species;
ii) the wind totems; and
iii) the ship totem.

Because of the large numbers of natural species, I have separated them from natural features and grouped the latter with natural phenomena such as mist and night, which were not included in Worsley's lists. Winds would thus be included with other natural phenomena. Worsley (1954a:111) noted that plant species were unrepresented except for a tree or two. While plant taxa are not often considered as important totems, more exhaustive research has shown that they are much more numerous than Worsley thought.

Turner (1974:87-88) did not seek to give an exhaustive listing of totems. He tabulated only those totems principally associated with Bickerton local groups. His interest was in the 'primary mythical beings linking local groups in the... myths'. Since most of these belonged to the animal kingdom, he interpreted them as being 'classified into a single category... **augwalja**, fleshy food substance'. He went on to note that, 'The only primary linking being mentioned that fell under the heading **anena**, or vegetable food substance... was **jinagbarna**, 'coconut'.'

Comparison of the numbers of totems with the data presented in Chapter 3 indicate that 11% of plant and 31% of all animal taxa are listed as totems. Tables 18 and 19 show the distribution of totems across all the superordinate categories of the biological and food taxonomies.

From Table 18 it will be seen that totems are distributed across almost the total range of named and covert life form taxa. Given that 31% of all animal taxa are totems, it may be noted that certain life form taxa have been selected more frequently as totems than others. Thus winged creatures, particularly birds, and marine mammals show a high percentage of totems, relative to the total number of taxa in these categories. Eleven (44%) of cartilaginous fish are totems. Among the plants, the distribution between the two life form taxa is relatively even. The ambiguously affiliated cycad is not a totem, though I understand it is significant in one of the ceremonies (see Mountford, 1956:30,92).

The lack of prohibitions against the eating of totemic species has already been noted in the previous chapter. Table 19 indicates that a little more than half the animal and plant taxa which are totems are considered edible. Almost all

Anindilyakwa name	English name	total number of taxa	number of totems	percentage of totems
aranjarra	cartilaginous fish	24	11	46
akwalya	bony fish	113	21	19
	Total fish	137	32	23
yimenda	turtles	6	1	17
adidira	shellfish	65	9	14
	crustaceans	13	1	8
	octopus etc.	3	–	0
	marine mammals	8	6	75
	coelenterates	7	2	29
	starfish etc.	2	1	50
yininya	bristle worm	1	–	0
arrkwara	beach worm	1	–	0
wurrajija	birds	74	39	53
	flying mammals	3	2	67
	insects etc.	45	16	36
	Total **wurrajija**	122	57	47
yinungungwangba	4-footed land animals	27	6	22
yingarna	snakes	16	6	38
dilaburnda	frogs	1	1	100
	grubs etc.	7	–	0
	Total animal taxa	417	124	30
eka	woody plants	114	11	10
amarda	non-woody plants	84	10	12
	Total plant taxa	197	21	11

Table 18 The number of totems as a function of the superordinate taxa of the folk biological taxonomy.

species of fish selected as totems are edible but despite the relatively large numbers of edible shellfish (42 of a total of 62 taxa), only two edible taxa are totemic species.

Worsley (1954a:121) stated that 'all the edible (totemic) species are those hunted by the men'. However virtually all of the twelve edible plant taxa are and were normally obtained by the women (coconuts only floated ashore in earlier days). And at least two of the edible land animals would generally have been hunted by the women.

I have found no indication that there is any key resource such as that noted by Goodale for the Tiwi and mentioned on p.30. Yams and cycads were important foods and cycads were prepared during times of ceremonies, as they were by the Tiwi. Both yam species are totems of the one set of clans but I am not aware of any specific ritual significance of yams or of any other food resource.

Anindilyakwa name	English name	total number of edible taxa	number of edible totems	percentage of edible totems as a function of number of totems
aranjarra	cartilaginous fish	20	9	82
akwalya	bony fish	99	21	100
	Total fish	119	30	26
yimenda	turtles	5	1	100
adidira	shellfish	42	2	22
	crustaceans	4	–	0
	octopus etc.	1	–	0
	marine mammals	2	2	100
wurrajija	birds	42	21	55
	flying mammals	2	2	100
	insects etc.	1	1	100
	Total **wurrajija**	45	23	51
yinungu-ngwangba	4-footed land animals	20	3	50
yingarna	snakes	4	2	50
	grubs	3	–	0
	Total edible animal taxa	246	63	50
	fruit	53	5	–
	root vegetables	31	4	–
	shoots	3	2	–
	nectar	3	1	–
	food from stems	3	0	–
	Total edible plant taxa	93	12	57

Table 19 The number of edible totems in comparison with the total number of edible taxa in each superordinate taxon and as a function of the total number of totems.

Table 20 shows the distribution of totems among the various clans as a function of the superordinate taxa of the biological classification system. The wide distribution and consequent lack of clustering of species within most superordinate taxa is immediately apparent, though the distribution is by no means even. One possible exception is the cluster of eight cartilaginous fish which belong to the Wurrakwakwa group of clans. However even in this instance the clustering is not complete since one of the shovelnosed rays belongs to a different clan in the same moiety and there is a shark in each moiety.

The other notable discrepancies in distribution are that there are twice as many **wurrajija** 'winged creatures and others' as totems in Moiety 1 as in Moiety 2 and shellfish are much more significant as totems in Moiety 2 than in Moiety 1. Nevertheless **wurrajija** is the only superordinate taxon from which every clan has at least one totem of which it claims primary ownership.

Clan name	TOTALS for clan	cartilaginous fish	bony fish	turtles	shellfish	crustaceans	marine mammals	coelenterates	starfish etc.	sea urchin	birds	flying mammals	insects etc.	4-footed land mammals	snakes	frogs	woody plants	non-woody plants	other totems
MOIETY 1																			
Wurringkilyangba Warningangurrkwurrikba Wurrumaminyamanja	22+11[a]	8(1)[a]			1(1)	1(1)					3(1)		3(1)				3(1)		3(1)
Warnungwamadada	11+22										7(3)			1(3)	2(3)			1(3)	
Warnungawerrikba	24		4		1				1		3	2	4				2		7
Warnungwijarrakba	24+24		8(1)						1(1)		7(1)			1(1)	1(1)		1(1)		5(1)
Warnungwadarrbulangwa	24+24	2(1)	1(1)				1(1)				7(1)		2(1)	1(1)			1(1)	1(1)	8(1)
Totals for Moiety 1	105	10	13	–	2	1	1	–	1	1	27	2	9	3	3	–	7	2	23

[a] First figure = total owned first by clan, second figure = total owned first by one or more other clans.

Table 20 Distribution of totems per clan as a function of superordinate taxa in the folk biological taxonomy.

MOIETY 2																			
Warnindilyakwa Warnungwamakwula	54		5		2					5		2	3			1	1	10	
Warnindilyakwa Warnungwamakwula Warnungwamakarjirrakba			1															1	
Warnindilyakwa Warnungwamakwula Warnungwamakarjirrakba Durila				1			2										3	4	
Warnungangkwurrakba	16+3		1							1					1(1)			1 4(1)	
Warnungangkwurrakba Warnindilyakwa Warnungwamakwula										2			3					2	
Warnungwamulangwa	16+29			4(3) 1(1)		5(3)				1(3)						1(1)		2(3) 1(1)	
Wurralillyanga	12+25									1(3)		2(3)				2(3)	2(3)	4(3)	
Warnungwamakarjirrakba	9+30									2(3)		1(3)					1(3)	2(3)	
Durila	18+29									1(3)			1(3)	1(3)			1(3)	3(3)	
Durila Warnindilyakwa Warnungwamakwula		1	1																
Totals for Moiety 2	97	1	8	1	7	–	5	2	–	–	13	–	5	4	4	1	4	8	34

Table 20 Distribution of totems per clan as a function of superordinate taxa in the folk biological taxonomy.

Discussion

Selection of totems

From the discussion in the previous section it will be apparent that totems have not simply been selected either because of the usefulness of the species as food, or because of a ritual attitude of avoidance of the species or because of its anomalous status within the biological classification system.

Bulmer (1978) sought to explain the selection of species as totems by the Kalam in Papua New Guinea in terms of their taxonomic salience within the folk biological taxonomy. As indicated in Chapter 1 (p.33–34), he has challenged anthropologists working among Australian Aborigines to test this hypothesis for Australian totemism. Granted that there are difficulties in defining and assessing taxonomic salience, some attempt at correlation may be made using Bulmer's three criteria.

The first area to which Bulmer has suggested salience may be attached is that of 'natural' groups of species (named or covert) and individual species within these groups. In order to determine the salience of totemic species in this regard, the list of totems (Table 16) may be compared with the folk biological classification given in Appendix 5.1 and with Table 18 which presents the number of totems as a function of the superordinate taxa of the folk biological taxon. Following Bulmer (1979:62), it would seem reasonable to assume that in his folk biological classification Nangurama would have listed those taxa which were most salient within each category first and that these were most likely to be the largest or most singular taxa within each category. The selection of totems from each of the main complexes and many of the covert subcomplexes of the biological taxonomy will now be considered in turn.

For the cartilaginous fish, there is little doubt, whatever the viewpoint, that both the largest and the most distinctive species in each of the main subcomplexes have been chosen as totemic species.

Of the bony fish, totems have been selected from eight of the twelve covert categories containing five or more taxa and from the one covert category containing three taxa. None of the covert categories of two taxa nor of the isolated taxa are totemic species. Of the nine covert categories from which the 21 totemic species have been selected, the totemic species are listed first in six instances. The uncertainty of some of the fish identifications and lack of knowledge on my part preclude any conclusive statement as to whether the species listed first are in fact taxonomically salient or whether Nangurama may have listed them first because of their significance in totemic myths. This seems particularly possible in the case of **Merrukwurra** the Long-tom which features in one of the myths of **Yinungwakarda** the Sea-eagle, both of which are totems belonging to Nangurama's clan. Hiatt has raised this issue in criticising Bulmer's hypothesis (Bulmer, 1979:59). Two of the totemic species which are not listed first, viz. **yukulbanda** 'barramundi' belonging to the Warnungangkwurrakba clan and **amekekilyuwa** 'Queensland halibut' belonging to the Durila clan, belong to clans which are closely linked with the mainland. Barramundi are much more common in adjacent mainland waters. The Queensland halibut is a relatively insignificant fish but is linked in totemic classification with **Bankwuja** the Tiger shark. The third totemic species which is not listed first in its covert category is the rock-

cod taxon **damaburna**. The largest taxon in this covert category is undoubtedly the groper, **alyakilya**. However it has been placed second to **dalyakilya** which is probably the flowery cod. Neither of these taxa is a totem. I do not know why **damaburna** could be considered taxonomically salient.

Of the turtles, whether or not **yimuwarraka** the green turtle, the only totemic species, is actually the largest or most distinctive, it is certainly the most well-known and most sought after species.

Of the shellfish, the nine totemic species are restricted to two covert categories, each containing five taxa. The shells of one covert category, including the baler shell and other species, all belong primarily to one clan. The other category of shells includes cone shells and other species, all of which were apparently used as a type of doll. There was some debate as to whether the first taxon listed in this category, **dadikayalukwa** 'textile cone and others', should be regarded as a totem of the Warnungwamakarjirrakba clan. It was not accepted in the end.

The largest shellfish, the giant clam, is not a totem, nor does it have any other ritual significance of which I am aware. There are other significant covert categories from which it may have been expected that totemic species might have been selected according to Bulmer's hypothesis.

Of the crustaceans, the large mud crab, **angwala**, without doubt the most taxonomically salient species, is not a totem. However, according to Mountford (1956:31-32), it features in one of the ceremonies.

Of the octopus, squid and cuttlefish, it is possible that **yerribuwa** 'cuttlefish bones' have some significance (Stokes, pers. comm.), but this taxon was not accepted as a totem by the Durila clan leaders, to whose clan it was thought to belong.

Of the marine mammals, the largest taxa are the whales. The mythical whale **yangkawa** is a mainland totem. The other whale taxon **akwurrangina** is not a totem, in contrast to the remaining taxa in this covert category. This could conceivably be because whales are not often encountered in comparison with dugongs and dolphins.

Of the coelenterates, the sea wasp is the largest of the floating species, but it is the distinctive siphonophore **minyangma** which is a totem, together with the similar taxon **marrkarnyerra**.

Turning to **wurrajija** 'winged creatures and others', because of the large number (59) of birds which are totems and the relatively small number (6) of covert complexes suggested by Nangurama, I have looked at salience within the various subcomplexes. But either way the result is the same: in about half the categories the first taxa listed are totems. In only about half the subcomplexes are the biggest taxa also totemic species. The first taxa listed are not necessarily the largest nor the most singular. For example, the wedge-tailed eagle and the great-billed heron are not listed first. Both are totems and both are in subcomplexes where the first taxon listed is also a totem.

In one of the large complexes of seabirds (10 taxa), all but one of the taxa, the smallest, are totems. Why this whole group might be considered taxonomically salient is difficult to say without reference to their being totemic species and, in four instances, subjects of myths.

There are three groups of birds whose feathers have been used in the decoration of spears and headbands and in the making of feathered string for various purposes. The most significant birds for string decoration are probably the parrots and lorikeets. In the subcomplex to which they belong, all six taxa are totems. The egrets and herons whose white feathers are sought after are not totemic species, nor is the larger taxon of doves and pigeons, **dakwurakburakba**.

There are twice as many subcomplexes of birds where the largest taxon is not the first listed as there are subcomplexes where it is listed first. This raises an interesting point. I began this analysis by making what seemed to me a reasonable assumption, viz. that the biological classification given by Nangurama should give a reasonable estimate of taxonomic salience in that the largest or most singular taxon would probably be listed first in the category (cf. Bulmer, 1979:62). Since this is not necessarily so, either the assessment of taxonomic salience needs modifying or my assumption is wrong.

In the subcomplex of flying mammals, the two larger of the three taxa are totemic species. Among the insects, much the same could be said as has been said for the birds.

Among the mammals, the distinctive sugar glider and echidna are totemic species, but the ringtailed possum which was valued for its fur is not a totem, nor is the largest taxon, the agile wallaby, though it may have ceremonial significance. The wallaby is listed first in the covert complex of mammals.

Of the four-footed land reptiles, only three of a possible sixteen taxa are totems. The largest and most distinctive taxon, the crocodile, is not a totem, nor are the freshwater turtle and the distinctive frilled lizard. However the turtle has ceremonial significance (see Mountford, 1956:30–31) and the frilled lizard features in a myth relating to death.

The best known and apparently most taxonomically salient goanna taxon, **yaraja** 'Gould's goanna', is not a totem, nor is the most distinctive taxon, **membirrkwa** the ridge-tailed goanna. I do not know why the water goanna should be a totemic species. The blue-tongued lizard is the largest and most distinctive of the skink and gecko complex but the taxon **yuwarjerra** seems to include the smallest species of skinks. The geckos are more distinctive than the small skinks. They are not considered as totemic species but it may be significant that the word for lightning and the word for gecko are the same and **yibilyubilya** as lightning features in a myth.

As noted on p.79, the snakes are divided into **dingarna** 'pythons, tree snakes and sea snakes' and **yingarna** 'venomous snakes, legless lizards and eels'. There are three totemic species in the taxon **yingarna**, belonging to several clans in Moiety 1, and four totemic species in the taxon **dingarna**, belonging to several clans in Moiety 2. There is one mythical snake in Moiety 1 and there are two in Moiety 2. The two largest generic taxa from each intermediate taxon are totemic species. Several totemic sites associated with the mythical snake **Yiningburna** in Moiety 1 are considered dangerous.

For the plants there would appear to be little correlation between those which are totemic species and those which are the largest. The only two covert categories in which totemic species are listed first are the categories headed by **mabanda** 'yellow hibiscus' and **yilerrba** 'liviston palm'. This palm may grow taller than the other two palms in the first category but **mabalba** the peanut tree appears to grow larger and has more distinctive seed pods than the hibiscus.

Of the other totemic species, **yinumaninga** the red wild apple has a distinctive fruit which is one of the larger bush fruits and the banksia **enindurrkwa** has a distinctive flower, though the large grevillea flowers could also be considered distinctive and they are not totemic species. The Cooktown ironwood **membirrkwa** has the hardest wood and the cypress pine **yimundungwa** is distinctive since it is the only pine tree. Its dark green foliage stands out conspicuously against the grey green of the remainder of the bush. The stringybark **alabura** is distinctive in that it is apparently the only tree, apart from the paperbarks, whose bark may be removed in sheets. The highly distinctive pandanus is not a totem. I am not aware of anything particularly distinctive about the white berry bush **mularrngkwa** or the small-leafed paperbark **mamarra**. There are fascinating links between these trees and certain features of one of the bird totems of the same clan to which the trees belong. The knob on the beak of the friarbirds is said to be the white berry of **mularrngkwa**. And the facial wattles of the masked plover are said to be paperbark from **mamarra**.

The largest root vegetables, the yams **marndakirriyerra** and **murungkwurra**, are both totemic species. The seagrass **mawurrira** is probably the largest of the marine plants but then it is said to be one of the main sources of food for the dugong which is a totem of the same clan. The remaining non-woody plants do not seem to be particularly distinctive. In fact the most distinctive, and to some extent anomalous, species, the blue waterlily **wurrayangkwurra** is not totemic.

Turning to natural features, if we judge salience by size, it is not surprising that Yandarrnga,[27] Central Hill, should be such a significant totem. Although only about 200m in height, it is the highest point not only on Groote Eylandt but in the whole of the surrounding Gulf of Carpentaria. The activities of Yandarrnga as he travelled to his final resting place left their marks on land and sea but these other features are not considered to be totems in the same way as Yandarrnga is. Other rock outcrops considered to be totems are Diduwa[8] 'Castle Rock' (Warnungawerrikba), Malirrba[79] on Bickerton Island (Warnungangkwurrakba) and Barrubarra[50] 'Chasm Island' (Warnungwamulangwa).

Many other places are of totemic significance in that the features of those places mark the activities of particular totemic creatures, but they are not considered to be totems. For example, Miyerriyumanja,[11] the small mushroom-shaped island off South Point, is considered to be Sea-eagle's nest but is not a totem.

At least three of the major rivers on the island are considered to be the result of the activities of totemic creatures. Thus the Angurugu River[1] was formed by **Yukwurrirrindangwa** the Sawfish cutting his way through to Central Hill and on to Angurrkwurrikba,[26] Salt Lake. He was followed by the stingrays which circled around the lake. The sediment flows coming from both the Angurugu River and Salt Lake are seen as extensions of the two river systems such that one name, Yinuma,[4] applies to the water in each place and thus to the whole totemic track. Yinuma is thought of as a totem.

The Amagula River[13] was formed by the track of the snake **Yabangwa**, also called **Duwurruwilya**. **Yabangwa** travelled from the mouth of the Amagula River, following the sediment flow initially, and then turning west to travel by sea around to the southern bay of Bickerton Island. As he travelled beneath the land to the northern bay of Bickerton, he appeared in the waterhole in the rocks at Mungwujirra.[80] Again, the Amagula River, **Makwulyarra**, is thought of as a totem.

The Emerald River[7] was formed by the track of Diduwa 'Castle Rock' as she crawled ashore looking for somewhere firm to settle. She retraced her steps and crawled up the creek line south of Emerald River and settled near there. However neither the river nor the seasonal creek is regarded as a totem.

The freshwater lake Angurrkburna[17] in the southeast of the island was formed by **Dinginjabena** the Dolphin travelling from Barrubarra[50] to there. Although dolphin is a totem, Angurrkburna is not a totem. I am not aware of any myth relating to the formation of the second lake, Emeda.[16]

There is a strong dichotomy between freshwater and saltwater. However only freshwater is regarded as a totem, by the Warnungangkwurrakba, Warnindilyakwa and Warnungwamakwula clans, closely associated with rain which is owned by the same group of clans.

The two most significant winds **bara** or **yinungkwura** the northwest monsoon and **mamarika** or **yiniyerrma** the southeast trade winds, are both important totems. The north wind **dimburru** or **dirrimala**, which blows for a much more restricted time, at the end of the wet season, is regarded as a totem but the south wind **dalada** is not a totem.

The only heavenly bodies which are known to be totems belong primarily to the Warnindilyakwa and Warnungwamakwula clans. The sun, Venus and several star constellations belong to these clans. The moon and a number of other named constellations are not considered as totems.

Only one habitat of all those listed in Table 1 is considered to be a totem, viz. **murungwena** 'monsoon forest (jungle)', a Warnungawerrikba totem. Other natural phenomena include fire, smoke and ashes, current and tide, and mist and night (or sleep).

Of the manufactured items which are recognised as totems, the one which appears to have the greatest significance is **mijiyanga** the Ship totem which belongs primarily to the Wurraliliyanga clan. Ship was reported as the principal totem of several clans by both Worsley (1954a:90) and Rose (1960:213). Before the settlement of non-Aborigines on the island, ships were undoubtedly the largest man-made items encountered. Associated with Ship is **dumbala** 'sail'. The same clan has Aeroplane.

One or more specific spears belong to certain clans. As far as I can determine at this time, the specific clan spears were used in fighting by the members of that clan, perhaps particularly in payback fights. The men dressed up for the occasion with feathered headbands, armbands, chestbands and hair belts. But not all spear types are owned by specific clans. Woomeras do not feature as totems.

String or rope, **merra**, belongs primarily to the Warnungwamakarjirrakba clan. However only one of the possible five or six plants used to make string is a totem. This plant also belongs to the Warnungwamakarjirrakba clan. Armbands in which string is used are owned by the same clan but headbands and chestbands are not specifically owned. Fishing line, originally made from rope, is not specifically mentioned as a totem.

The bark coolamon **ajamurnda** and sheets of stringybark **amureba** used for shelters and for paintings are both Warnindilyakwa/Warnungwamakwula totems, associated with the stringybark totem **alabura**. The old type of bark canoe, **angandilyuba**, belongs to the same clans but **miyeja** 'paddle' belongs primarily to the Warnungwamulangwa clan.

Other items such as digging sticks, the women's unique paperbark 'dresses' (**yinukwamba**) and the string dillybag (**kayuwa**) are not owned by any particular clan. No chopping or cutting implements feature as totems, nor do the musical instruments, viz. the didjeridu and the clap sticks.

In summary then, for biological taxa there is a tendency for the more distinctive species to be selected as totems but this is by no means always so. In many cases the largest or most distinctive species is not listed first in the folk taxon nor is the species which heads the list selected as a totem. Again in many instances the largest species are not selected as totems. There may be a greater tendency for the largest or most distinctive natural features and natural phenomena to be selected as totems, but this does not seem so apparent for most manufactured items.

The second area to which Bulmer suggested salience may be attached is that of ' "non-natural" ' groups based on habitat and feeding habits. As noted on p.51, there is a wide range of habitats on Groote Eylandt and in the surrounding seas. However, unlike the mountainous areas studied by Bulmer, the distribution of those habitats is generally very scattered. For example, there are pockets of monsoon forest in many places over the island.

The boundaries between many habitats are not always clearcut and the distribution of species is such that many are found in a range of habitats. This means that it is difficult to make a meaningful assessment based on habitat. One group for which distribution of species is fairly clearcut is shellfish which can be sorted into three main habitats, viz. on or near rocks, on sandbars and beyond, and in mangroves. However, the two covert categories of shellfish are both taken from shells associated with sandbars and beyond into deeper seas.

Though I have a number of notes on feeding habits, obtained largely through the use of the questionnaire (see Appendix 1), I am not in a position to assess salience on this basis. The only animals which would appear to be significant in this regard are the birds which are scavengers. These birds are not eaten. What is more significant regarding the selection of totems in relation to feeding habits of animal species is that if the animal species is a totem there is a reasonable probability that one or more of its food species will also be totems. Most such food species have been reported on the basis of observation but yams are said to be the food of the doves in a totemic myth belonging primarily to the Warnungwamakarjirrakba clan.

The third area to which salience may be attached is that of species which interact with man in a significant manner. There is a group of five bird taxa which may be referred to as **wurramukwu-langwa**. The suffix **-langwa** means, in this case, 'referring to, connected with'. The word **wurramukwa** is probably best translated as 'spirit of the dead'. **Dubudekbuda (Dakwurrinya)** the sooty oystercatcher is connected with the path that the spirit of a dead person takes to reach its final destination. Sometimes when **Dakwurakburakba** the rose-crowned pigeon and **Yingwa** the crow call they are said to be letting people know that someone has died. Crows scavenged on dead bodies when they were placed on burial platforms in the old days. Both **Warnikijungwa** the barn owl and **Dukwuja** the cuckoo-shrikes are believed to cause sickness, the former leading to death. Thus each bird has something to do with **wurramukwa**, with the spirits of the dead.

Of these bird taxa three are totems, viz. the oystercatcher, the crow and the cuckoo-shrikes. The latter two belong to the Warnungwadarrbulangwa clan together with **wurramukwa**, which is itself a totem, and **dambul** which refers to a ceremonial object decorated with feathered strings. Turner (1974:79) has linked this object with the hollow log coffin of mainland tribes.

To return to Bulmer's challenge, on the basis of the evidence presented in this section, it would seem that any correlation between the selection of plants and animals as totems and their taxonomic and ecological salience is rather weak. It certainly does not seem to be as strong a tendency as the one Bulmer found when studying Kalam totemic species. This is despite the fact that the choice of totems is extended further down the list of taxonomically salient species, as Bulmer predicted. This conclusion is based on acceptance of the covert categories of the biological taxonomy as a basis of comparison and on the assessment of salience in terms of size and distinctiveness. Further comments on the selection of totems will be made in the light of discussion in the following section.

Distribution and association of totems

In this section I will take up Borsboom's suggestion of dreaming-clusters and subclusters before pursuing the discussion on the interpretation of Worsley's comments on totemic classification. The first principle on which Borsboom based the composition of a subcluster was that they shared the same habitat. It is certainly possible to find subclusters the composition of which could be said to be based on this principle, for example, the group of stingrays and other cartilaginous fish belonging to the Wurrakwakwa clans and the group of shells belonging to the Warnungwamulangwa clan. But there does not seem to be any sufficient reason to suggest that the clustering of species should be based on habitat. It might just as well be based on form as on habitat.

Some of Borsboom's own data could be interpreted from an alternative perspective. The subcluster containing sugar-bag could be based on sweetness or honey, the importance of which has been shown by Borsboom (1978b:42-3). It seems probable that the little **Geganggie** bird feeds on the nectar of the stringybark flowers in which it is commonly found and, as Borsboom has noted, the native bees build their nests in hollow stringybark trees which are therefore a source of honey.

Borsboom's second principle was that 'these sub–clusters are connected because between them they cover the main types of habitat in Wurgigandjar country...' If this principle is applied to Groote Eylandt clan totems, it immediately becomes apparent that most clans have at least a representative portion of each habitat type. Clans owning territory along the east and south coasts have a greater proportion of country containing active sand dunes but otherwise there is little difference. I would thus want to ask whether the Wurgigandjar clan can be said to have a unique range of habitats relative to the habitats included in other clan territories. Otherwise there is little point in postulating a principle in which subclusters are connected by means of habitat.

Borsboom suggested that his argument was strengthened by the prominence of the land/water contrast in the song cycle. But is this a feature only of this clan's songs? Or is it a feature of all Djinang–speaking clans? On Groote Eylandt a strong contrast has been noted between land and sea but this permeates the total culture, not just the songs of one clan.

Borsboom's third principle was that 'additional connections are created by close natural relationships between some species.' This is akin to Worsley's 'connections in Nature'. Groote Eylandt examples which parallel Borsboom's examples are the group consisting of frog, rain and freshwater and the numerous examples of an animal species, such as the green turtle, together with its food species.

Borsboom's fourth principle involves associations with regard to life and death. I have already given the example of the several totems, belonging primarily to the Warnungwadarrbulangwa clan, which are linked through their association with death. I am not aware of any association of totems based on a symbolic representation of life.

I accept Borsboom's idea of dreaming–clusters and subclusters. It seems a useful way of describing the totems of a clan, among the Wurgigandjar and also on Groote Eylandt, and may thus be a useful concept on a wider scale. However, I do not accept that these subclusters, nor the relationships between them, are necessarily based on habitat sharing or distribution.

As was noted in Chapter 1 (p.35), Worsley considered that totemic classification was 'marked by agglomerative, arbitrary and fortuitous accretions' but that at the same time totems may be associated through 'connections in Nature, connections in myth, connections effected in historical cultural experience, etc.' The connections between totems give rise to the subclusters of totems suggested by Borsboom. I wish now to explore some of the connections between the totems found on Groote Eylandt.

Of the 'connections in Nature', one of the most straightforward is where the food species of a totemic animal are likewise totems. From Table 16, the totemic animals having food species which are also totemic (shown in brackets) are the pied goose (spike rush), sea–eagle (long–toms and garfish), dugong (seagrass), tusk–fish (sea urchin) and the green turtle (siphonophore and seaweeds).

Other animal and plant species form subclusters which could be based on similarity in either form or habitat. Again from Table 16, these subclusters are ducks and other waterbirds; brown snakes; parrots and lorikeets; sawfish,

shovelnosed ray and stingrays; sea-eagle and osprey; long-toms and garfish; grasshoppers and crickets; flying foxes; mosquitoes; frogmouth and nightjars; trevallies; tusk-fish; emperors; terns and other sea-birds; oystercatchers; praying mantis and stick insect; milk-fish and herring; mullet; olive and volute shells; seaweeds; pythons; dolphins; false trumpet and other shells; palms and yams. There are interesting natural connections between night and mist; current and tide; frogs, freshwater and rain; and fire, smoke and ashes. A further connection involving natural phenomena is that between the southeast trade winds, the southeast peninsula and Venus and the stars which rise in the east. A relatively recent connection based on similarity in form is that between dragonflies and aeroplanes.

There is a connection of a slightly different nature, based on the natural property of sweetness, linking the tiny native bee and its honey, scale insects, banksia, friar birds and the white berry bush.

From earlier discussion in this chapter it should be apparent that these subclusters of totems are generally not exhaustive of the taxa in the covert category to which they belong within the biological taxonomy. Thus despite the number of stingrays which are totems, there are several stingray taxa which are not totems. The point is that once one taxon is selected as a totem, there is a reasonable probability that other taxa from the same covert category may also be selected as totems.

The only connection based on historical experience appears to be the one between Ship and Makassan man. Another connection, which Worsley did not document, is that between a manufactured item and its source material. Examples of this connection, from Table 16 with the source material shown in brackets, are **makwurra** 'fish spear' and **mungarrkikba** 'two-piece hooked spear' (Cooktown ironwood); **mamalerrbirra** and **mungarrambilya** 'hooked spears', coolamons and bark canoe (stringybark); paddle (cypress pine); string (Burney vine); and feathered armbands (string). However, in most of these examples the source materials listed are not the only possible ones. The choice as to which material is considered to be totemic is often substantiated by inclusion in the relevant myth.

Of all the subclusters listed thus far, more than twenty are linked to at least one other subcluster by one means or another, often through myths. In some cases, the connection is between complete subclusters, in others it is through only one member of a subcluster. The latter is a typical example of chaining of the type referred to in Chapter 1 (p.21-22).

The remaining connection suggested by Worsley deals with associations found in myths. The role of myths in linking clans and territories has already been mentioned earlier in this chapter (p.118). The focus here is on the connections between the totems of the same clan(s) as expressed in myth. In more than twenty of the myths listed in Table 17 there are connections in the one myth between two or more totems belonging to the same clan. In this regard, two myths are particularly significant, viz. the myth of the totemic being Yandarrnga Central Hill belonging to the Wurrakwakwa clans, and the myth of the totemic creature **Yinungwakarda** Sea-eagle belonging to the Warnungawerrikba clan. Both Central Hill and Sea-eagle are said to have brought with them all the other totems of their respective clans when they left the mainland. This is mentioned in the

myth concerning Yandarrnga's travels but Nangurama did not know any details of Sea-eagle's travels from the mainland to Bickerton Island.

The connection between totems relating to death has already been noted.

When all known connections are taken into account, there remain approximately 30 (15%) totems which appear to be isolated. It is conceivable that further connections could still be elucidated, but since these connections are not always explicit it is not easy to pursue the subject. When Worsley used the term 'single' totem he was apparently thinking only of totems which lacked any connection in myth. Such totems would be included as isolated totems only if there were no other known connections. There is nevertheless one way in which apparently isolated totems are linked to other totems. All totems belonging to a particular clan are considered as 'brothers', regardless of any other connections between them. I understand Borsboom's use of the term dreaming-cluster to refer to all the totems of a clan, irrespective of the principles of association as outlined by him.

It is thus apparent that totemic classification is by no means completely arbitrary nor fortuitous. It has a strong basis in a variety of natural connections and in connections found in myths. It could be said to be agglomerative in that in most cases not <u>all</u> totems of the same clan(s) can be meaningfully linked together in one cluster. It is possible that further constraints on totemic selection are found in the selection of taxonomically and ecologically salient species but, as noted in the previous section, the tendency for this to occur is rather weak.

Whatever the constraints there remains a sense in which at least one totem from each of the various unrelated subclusters, in addition to the isolated totems, would appear to have been arbitrarily allotted to a particular clan or group of clans. It is this arbitrary distribution of totems per clan which is in such stark contrast to the ordered distribution of plants and animals within the biological and food taxonomies.

As noted on p.141, the data presented in Table 20 indicate that, when the distribution of totems among the various clans is considered as a function of the biological superordinate taxa, there is a wide distribution with limited clustering of like species in any one clan.

Thus far discussion has focused on the nature of associations which help to explain the distribution of totems between the clans. But it should be noted that, to the extent to which one can separate the selection of totems from their distribution and association, species selected as totems could have been distributed and associated in other ways. A few examples will suffice. **Yirumba** the Seagull belonging to the Warnindilyakwa clan could have been associated with the terns and other seabirds which belong to the Warnungwijarrakba clan. Freshwater **akungwa** belongs to the Warnungwamakwula and other clans who also own the Amagula River. Freshwater could equally have been related to Yinuma, the Angurugu River, belonging to the Wurrakwakwa group since it also has a number of birds, animals and plants found in predominantly freshwater habitats.

From a slightly different perspective, in the light of the historical fact of the handing over of part of the Warnungwijarrakba land to the Warnungwadarrbulangwa clan on the northwestern corner of the island, I find it

more than interesting that the latter clan has the northwest monsoon as one of its totems. The Warnungwijarrakba clan, owning the greater part of the northern-most peninsula of Groote, have **dimburru** the north wind as one of their totems. So it seems unlikely that they also had the northwest monsoon, although these two clans share their wind totems with each other. It does seem more than coincidental that the northwest monsoon belongs to the clan which owns the northwest corner of the island.

Sharing of Totems

Thus far, the connections between the totems of each clan or group of clans have been considered. Earlier in this chapter (p.118) I mentioned that there is a complex pattern of sharing of totems between various clans. In most instances the pattern of sharing is substantiated through the myths. About ten of the myths listed in Table 17 are significant in this regard. In his discussion of Groote Eylandt totemism referred to in Chapter 1 (p.36), Turner concentrated on the same set of myths, though he did not discuss the full set. I wish to comment on each of these myths in turn, discussing myths belonging to Moiety 1 clans first, then those belonging to Moiety 2 clans. For the tracks of the totemic beings mentioned in the myths, see Waddy, 1984:249; also Turner, 1980:39.[12]

Moiety 1

Strictly speaking there is only one set of myths belonging to clans in Moiety 1 which explains sharing of totems between Moiety 1 clans. These are the related myths of Yandarrnga Central Hill and **Yukwurrirrindangwa** Sawfish.[13]

> Yandarrnga was accompanied by Sawfish, Shovelnosed ray and the Stingrays when he left the mainland, as well as the other totems of the Wurrakwakwa clans. In the version told to me, Yandarrnga travelled to the northeast of Bickerton Island, to Wurringkilyangba territory but found it unsuitable. He travelled north to what is now Arrkarngka[69], 'Brady Rock', but found it too soft. Arrkarngka is one of the rocks he was carrying and left behind. This rock belongs to the Wurringkilyangba clan. He turned southeast and proceeded to Bartalumba Bay[68] and went ashore near Amalyikba[61] in the area called Ekilyangba[62] which is also Wurringkilyangba country. Not far inland, he dropped more rocks which are now called Warnijuwa[63] and Warnubarmba.[64] These names are linked with **Wurruweba** Red-winged parrot, one of Yandarrnga's companions. He continued travelling southeast until he was near what is now Angurrkwurrikba,[26] Salt Lake. This was firm rocky country and as he looked around he decided he would stay where he is today. This country belongs to the Warnungangurrkwurrikba clan.

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[12] For various reasons it was considered inadvisable to include a map showing these tracks within this book.

[13] The myths given in this section are in summary form only, with comments added on ownership of clan territories wherever necessary for the sake of clarity.

When Yandarrnga left Bickerton Island Sawfish and his companions decided to part company with Yandarrnga and travel southeast to what is now the mouth of the Angurugu River.[1] Sawfish cut his way through to the eastern side of the island and in so doing formed the Angurugu River. The other rays followed him, including White-spotted shovelnosed ray which belongs to the Warnungwadarrbulangwa clan.

The area along the Angurugu River originally belonged to the Wurrumaminyamanja clan but was handed over to the Warnungwamadada clan. The sawfish which made the Angurugu River is linked to Yandarrnga just as closely as the red-winged parrot which accompanied Yandarrnga throughout his journey. The sharing of totems between the three Wurrakwakwa clans, Wurringkilyangba, Warnungangurrkwurrikba and Wurrumaminyamanja, is thus clearly established. The reciprocal sharing of totems between these clans and the Warnungwamadada clan is based on Yandarrnga landing in Warnungwamadada territory on the mainland near Bickerton. The link has been strengthened by the exchange of territory.

Turner (1974:86-87, 90) reported that White-spotted shovelnosed ray **Makabaramurra** belonged to the Wurrakwakwa group of clans. However Miss Stokes and I were told that this ray belongs primarily to the Warnungwadarrbulangwa clan. In the myth it followed behind the other rays, thus linking the Warnungwadarrbulangwa clan to the Wurrakwakwa complex. There is no acknowledged sharing of the totem **Makabaramurra** between the Warnungwadarrbulangwa and the Wurrakwakwa complex. Instead there is a link expressing the interrelationship of the clans through the activities of the totemic creature in the myth. The same totem is also shared with the Warnungwijarrakba clan, since all totems belonging to the Warnungwadarrbulangwa clan are shared unequally with the Warnungwijarrakba clan. It is conceivable that there has been a shift in totemic ownership and in the associated myths since Turner gathered his data.

The myth of Sea-eagle is another myth which helps to explain the interrelationship of clans, though without actual sharing of totems. Nangurama indicated that Sea-eagle departed from the mainland though he did not know the exact location. He flew to Marngkarnumurrumanja[53] in the southeast of Bickerton Island. According to Nangurama and others this place belongs to his own clan, the Warnungawerrikba clan. They own a small pocket of land in what is otherwise Warnungwadarrbulangwa land. Turner (1974:77-79) attributed ownership to this latter clan. It is possible (Turner, pers. comm.) that the ownership is disputed and I didn't happen to ask people whose opinion agreed with Turner's, or that there has been a shift in ownership over the intervening period.

Sea-eagle flew(?) to Yinungwakardumanja[66] 'the place of the Sea-eagle' near Bartalumba.[67] There he made himself a bark canoe, paddles and a fishing line to go turtle hunting. The rock at that place represents his canoe.

There is another small pocket of land here which belongs to the Warnungawerrikba clan surrounded by what is otherwise Warnungwadarrbulangwa territory. The close association of territories in this way supports the linking of the two clans but is not conclusive evidence.

Sea-eagle returned to his nest Miyerriyumanja[75] near Marngkarnu-murrumanja[74] on Bickerton Island. From there he heard the wind blowing from South Point and thought he would go there. So he paddled his canoe to Yijijumanja.[9] When he arrived he began naming all the places around the South Point peninsula which now belong to the Warnungawerrikba clan. But when he got to Yelyuwarrakba[12] he met **Dubudekbuda** Oystercatcher naming places belonging to the Warnungwamakwula clan (in Moiety 2) and so they agreed to draw the boundary between their territories across the peninsula at that point. The myth continues as the story of Sea-eagle and Osprey.

The other linking myth discussed by Turner for Moiety 1 was **Wurramukwa** and **Dambul**, the spirits of the dead and hollow log coffin. Neither Nangurama nor Nanga, to whose clan the myth belongs, would accept that **dambul** should be translated as 'hollow log coffin'. They described **dambul** as a stick or piece of wood to which feathered strings were attached (in a similar manner to that described by Borsboom (1978b:167) for the Maradjiri pole of the Wurgigandjar clan). Nangurama once likened it to a maypole. I was told that there were two **wurramukwa**, of which one came from Amakwurrkwara in Warnungwadarrbu-langwa territory in the southwest of Bickerton Island and one from Windanga on the mainland but no further details were given to me. In the version of the myth obtained by Turner (1974:79-81) the hollow log coffin is brought from Bickerton to Bartalumba. Since Turner has interpreted the latter to be Warnungwijarrakba country rather than Warnungwadarrbulangwa country, he saw the myth as one which links these two clans.

The only other myth which could conceivably be used to substantiate the sharing of totems between the Warnungwadarrbulangwa and the Warnungwijarrakba clans is that of **Dinungkwulangwa** and **Dajinungkwa** Dugong and Echidna. Both these totems belong primarily to the Warnungwadarrbulangwa clan. However the place in the myth where Dugong and Echidna exchange places, Edirrangmanja,[57] is in Warnungwijarrakba country on the eastern side of Winchelsea Island.[58] This raises an interesting possibility, particularly since Mountford recorded the same place name in relation to Dugong back in 1948. It is one of the few totemic sites which are not in the territory of the clan which claims primary ownership of the totem. Since the exchange of territory between these two clans was apparently only two or three generations ago, did these totems, and others belonging primarily to the Warnungwadarrbulangwa clan, belong in the first instance to the Warnungwijarrakba clan? It is an interesting conjecture which is unlikely to be resolved.

Moiety 2

The pattern of sharing of totems is much more complex among clans in Moiety 2 than in Moiety 1 and this is reflected in the greater number of myths which explain this sharing. The sharing of baler shell and frog subclusters of totems by the Warnungwamulangwa and Warnungangkwurrakba clans has already been referred to earlier in this chapter (p.137).

The myth **Yirumba** and **Yikba** Seagull and Pheasant coucal is owned by the Warnindilyakwa and Warnungwamakwula clans. It explains how Seagull became responsible for making the southeast trade winds blow and Pheasant became responsible for making the rain. Seagull, Pheasant and southeast trade winds are

all shared equally by the two clans but **yelyukwa** rain is shared equally between the Warnindilyakwa, Warnungwamakwula and Warnungangkwurrakba clans and also with the Warnungwamulangwa clan, through its link with the frog totem.

The close link between the Warnungangkwurrakba clan and the Warnindilyakwa and Warnungwamakwula clans is probably best expressed through the myth of **Duwurruwilya** (**Yabangwa**) the mythical python. Nandjirrkinna, a member of the Warnindilyakwa clan, claimed that **Duwurruwilya** travelled from Marungwarra(?) on the mainland to Mungwujirra[80] on Bickerton Island and then to the Amakwula River[13] which he made by his track. However Mountford (1956:25–6) claimed that the track was made by **Duwalja** Water python and that it originated in the upper reaches of the present Amakwula River and proceeded from there to Mungwujirra and thence to Wurrindi on the mainland. Several Warnungangkwurrakba clan leaders agreed with this version of the story and added that freshwater soaking from the 'eye' of Water python became the water source of the Amakwula River. Regardless of the direction of travel, the myth clearly links the Warnungangkwurrakba and Warnungwamakwula clans, a link which is expressed through the sharing of the python–Amakwula River subcluster of totems. The Warnindilyakwa clan also shares these totems equally.

The same three clans are further linked, together with the now extinct Warnungumurrkwulya clan, through the travels of **Yinikarrka** 'hawk/kite/falcon'.

> **Yinikarrka** flew from Mungwujirra[80] on Bickerton Island to Mungwarndumanja[43] on Jagged Head[42] in the north of Groote Eylandt. About half the small island there originally belonged to the Warnungumurrkwulya clan but now belongs to the Warnungangkwurrakba clan.

The remainder of the island and the adjacent coast of Groote belong to the Warnungwijarrakba clan in Moiety 1. This is one of the few examples of a pocket of land, seemingly excised from another clan's territory, which does not indicate a close relationship between the two clans.

> The birds quarrelled at Mungwarndumanja and flew on to Marngkala[24] in the southeast of Groote, and then across the peninsula to Amukwangka.[19] In both places there is a pocket of Warnungangkwurrakba territory in what is otherwise Warnindilyakwa territory.

Another myth, belonging to the Warnindilyakwa, Warnungwamakwula, Warnungwamakarjirrakba and Durila clans, concerns the travels of **Yimuwarraka** Green turtle. It would appear that there may have been two turtles (two myths?).

> One turtle is connected with the place Amiyelkuwa[14] in Warnungwamakwula territory on the southern coast of Groote Eylandt. The second turtle travelled from Marumara(?) on Woodah Island[86] in Durila territory to a place on the northeast coast of Groote in Warnungwamakarjirrakba territory, and from there to Awedirrumanja,[22] an island forming a pocket of Durila territory in what is otherwise Warnindilyakwa territory. Both turtles met at Mamawuramanja[21] 'the place of the sun' on the eastern end of the southeastern peninsula in Warnindilyakwa territory.

The second turtle is thought to have originated from the mainland in Durila territory but the exact details were uncertain. This myth expresses the sharing of the turtle subcluster of totems by these four clans.

The myth of **Bankwuja** Tiger shark also expresses the link between the Warnindilyakwa, Warnungwamakwula and Durila clans who share the Tiger shark totem. I have heard various versions of this myth, which is closely linked with the travels of **Darrawurukukwa** Dove. However the essential features of the myth, as related by Nerrachunga Bara Bara and Nanggadjaga Durila and backed by Nandjirrkinna Mamarika, appear to be as follows:

> Tiger shark left Durila territory on the mainland from Rludhunba near the Mardarawaj River which flows into Blue Mud Bay[87] and travelled (southeast) to Lyimburrirra[85] Nicol Island which is still Durila territory. Dove heard Tiger shark coming and told him he couldn't stay, it was her country. However apparently Dove travelled from there on Tiger shark's head, first to Barrubarra,[50] Chasm Island, and then on to Umbakumba.[31] Tiger shark was also accompanied by **amekekilyuwa** the Queensland halibut. As Tiger shark drew near to Chasm Island, he tried to make a home there but the Dolphins were there. Tiger shark attacked and caught one and bit it in two, eating the tail half. The other half is now a rock at Alakwurumanja[51] on the western end of Chasm Island. Dove rested on the island but when searching for a drink of water was disturbed by the owners of the island, who threw a rock at her.
>
> Tiger shark went on from there to what is now Little Lagoon[33] near Umbakumba in Warnindilyakwa territory. He travelled in a circle making the whole lagoon, still with Dove on his head until they reached the point Yabangwamanja.[32] At that stage Dove heard another dove calling and flew off to join her in nearby Warnungwamakarjirrakba territory. In the meantime Tiger shark was chasing all the **yimurarra** 'milk-fish' and various mullet in the lagoon and eating them. He decided this was no place to stay with so many fish and jumped from Alirrma[30] to what is now the billabong Akwalinumanja.[28] He is said to be still living there today, still in Warnindilyakwa territory.
>
> It would appear that a second shark left Djambarrpuyngu territory on the mainland to the north of Groote, travelled to Little Lagoon to meet the first shark but then returned from there via Chasm Island to Woodah Island where he is said to have vomited from eating too many fish and dolphins.

The clearest link expressed by this myth is between the Durila and Warnindilyakwa clans, through the sharing of the tiger shark totem (and the Queensland halibut). However the myth also expresses something of the close interrelationship with several other clans in Moiety 2, particularly through the travels of Dove.

In the myth of **Darrawurukukwa** Dove, as told by Murabuda Wurramarrba, Dove begins her travels at Yinbiya[77] on Bickerton Island. In fact there are two doves, Dilirruwarna and Duwarna.

> The initial part of the story explains why round yams must be processed before eating but long yams may be eaten immediately. Dissatisfied with

always digging yams, the Doves decided to move on but were met by Spider who wondered how they were going to cross the bay to Rrarrurrarra.[76] Spider offered her thread but it was too fine. They eventually succeeded in making a rope which was strong enough to allow them to cross the bay. There one of the doves had a baby. As the chick grew up she heard the story of her parents' arduous trip to Rrarrurrarra and wondered why they didn't fly and proceeded to lead her parents in search of a new place.

On the way they heard someone whistling them from Lyimburrirra Nicol Island[85] and they turned and flew there and stayed for a while. But then they heard a stranger, Tiger shark, coming from Umbakumba, so they decided to leave and flew to Barrubarra, Chasm Island. But the same shark was chasing fish and dolphins there and they flew on to Mawurirrumurru-manja[35] in the northeast of Groote in Warnungwamakarjirrakba territory. There they made another string with **wurrumilyelya** 'Burney vine' and made armbands. Again they felt unsettled, this time because of their proximity to Warnindilyakwa people from Umbakumba and they flew on to Amburrkba[38], the largest island in the Northeast Isles.

They finally settled at Amakarrma[39] on Amburrkba. From there they named all the places, the sandhills, the rocks and the springs and claimed the land as their own.[14] Again they made armbands. While they were out hunting one day, **Yimurralya** Green tree ant stole their armbands and broke them up.

The travels of Dove link the Wurraliliyanga, Durila, Warnungwamulangwa and Warnungwamakarjirrakba clans which together share many totems. Spider and the yams belong primarily to the Wurraliliyanga clan. Dove, Burney vine, string, armband and Green tree ant all belong primarily to the Warnungwamakarjirrakba clan. But each subcluster is shared with the other three clans.

There is some debate as to whether the Northeast Isles should actually belong to the Wurraliliyanga or to the Warnungwamakarjirrakba clan. This debate is unlikely to be satisfactorily resolved since the old men of the two clans have died and the oldest male in the Warnungwamakarjirrakba clan is only in his twenties. It is of interest that the former Wurraliliyanga clan leader stated his case authoritatively on tape some time before his death. In the meantime the Warnindilyakwa clan has been given the right to hunt and fish in this area.

As stated earlier in this chapter (p.129), I have not included any myths which are purely ceremonial in significance. I understand there are myths which might further link some of the clans in Moiety 1 through the totem **dubulkuma** 'water goanna' and in Moiety 2 through the totem **yingakbarrnga** 'short cut-leaved palm'. I know there are other animals of ceremonial significance which are not totems for Groote Eylandt clans.

I have not specifically mentioned the myth about Ship because I was not given any clear details which would explain its role as a linking myth, although I

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[14] Mountford (1956:69) said that Dove created these places but this appears to have been a misunderstanding in translation or of the English used by his Aboriginal informants.

have been given a little more detail of the making of the ship than that mentioned by Turner (1974:75). I was unable to substantiate Worsley's reported version of the myth (1954a:97–98). Kauffman (1978:101) interpreted Worsley's version of this myth to imply sharing across the moiety boundary, since Worsley mentioned that the Makassan ship had called in at Bartalumba and Jaragba, i.e. territories belonging to clans in the opposite moiety. I would be hesitant to accept this interpretation without being able to check the details of the myth.

Turner (1974:73) noted that no one track or myth was sufficient to explain the links between all the clans in each of the four complexes which he found. I would agree with this finding. However, from the data I have collected, I find it difficult to agree with his finding that the linkages expressed through totemic myths provide evidence in support of two complexes of clans in each moiety. Turner grouped the Warnindilyakwa, Warnungwamakwula and Warnungangkwurrakba clans in one complex and the Warnungwamulangwa, Wurraliliyanga, Warnungwamakarjirrakba and Durila clans in the second complex of Moiety 2 clans. I have shown that, besides the sharing of totems within each of those two groups of clans, there is also sharing between the following clans:

Warnindilyakwa and Warnungwamakwula with Warnungwamakarjirrakba,

Warnindilyakwa and Warnungwamakwula with Warnungwamakarjirrakba and Durila,

Warnindilyakwa, Warnungwamakwula and Warnungangkwurrakba with Warnungwamulangwa, and

Warnindilyakwa and Warnungwamakwula with Durila.

Thus, when the intricate pattern of linkages in Moiety 2 is compared with Turner's data, it becomes apparent that there are no longer two separate complexes in Moiety 2 but rather a single complex. Furthermore there is a definite link, as yet unfathomable, between the Wurrumaminyamanja clan of the Wurrakwakwa complex and the Warnungawerrikba clan in Moiety 1. Linking of all the clans within each moiety parallels Morphy's comment (1977:34) that 'every clan at Yirrkala is connected with every other clan of the same moiety through mythologically traceable links'. It is conceivable that there has been a shift from two distinct complexes within each moiety towards a single complex within each moiety.

In this connection the status of **muwarraka** the whistling tree or casuarina is interesting. This tree is not currently accepted as a totem, contrary to the opinion of Rose (1960:214) and Worsley (1954a:90). However Miss Stokes (pers. comm.) has found that this tree may be included in songs of <u>both</u> moieties. In Moiety 1 songs it is referred to as **amalila** and in Moiety 2 songs it is referred to as **yamara**. Thus it appears to have a role in linking not only the whole of each moiety, but also the tribe.

The clans of Moiety 2 are also linked by the myth of Jejabun (Turner, 1980:44). Jejabun is not considered to be a totemic being but the myth has ceremonial significance (Mountford, 1956:92; Turner, 1980:44). In his travels across the south of Groote Eylandt, Jejabun's activities take him through Warnindilyakwa, Warnungangkwurrakba (formerly Warnungumurrkwulya) and

Warnungwamakwula territories and then through Wurraliliyanga and Warnungangkwurrakba territories on Bickerton Island before proceeding to the mainland. In Turner's version of the myth, links with Warnungwamakarjirrakba and Warnungwamulangwa clans are substantiated by Jejabun calling out the names of places in the territories of these two clans.

Turner (1980:44) considered that there is no direct link among the clans of Moiety 1 but that they are linked indirectly through their association with Nunggubuyu clans. The Nunggubuyu clans in the corresponding moiety are linked by the travels of Gilyirringgilyirring beings. They are said to have looked across to Warnungawerrikba territory, thus substantiating a link. I have reported that **Makabaramurra** White-spotted shovelnosed ray serves as a link between the Wurrakwakwa complex and the Warnungwadarrbulangwa clan of the other complex. As noted earlier, it is conceivable that this link is a recent development.

It should nevertheless be noted that for ceremonial purposes there are apparently two complexes. Also, as Turner has said, the close relationship between clans in the same complex is indicated by equivalent use of kinship terms. What I am saying is that sharing of totems, at least in Moiety 2, is not restricted to clans within the same complex and cannot be taken as evidence for the existence of two complexes.

In a later interpretation of his data Turner (1980:38–46) has described the clan complexes as ' "brotherhood" alliances'. In his map showing Groote Eylandt clan territories he indicated that there were a number of apparently small pockets of land belonging to one clan situated within a larger tract of land belonging to a clan in a different clan complex. Turner suggested that this appeared to contradict his 'principle of "brotherhood" linkage by common mythological affiliations'. However he found there were mythological links between most of the clans owning the territories in question. He went on to hypothesise that

> such claims to territory within territory are only made when two or more patri-groups decide to alter the nature of their alliance relationship such that, for example, they no longer wish to regard one another as 'brothers' but perhaps as 'mothers-in-law', or even as 'wives' or 'brothers-in-law'.

Turner considered that 'brotherhood' linkages were eradicated by the creation of ' "countries within countries" '.

I have already noted three pockets of land where the clans concerned belong to the same clan complex. In these cases and in the instances where there are pockets of land within territories owned by clans from another complex, I have shown that the pattern of land ownership generally reflects the sharing of totems between the clans concerned. I have found three exceptions. One is the pocket of land on the southeastern corner of Bickerton Island owned by the Warnungawerrikba, within Warnungwadarrbulangwa clan territory. These two clans belong to the same clan complex as suggested by Turner but in this instance there is no sharing of totems. Another is the pocket of land at Jagged Head. This is the apparently anomalous case of a pocket of land belonging to a clan in the opposite moiety to that of the clan owning the larger territory. The third exception to a pocket of land reflecting sharing of totems is the pocket owned by

the Warnungwamulangwa on the north coast of Bickerton Island within Warnungwamadada clan territory. These clans are also in opposite moieties.

I would question the data on which Turner based his hypothesis. In five of seven examples the size of the so-called pocket of land has turned out to be as large as or larger than other clan territories. I have interpreted a pocket of land to mean a tract of land which includes from one to five place names, where place names are spaced, at least along the coast, at intervals of approximately one kilometre. Perhaps Turner's interpretation was larger than mine. In one instance there is a discrepancy between Turner's and my data in ownership of clan territory, viz. Wurrumaminyamanja ownership of the southwestern peninsula of Groote instead of Warnungawerrikba (my data). In the example of Warnungangurrkwurrikba territory within the area of the Warnungwijarrakba, I have found that rather than a pocket of land at Amalyikba there is a continuous tract of land from the northern coast right through to Central Hill and Angurrkwurrikba 'Salt Lake' on the east coast. The only example in which I readily agree with Turner is the pocket of land at Jagged Head noted above.

At this point I wish to comment further on Kauffman's suggestion that there have been processes of fission and fusion between various clans in recent years. Kauffman (1978:67-68) suggested that fission of larger clans was probably based to some degree on settlement pattern. Historically, differences in choice of settlement led to differences in choice of surname though totemically there was and is no distinction between respective groups in the two communities. The difference in choice of settlement is not just Umbakumba vs. Angurugu but in the case of Mamarika vs. Amagula it goes back at least another generation to the choice by different members of the clan of what is now Warnindilyakwa vs. Warnungwamakwula clan territory. The fission of the Warnungwadarrbulangwa clan into Wurrabadalamba and Bara is not seen in the same way, at least not yet. The fusion of Bara with Jaragba probably reflects the fact that the relatively small number of Bara 'clan' members (i.e. those who take the surname Bara) at Umbakumba have aligned themselves with the small number of Jaragba clan members, with whom they are closely linked totemically. The Bara 'clan' has been granted access to Jaragba clan lands and has set up a homeland centre there. There is no Bara territory as such which would support the fission of the clan.

It is interesting that a number of the larger clans such as Lalara and Wurramara are each subdivided, for the purposes of allotting royalty monies, on the basis of a person's mother's mother's clan. There is no hint that this represents fission. It is a way of allowing equitable distribution of funds from an Aboriginal perspective.

The same comment could be made for the fusion of various clans suggested by Kauffman. In a number of instances, mainland clan members have been grouped with their Groote Eylandt counterparts. These clans are linked totemically but I would not expect complete matching of all clan totems. In most instances these clans have relatively few members. The exceptions are Mirniyowan and Nunggumadbarr clans which are given equal status to Groote Eylandt clans by virtue of long term residence and relative numbers of clan members.

Groote Eylandt Aborigines appear to have had a very good capacity to adapt readily to changing situations, making the most of existing structures when

appropriate and finding new ways when necessary. Such adaptability does not necessarily mean a change in the fundamental structures of society such as clan organisation. This is further evidenced by a different grouping of clans for representation on the Angurugu Community Government Council. The clan groupings are indicated in Table 21, in this instance ten groups. In this case equitable representation was required for those actually living at Angurugu. There was a need to allow for movement between other centres and Angurugu - hence the inclusion of surnames used at Umbakumba and of mainland clans - but the clan groupings reflect the general balance in numbers of clan members at Angurugu.

It may thus be concluded that the grouping of clans for specific purposes such as council representation and granting of mining royalties does not necessarily reflect processes of fission and fusion of clans. These groupings of clans do not reflect changes in the sharing of totems. In most cases the decisions as to which clans should be grouped are based first of all on the sharing of totems, but an important consideration has been the need for an equitable distribution of

1.	Lalara Ngalmi
2.	Amagula Mamarika
3.	Wurramara Nundhirribala
4.	Wurramarrba
5.	Wurrabadalamba Jaragba
6.	Mirniyowan Nunggumadbarr
7.	Murrungun Manggurra
8.	Wurragwagwa Yantarrnga
9.	Wurrawilya Maminyamanja
10.	Bara Bara Wanambi Durila

Table 21 Clan groupings entitled to nominate candidates for the Angurugu Community Government Council (Northern Territory of Australia, n.d.:19).

numbers within each group according to the purpose in hand and it is this which has given rise to the different grouping.

Turner (1974:91) has explained the preponderance of animals as primary linking beings in terms of Lévi-Strauss's Nature/Culture dichotomy. He interpreted animals as being in the relatively anomalous position of being like man in being 'sensitive' or 'quick' and like nature in being 'consumable' and 'transformable', whereas plants can only be like nature. Miss Stokes (pers. comm.) has suggested that the preponderance of animal species in the myths is simply because of their mobility.

In the light of this suggestion, Bulmer (pers. comm.) has suggested that perhaps totemic selection might be based on taxonomic salience in relation to local distribution and movement patterns, and that one might ask, in relation to each site of importance and mythical travel route, what animals and plants might most effectively symbolise these locations and journeys? It is an interesting suggestion but one I find hard to know how to test adequately. For example, sea-eagles and doves are common right around the island from my observation. The dove or pigeon species which I would see as being more likely to be connected with a travel route, because it seeks out monsoon or rainforest fruits, would be **dimirra** the Torres Strait pigeon, which is not a totem.

If the dozen or so main totemic beings whose travels substantiate the sharing of totems between clans are considered in relation to the biological classification system, it can be seen that they include fish, birds, snakes, turtles, sea and land mammals, besides a rocky hill. It is of interest that the cartilaginous fish are much more significant in this regard than the bony fish but otherwise there is no tendency for one group to be favoured more than another.

To conclude this chapter, I would say that Groote Eylandt totemic classification is an example par excellence of Hallpike's complexive classification, a point which I shall take up in the final chapter. As Worsley (1954a:117) has rightly said, 'totemism on Groote Eylandt... expresses the relations between Man and Nature, and... the relations between man and man'.

Chapter Six

LINGUISTIC CLASSIFICATION

In Chapter 1 (p.37) three types of linguistic classification were noted which were likely to be a means of ordering plants and animals. Anindilyakwa has two of these, viz. noun classification (with agreement) and noun incorporation. Each of these will be discussed in turn.

Noun classes

Capell (1942:376–7), Moody (1951), Worsley (1954b:275) and Stokes (1982:36) have found nine noun classes in Anindilyakwa, five of which refer to non–personal nouns including plants and animals. The classes referring to personal nouns are not considered in this book. Each noun class is characteristically marked by certain prefixes. The prefixes of the non–personal nouns are indicated in Table 22.

From the limited data which he obtained with reference to plant and animal names, Capell (1942:377–8) stated that 'a' class nouns included 'some fish (and) trees', 'd' class 'some birds and animals', 'm' class 'lily roots', 'y' class 'the lesser animals' and 'w' class 'the larger animals'.

Worsley (1954b:277–9) analysed the distribution of some 560 nouns across the five noun classes, including 357 (64%) names of animals and plants. He found that Capell's comments on 'y' and 'w' class nouns, in particular, were not borne out by detailed analysis of plant and animal data. Worsley also found that fish and plants (both woody and non–woody) were scattered among the five noun classes.

Capell, 1942:377	Moody, 1951	Worsley, 1954b:275	Stokes, 1982:36
a– e–	a– ă–	a– e–	a– (includes e–)
da–	d–	d–	d–
ma–	m–	m–	m–
ɟi–,ɟa–	y–	ɟ–	y–
wura– wana–	wur– waṇ–	wur– waṇ–	w– (includes wurr– and warn–)

Table 22 Characteristic prefixes of non–personal nouns in Anindilyakwa.

My results, using the total known number of Anindilyakwa plant and animal names, including synonyms, have largely confirmed Worsley's results, as can be seen from Table 23. The only noun classes which are significantly different in overall percentage are the 'a' and 'm' classes. In my data the 'a' noun class contains 26% of plant and animal names, 8% more than Worsley found. The 'm' noun class has correspondingly 6% fewer plant and animal names than Worsley found.

Although there are some definite trends in the distribution of the various higher order taxa among the five noun classes, such as the large proportion of land animals in 'd' and 'y' classes and of marine animals in the 'a' and 'y' classes,

Animal or plant category		Noun class				
Anindilyakwa name	English name	a	d	m	y	w
aranjarra	cartilaginous fish	16	6	6	11	–
akwalya	bony fish	30	18	9	56	6
yimenda	turtles	1	1	–	5	1
adidira	shellfish	19	9	8	32	3
	crustaceans	7	–	5	–	1
	octopus etc.	1	1	–	1	–
	marine mammals	2	5	–	1	–
	coelenterates	2	1	4	1	–
	echinoderms etc.	1	2	1	2	–
	Total	79	43	33	109	10
wurrajija	birds	4	36	8	23	17
	flying mammals	–	–	–	3	1
	insects	5	18	3	18	11
	Total	9	54	11	44	29
yinungungwangba	4-footed land animals	–	14	1	19	6
yingarna	snakes etc.	2	10	1	10	–
	frogs, grubs etc.	4	2	–	3	–
	Total	6	26	2	32	6
amarda	non-woody plants	35	3	32	10	5
	Total	87	13	73	36	6
Total: plants and animals		181	136	119	221	51
Percentage		26	19	17		317
Total according to Worsley (1954b:279)		62	68	82	113	24
Percentage		18	19	23	32	7

Table 23 The relationship between noun classes and Anindilyakwa biological classification.

nevertheless, as Worsley indicated, there is little point in trying to determine the semantic basis of noun class membership in Anindilyakwa. This view is substantiated from my knowledge of the language as a whole, though again, as Worsley indicated, there are certain trends such as nouns related to transport which are 'm' class. I would support Heath's view that one of the main functions of noun classes is to provide a means of cross-reference to specific items in a sentence or discourse.

Evidence to support Heath's view is found in specific instances of the same name with different noun class prefixes. Some examples were given in Chapter 3 in the discussion of nomenclature. Other examples are: **mangkarrkba** is the wild plum Buchanania obovata but **dumangkarrkba** is the jungle plum Buchanania arborescens. Similarly, **yawurdarra** Drypetes lasiogyna, a jungle tree with red berries, is distinguished from **dumawurdarra** Ganophyllum falcatum, another jungle tree with red berries. The latter may be abbreviated to **mawurdarra**, but only when there is no possibility of confusion with **mawurdarra** the woolly butt Eucalyptus miniata. It is not clear why these two trees should have similar names. There is a set of three similar vines, which in English can be referred to as beans, viz. **amukalyimbija** Mucuna urens var. papuana, **dadikalyimbija** Canavalia sp. and **mamukalyimbija** Canavalia maritima.

There are two fish taxa from the covert category of rock-cods and others, viz. **alyakilya** Promicrops lanceolatus and **dalyakilya** probably Epinephelus fuscoguttatus, and another two from the catfish group, **wurramudurrngwa** Arius proximus and **yimudurrngwa** Netuma thalassina. Other examples could be found among the shellfish.

An interesting use of the noun class distinction is found in the classification of stingrays. As noted in Chapter 3 (p.67) adult forms of stingrays all belong to the 'a' noun class but juvenile forms belong to the 'd' or 'y' noun class. Usually when the young are distinguished by a different name, the name is in the same noun class as the name of the adult.

Noun class prefixes are also applied to categories and parts of plants and animals when referring to a specific folk taxon. Thus **eka** is tree in general but **amemeka** is used in specific reference to an 'a' class tree such as **alabura** Eucalyptus tetrodonta and **mememeka** to an 'm' class tree such as **mawurdarra** Eucalyptus miniata. Other examples may be found in Levitt (1981:111, 136-37).

Table 24 indicates noun class distribution in relation to the food classification system. With few exceptions, the distribution parallels the distribution in relation to the biological classification system. The exceptions relate to categories which are not eaten, viz. adult stingrays ('a' class **aranjarra**), cone shells, cowrie shells and olive shells ('d' class) and various 'y' class skinks, other lizards and snakes. In the plant foods there are noticeably few 'y' class plant foods in relation to the total number of 'y' class plants. A few more 'm' class plants are eaten than 'a' class plants compared to the total number of 'a' and 'm' class plants but the differences do not appear to be significant and it is clear that Capell's thought of 'm' class being 'lily roots' was based on inadequate data.

Animal or plant category		Noun class				
Anindilyakwa name	English name	a	d	m	y	w
aranjarra	cartilaginous fish	3	6	4	7	–
akwalya	bony fish	21	16	8	46	4
yimenda	turtles	1	1	–	3	–
adidira	shellfish	12	–	5	23	2
	crustaceans	3	–	1	–	–
	octupus etc.	–	1	–	–	–
	marine mammals	–	2	–	–	–
	Total sea animals	40	26	18	79	6
wurrajija	birds	2	19	6	9	7
	flying mammals	–	–	–	1	1
	insects	–	–	–	2	–
	Total **wurrajija**	2	19	6	12	8
yinungungwangba	4-footed land animals	–	11	1	8	–
dingarna	pythons	1	3	–	–	–
	grubs	1	–	–	2	–
	Total land animals	2	14	1	10	–
	Total edible animal taxa	44	59	25	101	14
	fruit	22	3	22	4	1
	root vegetables	12	2	15	2	–
	shoots	–	–	–	3	–
	nectar	2	–	–	1	1
	food from stems	–	1	2	–	–
	waterlily	–	–	–	–	1
	Total edible plant taxa	36	6	39	11	2

Table 24 The relationship between noun classes and Anindilyakwa food classification.

Noun incorporation

Worsley (1954b:281-3) reported another 'system of noun classification by means of prefixes' which crosscut the Anindilyakwa noun classes, a feature which at that time he did not think had been reported in other Australian languages. In fact Capell (1942:24) reported the incorporation of nouns into verbs in 1942, in Tiwi, the language spoken on Bathurst and Melville Islands. In addition, Moody had reported the incorporation of body part nouns into Anindilyakwa in 1951.

The system of prefixes noted by Worsley extends throughout the non-personal noun classes such that most concrete nouns and some abstract nouns,

such as story and word, may be represented by one or more prefixes. Worsley referred to these prefixes as secondary prefixes in the sense that they can only be used word initially when the secondary prefix begins with 'a' or 'e' and it is prefixed to a word qualifying an 'a' class noun, rather than to a verb. I have followed Worsley for the purposes of this book.

A list of the prefixes applicable to plants and animals is given in Table 25. Comment on other prefixes must await a more detailed linguistic analysis. Miss Stokes did the initial checking of these data. I have extended the checking in the light of further awareness of the biological taxonomy.

Whereas the system of noun classification is exhaustive of all nouns in the language, noun incorporation is neither exhaustive nor exclusive in its categorisation. Thus, for example, there would appear to be some shellfish which cannot be represented by any prefix and stingrays may be referred to by two different prefixes.

The prefixes may be applied to adjectives and numerals, in each case preceded by the noun class prefix of the noun being qualified. For example,

embirrkaruma amaduwaya	a large stingray
yakamungkambilyuma yimuwarraka	two green turtles

The same prefixes may also be inserted before the stem of a verb and following the normal pronominal subject and object prefixation. For example,

nirrekuwardanga yingarna	he killed the snake
ngarukwudakina darruwurukukwa	cook the doves!

Worsley (1954b:284) referred to the prefixes used in this way as 'glossemes', since he distinguished between noun incorporation as found in verbs and the use of the secondary prefixes in 'adjectival agreements'.

Wherever the secondary prefixes are used, they represent the noun so that, if the context is clear, the noun may be omitted from the sentence. But in saying that the prefixes represent the noun, a closer inspection of the range of meanings of the various prefixes listed in Table 25 suggests that the focus may not be so much on actual nouns, whether on folk generic taxa or on higher order taxa, as on concepts or properties of a group of nouns. Thus the prefix **rrek(w)-** focuses on the properties of being flexible and able to be coiled. Snakes have these properties as do rope and wire. The prefix **embirrk(w)-** focuses on the concept of roundness and is thus able to include at least some of the stingray species and certain shellfish as well as fruits, eggs and coins.

The prefix **akamungk(w)-** is particularly interesting because it brings together the marine and freshwater turtles as well as the covert category of crustaceans and hermit crabs in their host shells. The latter are classified with shellfish in the folk biological taxonomy. The underlying concept appears to be animals with legs which live within a shell.

If these secondary prefixes refer to concepts or properties rather than to concrete objects, it is reasonable to ask if the term noun incorporation is appropriate. However this question needs to be discussed on the basis of all

current Anindilyakwa	Worsley's[a] Anindilyakwa	current English	Worsley's English
akamungk(w)–	**gwag(w)–** **gamgw–**	turtles incl. freshwater turtle; crabs and other crustaceans; hermit crabs in shells	porpoise, dugong; crabs (2 species) turtles (2 species) ? stomach
alk(w)–	**alg–**	plants/foliage	leaves, etc.
arrk(w)–		certain ?edible shellfish	
embirrk(w)–	**embirg–**	stingrays; fruits; eggs; certain shellfish; round objects	round things
lingak(w)–	**luŋg(w)–**[b] **luŋag–** **laŋag–** **laŋ–**	trees; ?log, piece of wood which may be stood upright	trees; objects made of wood esp. parts of vessels
lirrk(w)– **lirrirrk(w)–**		marine mammals (? + certain sharks)	
lyikarrk(w)–		body of animals (with feet)	
milyurrk(w)–		squid; ?soft objects	
mungk(w)–		blue-tongued lizard and other skinks	
narrk(w)–		oysters	
ngarrk(w)–	**ŋ(g)arg–**	crocodile, goannas, frilled lizard; stingrays and shovelnosed rays; ?rough-skinned	reptiles
ngengk(w)–	**ŋeŋg–**	certain sharp-edged bivalves; sharp-edged objects	metal things
rrak(w)–	**arag–**[c]	any (bony) fish and sharks; any root vegetable	fish; round, hollow, wooden objects
rrek(w)–	**ireg–**	any snake etc. (**yingarna**); coiled, flexible objects	snakes, long things
ruk(w)–	**uru(r)gw–**	any animal with feet, incl. all winged creatures	birds, some animals

[a] Worsley, 1954b:281–3
[b] **alungk(w)–** 'like', used in plant names
[c] **rak(w)–** 'round, hollow objects'

Table 25 Secondary prefixes used in reference to plants and animals.

available data and not just on the prefixes which may be used in reference to plant and animal species. Nevertheless it is clear that these prefixes provide another means of grouping plants and animals and thus classifying them in the broadest sense of the word.

Discussion

When the basis of Anindilyakwa noun class membership as applied to plants and animals is compared with that found in other languages, such as those discussed in Chapter 1 (pp.37–39), it would seem that plants and animals are more widely distributed across the five classes than in many other languages. Though there are some trends they are not sufficiently strong to suggest any clear semantic basis of class membership. As noted earlier in this chapter, one of the main functions of noun classes in Anindilyakwa would appear to be as a means of cross-reference between parts of a sentence or discourse. This is achieved through the agreement between prefixes on verbs, adjectives and other parts of speech. The wide distribution of taxa across the various noun classes would appear to increase the chances of specific cross-referencing.

Dixon (1968:117) appears to have interpreted Anindilyakwa noun incorporation as noun classification in the sense of noun classes with agreement. He interpreted Worsley's data to mean that 'a noun consists of a class prefix and a stem'. The stem is what Worsley and I have called a secondary prefix. These prefixes are not applied to nouns: they are used to represent nouns in other parts of speech. Worsley (1954b:281–85) interpreted noun incorporation as a form of noun classification but he made it quite clear that it was separate from, and that it crosscut, the normal noun class system.

It would seem that Anindilyakwa may well be unique among the languages of the world in having a set of secondary prefixes which may be applied to adjectives and numerals as well as to verbs. The use of the same set of secondary prefixes in adjectives and numerals as well as verbs is different from the system in Tiwi where the incorporated forms are used only in verbs (Osborne, 1974:47–50; J. Lee, pers. comm.). In Nunggubuyu, the language most closely related to Anindilyakwa, the same set of secondary prefixes is applied to adjectives and verbs but not to numerals (M. Hore, pers. comm.).

Like the classificatory verb stems of the Indian languages in the USA, Anindilyakwa secondary prefixes would appear to be conceptually based in contrast to the possible semantic basis of noun classes.

It is the apparent uniqueness of Anindilyakwa linguistic classification that prompted me to include it along with folk biological, food and totemic classification. Without examining the relationship between the various systems of classification, there could always have been the question as to how they are related. When I first considered the relationship, I quite expected a closer tie up between the systems.

So far as I am aware, linguistic classification has not been discussed by other folk biologists such as Berlin, Bulmer and Hays, presumably because noun classification and noun incorporation have not been features of the languages under investigation.

Chapter Seven

CONCLUSION

Faris (1973:46) has pointed out that

> it is not enough to indicate in contrast sets... the discriminations between lexemes of a domain... or even to demonstrate the existence of a taxonomy... Attention must also be given to the place of the domain in the wider corpus of local vocabulary, its formation, and to the relevance of symbolism and connotation from other spheres of the culture.

In this study I have sought to demonstrate the existence of several taxonomies, folk biological taxonomies and food taxonomies. But in addition I have sought to show the classification of the same domains of plants and animals from a symbolic perspective, i.e. totemic classification. I have also placed plants and animals within the wider vocabulary in my examination of linguistic classification.

In this final chapter I compare and contrast the nature of the various systems of classification of plants and animals on Groote Eylandt and the basis of classification in each case. I then consider the data in the light of historical records and discuss some of the theoretical and practical implications of my research.

The nature of folk classification

From the data presented in this book, it will be apparent that in almost every case the folk taxa which feature in each classification system are the same, regardless of the system. Folk genera are almost always the significant units of classification, in biological, food, totemic and linguistic classification systems. The exceptions are the few instances where, in the food classification system, the edible part of the plant is named differently from the whole plant in the biological classification system. The basic units of classification belong simultaneously to a number of different classification systems, as suggested by Conklin and noted on p.9.

If the basic units of classification are the same, what constitutes the differences between the various classification systems? The differences lie in the nature of the various systems, the differing ways in which the basic units are arranged in categories.

The simplest classifications are those which are based on a straight-forward binary classification of the plant and animal domains. Thus plants and animals may be classified as edible or inedible, as totemic or non-totemic. For Groote Eylandters, both these classifications involve a separation of folk genera into two groups. It is the differing relationships between folk genera within these groups which provide the different classification systems.

The relationships between folk genera which are totems can be interpreted in terms of associations, connections in Nature, connections in myth and connections in historical experience as Worsley suggested, but they cannot be interpreted as hierarchical. Totems belong to clans but clans are part of the social classification system. The relationships between folk genera which are edible can be interpreted as hierarchical because there are labelled superordinate categories which include a number of folk genera. Similarly the relationships between plant and animal generic taxa based on form and behaviour can be interpreted as hierarchical because of the labelled superordinate categories.

When these various relationships are conveyed in a two-dimensional form, such as on the pages of this book, difficulties may arise in expressing some of the relationships. Generally speaking the relationships of association such as those found in totemic classification, can be expressed by listing the taxa, although difficulties are likely to arise where there are multiple associations between taxa. Conveying a hierarchical system on paper is not so easy if one is restricted entirely to relationships of inclusion. As soon as one goes beyond the initial level of the unique beginner, one is faced with the question of how to arrange the taxa at the next level and then again at succeeding levels until the terminal taxa are reached. Should the taxa within a category be arranged arbitrarily? Or alphabetically? Or is there some other basis of arrangement? Are there horizontal relationships as well as vertical relationships?

In the scientific hierarchy the sequence of taxa within any superordinate category is normally presented in accordance with evolutionary theory, beginning with the most primitive and ending with the most advanced. There is a horizontal sequencing which implies a horizontal relationship in addition to the vertical relationship of inclusion. This theory is applied at almost every level of the hierarchy so that, in order to find a particular taxon in the system, one must either learn the order in which taxa appear or be thoroughly conversant with the theory of evolution and its implications. The sequence of plants and animals presented in many reference books, such as the Reader's Digest complete book of Australian birds, is based on evolutionary theory. This theory results in the grouping together of the great majority of similar plants and animals. Alternatives, such as alphabetical ordering, may be satisfactory in a limited field of enquiry in a limited area but interrelationships between taxa cannot normally be expressed in an alphabetical list, except where, for example, specific taxa are grouped under their respective generic taxa.

In hierarchical folk classification systems, there is no overall theory which folk biologists can use to arrange folk taxa horizontally within the various superordinate taxa. In interpreting folk biological classification of animals on Groote Eylandt, I was given no real guidelines by my Aboriginal assistants as to whether 'land animals', 'sea animals' or 'winged creatures' should be placed first, or as to the ordering of life form taxa within those categories. Sea animals seemed to take precedence over land animals, perhaps because of a greater reliance on the sea for flesh foods, and winged creatures seemed to fit in between since there were both sea and land birds. Nor was there any clear ordering of covert or labelled intermediate taxa within life form taxa. It did not seem to matter how they were listed. However there did appear to be horizontal relationships which could be used to order most generic taxa within their covert categories. These relationships appeared to be based on association through similarity in form or some other feature, but there may be chaining, where the basis of similarity shifts

from one to the next, as in Hunn's example of gull classification in English. Generic taxa could not only be assigned to covert or labelled intermediate taxa, they could also be arranged within those taxa. But, as Hunn (1977:133) pointed out, a 'linear format does not reflect the full complexity of these relationships.'

The interpretation of food classification presented similar difficulties in arranging taxa within superordinate categories. In fact, in the classification of plant foods, I did not pursue the horizontal ordering of generic taxa and so the taxa are listed alphabetically within each superordinate taxon since the superordinate taxa are different from those in the biological classification systems.

Conveying linguistic classification on paper is a different matter again. Though there may be clustering of some plant and animal generic taxa within specific noun classes, this clustering does not appear sufficiently clear-cut to be useful in ordering plant and animal taxa within the noun classes. The most useful arrangement of data in this instance is alphabetical. In the case of noun incorporation, since the secondary prefixes appear to be conceptually based, there seems little point in trying to suggest any internal ordering of generic taxa which can be represented by a particular secondary prefix. Either they can be represented by that prefix or they cannot. This is akin to the binary classifications edible/inedible and totem/non-totem. They are either one or the other.

It is apparent that there are fundamental differences in the nature of the various classification systems. The biological and food classification systems are hierarchical, based on relationships of class inclusion which cannot be found in totemic or linguistic classification. Totemic classification is based largely on association. Linguistic classification is of two kinds, a set of noun classes the basis of which is not altogether clear though it is not entirely arbitrary, and noun incorporation which is conceptually based. Biological classification and noun classes are both exhaustive of the total domain of named plants and animals, as are the binary classifications edible/inedible and totem/non-totem. Food and totemic classification only apply to the respective categories produced by binary classifications. Noun incorporation only covers certain plants and animals.

Other classifications could have been considered, including such binary classification of the total plant and animal domains as useful/non-useful, and subsequent classification of the useful category, such as medicinal use/non-medicinal use, used for implements/not used for implements and so on. The binary classification domestic/wild is not applicable to Groote Eylandters since neither plants nor animals were domesticated, with the single exception of the dog.

In the light of the preceding discussion, it would seem to me that a general purpose classification, as discussed on p.7, can be further defined as one which covers the total domain of plants and animals, providing the system of identification for the units which are subsequently used in most special purpose classifications. It is the basic system of classification from which all other systems are derived. Special purpose classifications, such as food, totemic and medicinal classification, are dependent first of all on a binary classification of the domain of plants and animals. The binary classifications themselves may be considered to be special purpose classifications, as can noun incorporation. Noun classes are a little different in that they cover the total domain of named plants

and animals and yet they are not 'natural' in the same sense as biological classification. The significant point to me is that there are numerous ways of classifying plants and animals, a point which has not always been acknowledged in the past. When this is accepted, many of the difficulties of interpreting plant and animal classifications no longer arise.

I have called this book 'Classification of plants and animals from a Groote Eylandt Aboriginal point of view'. There will always be some possibility that this is not so, that it is my interpretation. I have sought to be faithful to the data given to me, but it is possible that my strong scientific orientation caused me to interpret the data I was given from the beginning, so that I failed to see some things or made too much of others. However I believe that any difficulty in this way is at least partly compensated for by having examined in detail a number of widely differing systems of classification of the same basic units of plants and animals. The systems reported here are unique to the Aborigines of Groote Eylandt. The contrasts that have been found between the various systems lend support to the fact that they are indeed from an Aboriginal perspective. I only expected to be studying biological classification. It had not occurred to me when I began that there should be so many different systems of classifying plants and animals.

The basis of folk classification

In the first chapter (pp.41–45) I discussed in some detail Hallpike's suggestion that all folk classification is complexive, i.e. based on associations and not hierarchical. I did not deny the possibility of complexive classification but sought to show that it is most often seen in the realm of symbolic classification and not in biological classification.

Hallpike (1979:179), and Worsley (1967:151–53) before him, drew attention to Vygotsky's ideas on the development of childhood thinking and its relation to classification systems such as those used by Groote Eylandt Aborigines. It may be recalled that Vygotsky distinguished three basic phases of development in thinking, viz.

i) grouping of objects random and syncretic
ii) groups based on association, functional cooperation, chaining etc. ...complexive thinking
iii) groups based on stable concepts defined in abstract terms ...conceptual thinking

Worsley summarised each of Vygotsky's three phases but did not elaborate on the various stages as I did on p.42. Worsley interpreted Groote Eylandt classification such that totemic classification is based either upon 'congeries thinking' or 'complex thinking' whereas biological classification, which he termed 'proto-scientific', is based upon conceptual thinking.

In summarising his chapter on classification, Hallpike (1979:234–35) stated that

> primitive classification is based on functional, associational relationships derived from concrete properties and everyday

> associations, and is inherently complexive in type, although in restricted instances primitives are clearly capable of employing taxonomic classes.

Although Hallpike has admitted the possibility of hierarchical classification and thus presumably of an element of conceptual thinking he has seen this as the exception. In contrast to Hallpike, Worsley has interpreted his Groote Eylandt data to mean that there is a fundamental distinction between two different systems of classification, thus implying that other societies may also be expected to have fundamentally different systems of classification.

I wish now to examine my data in the light of Vygotsky's suggested development of thinking.

For biological and food classification the taxonomies themselves can in no way be considered as random. Whether scientific species are named or unnamed in Anindilyakwa, every species which is recognised as a living thing can be subsumed under some superordinate category which has a clear basis of membership. The same applies to everything which is recognised as food. The determination of what is in fact edible may be subjective (see p.107), but it cannot be random.

Although it is possible to interpret certain aspects of the biological and food taxonomies as based on complexive thinking, I would agree with Worsley that both these systems are essentially based on conceptual thinking. The main basis for asserting this is that the superordinate taxa are stable categories which are generally well-defined. There is one notable exception, viz. **wurrajija** 'winged creatures and others'. The 'others' included in this taxon, such as spiders and scorpions, are apparently linked through chaining.

It may be recalled that on pp.81-82 a distinction was drawn between covert categories which could be considered as covert life forms, such as marine mammals, and covert categories which were clearly at an intermediate level. The latter were concerned as much with the horizontal ordering of plants and animals within those categories as with their vertical arrangement within the appropriate hierarchies. The horizontal ordering may be based on association but the vertical ordering, i.e. into sub-categories and larger categories, appears to have been based on concepts. However this may be an area where pseudo-concepts are operating since the basis of classification tends to be on one attribute which is not necessarily the same for each person doing the classifying. This applies particularly to the plants. More work would need to be done in this area to enable a more definite conclusion to be drawn.

If biological and food classifications are generally based on conceptual thinking, it may well be asked what level of conceptual thinking is operative. As Vygotsky intimated, this is not easy to assess, but I would venture to suggest that at least for some Groote Eylandt Aborigines some of the time they are operating at the highest level of conceptual thinking. Thus, as indicated on p.104, Nangurama and others were able to apply the principles of food classification to introduced foods, clearly expressing the basis of logical classification. It should be noted that Vygotsky himself (1962:75) stated that

> even the normal adult, capable of forming and using concepts, does

> not consistently operate with concepts in his thinking. Apart from the primitive thought processes of dreams, the adult constantly shifts from conceptual to concrete, complexlike thinking. The transitional, pseudo-concept form of thought is not confined to child thinking; we too resort to it very often in our daily life.

I suspect this point has been overlooked by Hallpike.

Turning to totemic classification, I have already pointed out on p.153 that the selection and distribution of totems is generally not random, although the addition of some totems could conceivably have been at random where there are no known associations with other totems. However, in contrast to biological and food classification, it is difficult to see any way in which totemic classification might be interpreted as conceptual thinking. As suggested by Worsley and discussed on pp.151-153, the distribution of totems among the various clans is based largely on connections in Nature, connections in myth and connections in historical experience. The nature of these connections is entirely characteristic of complexive thinking. Thus there are associative complexes based on similarity in form, as of certain birds or shellfish, and collection complexes based on functional cooperation such as an animal and its food sources. Chain complexes are probably best exemplified by the connections in myth which express the linking of various clans through the travels of totemic creatures mentioned in the myths. Diffuse complexes could be applied to the association of totems within a myth.

Pseudo-concepts also find a place in totemic classification. In applying Borsboom's idea of dreaming-clusters and subclusters to my data, I found numerous subclusters of totems within the cluster of totems belonging to a clan - and subclusters within subclusters. To all intents and purposes it looked like a hierarchical classification of totems! But there is no way in which such an arrangement could be considered as logical class inclusion. There is no sense of subordination. All totems are equally totems. Even if some have greater significance than others, there is no way in which such totems can be said to subsume other totems. Relationships are based on association. The only possible candidates for superordinate taxa would be clans, or moieties in the sense that totems belong to a clan and a clan is included in a moiety. But the concepts of clan and moiety belong within the social classification system, a system which is complete within itself. Totems may be linked with groups of people but these relationships are expressed within the kinship classification system which again is complete within itself. As Worsley (1967:154) noted, 'order is introduced into (the) totemic collection from <u>without</u>, i.e. the framework provided by the association of totem and clan/moiety' (my emphasis, J.W.).

As pointed out on p.35, Worsley (1967:154) implied that the selection of totems was largely 'random, fortuitous or haphazard'. His actual statement was

> The totemic elements themselves, which are congeries-like in that the associations between totems are of mythological derivation, and are therefore random, fortuitous, or haphazard (unless we start making assumptions about subconscious levels of association), though established along quite discernible, multiple lines of association (connections in Nature, connections in myth, connections effected in historical cultural experience, etc.).

In other words, he appears to have interpreted the totems mentioned in a myth as collections, thus assuming that the totems preceded the myth. I have assumed that the myth preceded the totem. This begs the question of which came first, the myth or the totem? Or were they developed at the same time? - a highly speculative issue which I do not wish to debate in the present context. It is of interest that Kolig (1981:128) has recently discussed the possibility of myth preceding its attachment to land and hence presumably to specific totems. He stated that 'Selection (of totemic sites) is random as well as completely arbitrary and apparently depends on chance revelation.'

To me, whatever element of randomness may have been present in totemic selection, totemic classification, i.e. the distribution, association and sharing of totems among the clans of Groote Eylandt, is complexive classification par excellence. Thus the basis of totemic classification is in sharp contrast to the conceptual thinking of biological and food classification.

Considering linguistic classification from the perspective of Vygotsky's studies, if noun class classification of plants and animals were entirely random, one would expect a balanced distribution across the various classes. But, as Table 23 shows, this is not the case. Although the basis of distribution is not clear, it must be concluded that noun class classification is not entirely random. There is some suggestion of association in the manner in which, for example, land animals are found mainly in 'd' and 'y' noun classes. But there seems little point in trying to draw further conclusions about the nature of noun classification.

Noun incorporation as a means of classification is in sharp contrast to the noun class system. Clearly noun incorporation is not based on random assignment of nouns to the various incorporated forms. Nor does it appear to be based on complexive thinking. As suggested on p.169, it would seem that the basis of classification underlying noun incorporation is conceptual, at least in reference to plants and animals. As stated earlier, this suggestion needs to be studied in relation to noun incorporation as a whole and not just in the limited field of plant and animal classification.

One point which does not appear to have been raised, and perhaps should be considered in relation to the work of Vygotsky and others, is that Vygotsky reported on experiments with individual children and drew conclusions about the overall development of thinking in children. He then sought to apply his findings to primitive societies in contrast to literate societies. This is the particular point taken up by Hallpike in his study. There seems to have been an assumption that because certain aspects of classification in so-called primitive societies appear to parallel the classificatory behaviour of children, then classification as a whole remains at a lower level of development in that society; or, alternatively, that because individuals in certain experimental situations classify at a lower level, then the classification systems of the society as a whole are based on less advanced patterns of thinking.

As already noted, Vygotsky pointed out that as adults (in a literate society) we frequently revert to thinking in complexes. To me, it seems that, faced with the experimental task of classifying a wide range of familiar objects, one is highly likely to end up with a confused classification, apparently based on complexive thinking. This need not mean that a person is incapable of classifying the same objects on a conceptual basis. More particularly, it should not be taken to mean that the society as a whole cannot classify the same objects on a conceptual basis.

The investigator is faced with a dilemma. If he specifies the classification system he is investigating and obtains a classification based on conceptual thinking, he can be accused of structuring the situation to suit his own ends. Initially unaware of the possible consequences, I chose to specify the classification systems I was investigating - and I do not regret doing so. I believe that there are distinctly separate systems of classification and that the distinction between these systems is reinforced by the fundamentally different modes of thinking on which some of the systems are based.

However, to return to Vygotsky's stages of development in thinking, I am not saying that every person in a primitive society will necessarily be able to classify at an advanced level of conceptual thinking. Rather, the potential is there within the society's classification systems. In non-literate societies where little emphasis is placed on verbal explanation in the process of learning, it may well be that many folk do not actually achieve advanced conceptual thinking, simply because they have not had occasion to think abstractly about their environment. The system is there and they use it in the context of the situation. But it would seem more than likely that such folk would have at least the potential concepts of a classification system based on conceptual thinking.

Totemic classification on Groote Eylandt turned out to be based on complexive thinking but I still had to go to the experts to obtain all the details of totemic classification and to understand something of the complexities of the various associations. It was not enough that folk should have been able to classify complexively. So too I had to go to the experts to obtain the breadth and depth of the biological and food taxonomies. I would not expect to find such an awareness of these taxonomies amongst all Anindilyakwa speakers. But the potential for these hierarchies clearly exists in both biological and food classification, whereas there is no hint of such a hierarchy in the distribution, association and sharing of totems among the various clans.

One of the problems which Hallpike (1979:178) highlighted in seeking to deny hierarchical classification in primitive societies was that the boundaries of logical classes should be clearly marked (see p.45). On pp.78-79 I noted several instances where the boundaries of superordinate biological taxa were a little uncertain. On p.138 I pointed out that the boundaries of clan territories are not clearly defined. Now it seems to me that in Aboriginal society folk are not normally concerned with the precise definition of categories, since such definitions are verbal and they are not concerned with verbal definitions (Harris, 1980:77). They are concerned with the focal point or points within their clan territories, usually the totemic sites (Morphy, 1977:48, Williams, 1982:141). They are not concerned with the exact definition of boundaries unless there is need to be (Williams, 1982:145). In the same way their use of higher level superordinate taxa is not in relation to their precise definition but rather in relation to practical issues of hunting and gathering. Again they are not normally concerned about the boundaries.

It may seem that such a viewpoint is in conflict with classifications based on conceptual thinking but it is consistent with the formation of what Piaget called spontaneous concepts (Vygotsky, 1962:84). Vygotsky contrasted spontaneous concepts with scientific concepts. He stated that

> The child becomes conscious of his spontaneous concepts relatively late; the ability to define them in words, to operate with them at

> will, appears long after he has acquired the concepts. He has the concept (i.e., knows the object to which the concept refers), but is not conscious of his own act of thought. The development of a scientific concept, on the other hand, usually begins with its verbal definition and its use in non-spontaneous operations – with working on the concept itself. It starts life in the child's mind at the level that his spontaneous concepts reach only later.

Thus in Aboriginal society, there is no need to doubt that the concepts are there. At least some members of the society are able to define some of the concepts on which their classification systems are based and to operate on them. But, perhaps because they have not been exposed to the rigorous verbal definitions required by our technological society, they appear to be content with concepts defined on the basis of normal membership of classes.

Historical perspective

In Chapter 2 (p.62ff.) I drew attention to early studies on Aboriginal plant and animal data. I noted that the focus was generally on reporting names and uses of useful plants and animals, often as they were encountered in the course of other research. Such data seem generally to have been limited to the more common forms that might have been obtained in a particular area. Until the last twenty years at least, little thought was given to linguistically generic terms and their role in folk classification systems. Now extensive data are available from a number of different areas and the data have been studied within a much wider theoretical perspective, thus encouraging researchers to consider higher level terms within a hierarchical classification system.

Although a considerable amount of data is available for Groote Eylandt Aborigines from as early as 1921–22 (see p.58ff.), as elsewhere in Australia little attention was given to folk classification systems. There is one exception, viz. Worsley (1961:181–89; Waddy, 1984(2):40–91). In 107 names recorded by Tindale (1925a, 1926; Waddy, 1984(2):2–14), only two were higher level terms, one being used for 'food' (see Chapter 4, p.97), the other being used to refer to a chalcid wasp found in figs. As far as I am aware there is no other Anindilyakwa name which might have been applied to the wasp and so the term **wurrajija** 'bird, insect, winged creature' was used. Rose (1960:214, 216; Waddy, 1984(2):17) and Mountford (1956:84, 86; Waddy, 1984(2):38) both reported the term **mangiyuwanga** with reference to 'shark' in the context of totems and stories. In the second of Mountford's two examples of the use of the term, he identified it as the hammerhead shark which is otherwise known as **mungwarra**. In the first example (with a different spelling) he implied that it might be a species of shark related to **bankwuja** 'tiger shark'. From the information given it is more than likely that he was given the higher level term in the earlier stages of his research and the more specific term at a later stage. Turner (1974:87) recorded two higher level terms, both with reference to food, viz. **akwalya** 'flesh food' and **aninga** 'non-flesh food'.

Worsley actually used higher level terms to group his extensive data meaningfully into land animals **yinungungwangba**; fish and marine mammals **akwalya**; birds **wurrajija**; trees **eka** and plants; crabs and shellfish (unnamed); and insects, flying things etc. **wurrajija**. He also recorded the term for shark in a linguistically generic sense referring to three other specific shark taxa and

likewise the term for snake **yingarna** referring to four other specific snake taxa. Since his data were collected in 1952-53, his awareness of such terms seems to have been unusual. All these terms are still in very common use in the same way today, some thirty-five years later. At that time there was far greater reliance on hunting and gathering than there is today.

My own studies have shown that both the biological and food classification systems are more extensive, at least potentially, than Worsley has indicated. Worsley collected a remarkable amount of data in the time he had available and biological data was by no means the primary focus of his study. Of 413 Anindilyakwa names recorded by Worsley, about three per cent are unrecognisable today and about five per cent differently identified from my data, usually as a closely related species. This could have been due to misidentification of scientific species as much as variation in the use of Anindilyakwa names. Worsley made no comment about how he identified species, when he did in fact give a scientific identification, nor about the range of people consulted in the Anindilyakwa identification of specimens. There is no doubt that the general knowledge of plant and animal terms in the community as a whole has decreased over the years but there is still a good knowledge of many plants and animals in a good number of families. The data suggest that the use of plant and animal terms has been fairly stable over time.

Implications

Theoretical implications

The clearest implication to come from this study is that, in considering plant and animal folk classification systems, anthropologists need to take care to differentiate the various systems. Binary classifications need to be distinguished from hierarchical classifications, conceptually based systems from symbolic systems, general purpose biological classifications from special purpose classifications. If these differences are recognised it should pave the way for comparative studies on a much broader basis than has been possible in the past. This would allow further testing of universals such as Berlin and Brown have suggested and perhaps suggest additional universals, for example in the field of food classification.

In regard to universals in the classification of foods, I would tentatively suggest the following hierarchical system:

i) a division into 'flesh foods' and 'non-flesh foods',
ii) classification of 'flesh foods' as a subset of the biological classification of the animal kingdom, and
iii) classification of 'non-flesh foods' contrasting with the biological classification of plants and based on the part of the plant which is eaten.

These universals are proposed on the basis of the following examples:

i) Groote Eylandt data,
ii) Meehan's Anbarra data (1982a and b; see also pp.61 and 106),
iii) Fowler and Leland's Northern Paiute data - see following interpretation.

iv) Rudder's Djambarrpuyngu data – see following interpretation, and
v) additional Aboriginal data as outlined on pp.58–62 and p.107.

Dwyer's comments mentioned on p.8 on the coincidence of Rofaifo biological, food and symbolic classification of animals are also relevant. It would be interesting to know whether there is a similar coincidence in the classification of plants or whether the various domains remain as separate entities.

I am aware that English food classification does not so readily fit this schema. It may be that it is applicable only to hunter–gatherer societies and those where agriculture is supplemented by hunting and gathering.

When discussing the confusion of classification systems in Chapter 1 (p.5), I noted that Fowler and Leland (1967) had reported what they considered to be the classification system for the Northern Paiute. Their extensive data lends itself to reinterpretation in the light of this study. As noted on pp.5–6, I would interpret the initial division into 'things that are eaten', 'things that are used' and 'things that are not used' to be based on the two binary classifications edible/inedible and useful/non–useful.

When Fowler and Leland's various figures are compared it is apparent that essentially the same subcategories appear for the categories 'things that move' whether one is talking about 'things that are eaten', 'things that are used' or 'things that are not used'. When the subcategories from these three major categories are combined (Fig. 19), the resultant arrangement of the data closely parallels the hierarchical biological classification system anticipated by Berlin and others. The category 'things that move' becomes the unique beginner. There are five life form taxa, a number of named intermediate taxa and many generic taxa (not shown in the diagram).

For the category 'things that grow in place' the situation is a little more complex since there is a clear distinction between the subcategories within the categories of 'things that are eaten' and the subcategories within 'things that are used' and 'things that are not used'. Such a distinction parallels the finding for the Groote Eylandt data that, for animals and flesh food, food classification is a subset of biological classification but for plants and plant foods there is a clear distinction between the two classification systems. Fowler and Leland considered that Paiute food classification was based on the used portion of the plant rather than on any overall physical characteristic and that it appeared to be linked to the method of preparation. It would certainly be possible to interpret the categories seeds, berries, greens and roots as based on the part of the plant that is eaten, thus paralleling the Groote Eylandt data.

Using the remaining data on plants it is possible to construct a biological classification of plants as indicated in Figure 20. In discussing their classification of useful plants Fowler and Leland noted that in the category 'medicine' it is 'the uses that contrast', not the plants themselves (1967:387). The subcategories of medicine have not been included in Figure 20. The classification I have suggested must obviously be very tentative but it does show that the data could be interpreted differently. I have included 'rabbit brush' as an example of a generic taxon which includes two specific taxa. The initial division of the plant kingdom is based on habitat, similar to the division into animals of the sea and animals of the land for the Groote Eylandt data.

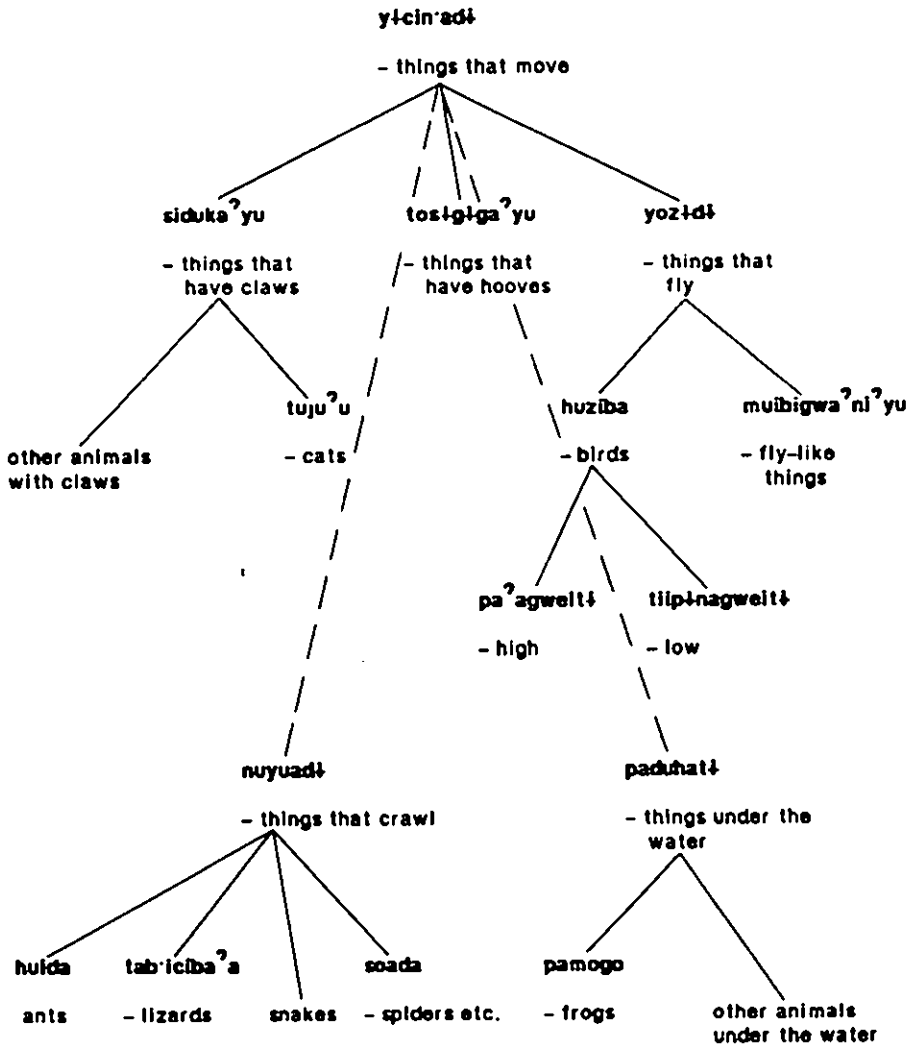


Figure 19 A possible interpretation of Northern Paiute biological classification of the animal kingdom.

Rudder's Djambarrpuyngu data, mentioned on p.60, can readily be interpreted to give hierarchical biological and food classification systems (Rudder, 1978/79:353-5). Djambarrpuyngu lacks labelled unique beginners for the plant and animal kingdoms but it has a single word for all kinds of food maranhu, which is

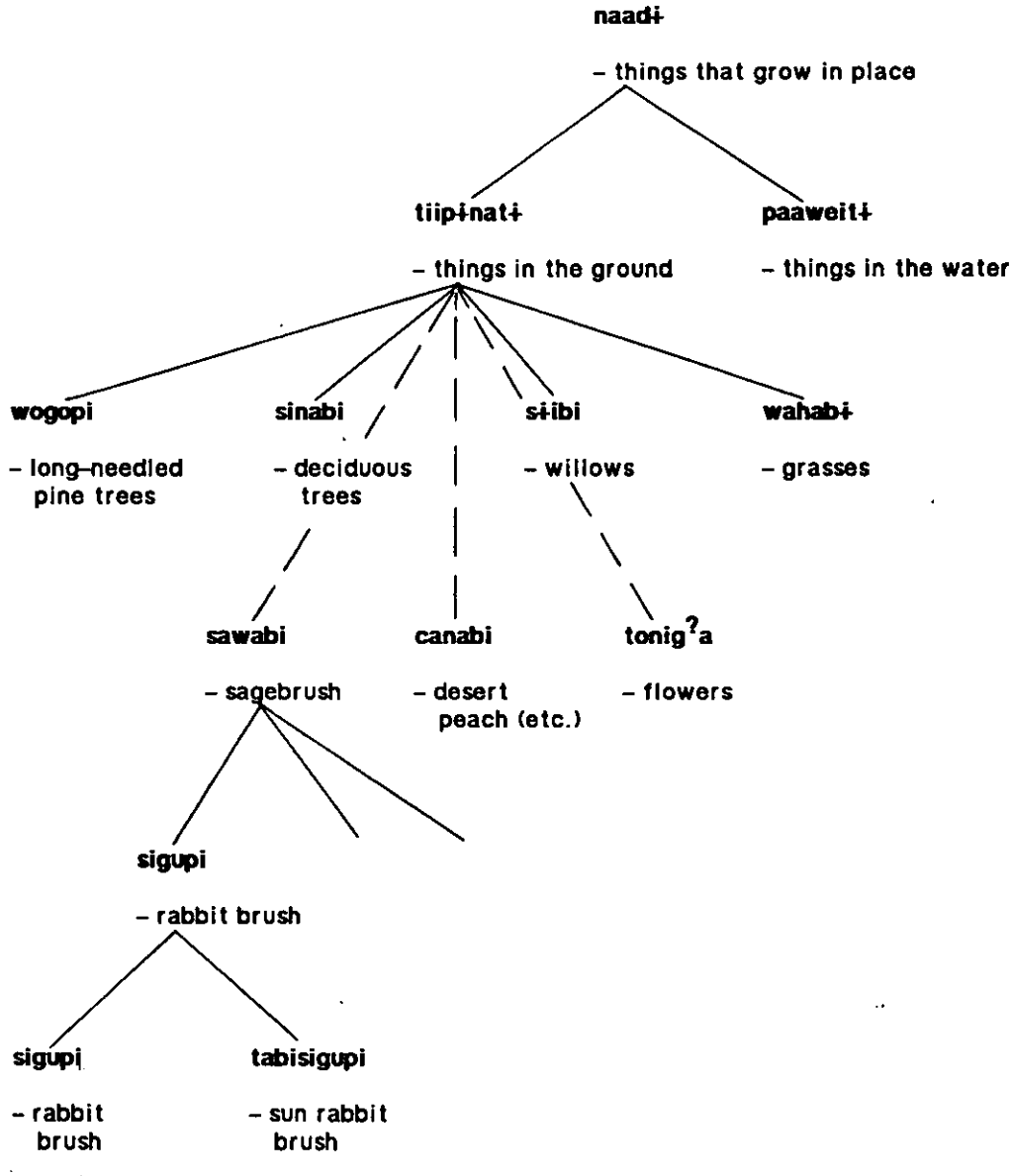
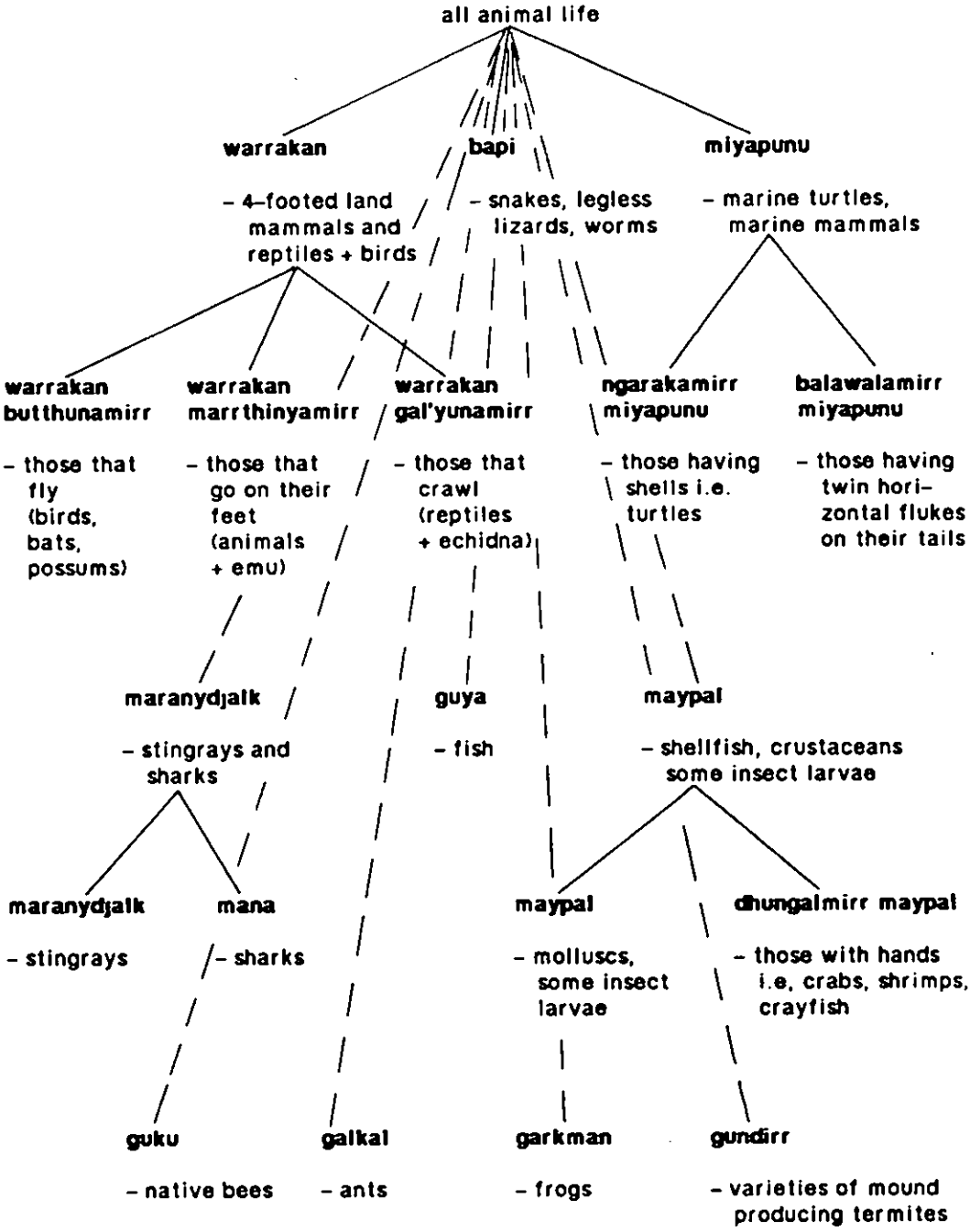


Figure 20 A possible interpretation of Northern Paiute biological classification of plants.

different from the words for vegetable foods **ngatha** and meat foods **gonyil**. Again the classification of meat foods is a subset of the biological classification of animals. In the latter system, as indicated in Figure 21, there are five or six labelled life form taxa, ten labelled intermediate level taxa, numerous unaffiliated generics and several taxa whose status is uncertain (ants, frogs, etc.). In the biological classification of plants, there is a division into **dharpa**



[a] included within **warrakan** as **warrakan djuryunamirr** 'those that slide i.e. edible snakes' for food classification system

Figure 21 Djambarrpuyngu biological classification of the animal kingdom expressed as a hierarchy (Adapted from Rudder, 1978/79:353-5)

'plants with definite stems' and **mulmu** 'plants without definite stems'. Such a division closely parallels the Anindilyakwa division into woody stemmed and non-woody stemmed plants. In the classification of vegetable foods, the division is into **borum** 'fruit', specifically ripe fruit, and **ngatha** 'other vegetable foods', including root foods, nuts, bee products[15] and the growth centres of palms. Although Rudder has not indicated whether the various types of **ngatha** are specifically named, again there are close parallels with Anindilyakwa food categories. The only significant differences are that nuts are separated from fruits and fruits are contrasted with all other vegetable foods.

I would hope that the data and discussion presented in this study would contribute to a satisfactory solution to the problems of defining the term folk genus, although I myself have not specifically addressed the problem.

On pp.87–88 I summarised my findings on the application to the Groote Eylandt data of Berlin's hierarchical model of biological classification and listed a number of unusual features. I made several suggestions in relation to current theory, perhaps the most radical being the idea of covert life form taxa. I suggested that non-hierarchical models of biological classification have suffered from two factors, viz. (i) a mixing of classification systems and (ii) horizontal relationships being conveyed at the expense of vertical relationships.

Allowing for modifications, Berlin's model seems the most satisfactory model to date to explain the vertical relationships of class inclusion which are implied by the existence of superordinate taxa. However there is a need to give further thought to the horizontal relationships between taxa at any one level of a hierarchy as part of the total classification system.

There is tremendous scope for comparative studies of Australian Aboriginal classification systems. To my knowledge, comprehensive data on plant and/or animal names with scientific identifications are already available in another five or more Aboriginal languages, though most of the data are as yet unpublished. But so much of what has been done in the past, both in Australia and overseas, is purely descriptive, providing lists of names in the vernacular with a translation which may or may not include scientific identifications. What is needed is a study of the various biological and food classification systems. It would not be so difficult to extend the basic identifications to neighbouring languages and thus allow further classification systems to be studied.

There is also ample scope for further work in exploring the relationships between different classification systems once the various systems have been identified. A possibility which could provide some interesting comparative data would be the relationship between the food classification system of a particular society and what is considered to be a meal in that society.

As far as I am aware the data presented in Chapter 5 provide the most detailed examination to date of Australian Aboriginal totemic classification in the sense in which I have defined it. Such an examination would not have been possible without the detailed study of the biological classification systems as a

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[15] **guku** 'bee products' should be classed as **ngatha** 'other vegetable food' and not as **gonyil** 'meat food'. (Rudder, pers. comm.)

knowledge base. Again there is tremendous scope for comparative studies of totemic classification systems, particularly in relation to clan totemism, taking into account the selection, distribution, association and sharing of totems. Comparative studies between successive neighbouring groups, becoming aware of successive changes in totemic relations and associated myths, would make a fascinating study in itself. I am aware that some of this type of work has been done but I can see value in studying complete systems and not just selected parts of the system, though such studies also have their place.

Practical implications

Attention has already been drawn on p.26 to the importance of making available the scientific classification of plant and animal species which are totemic species. It was pointed out that the use of English names as a basis of comparison of totemic species has led to misunderstanding in the past which has resulted in difficulties in determining the suitability of marriage partners. There is a need for the type of work reported in this study to be extended over all those areas where interrelationships between tribal groups are dependent on totems.

As mentioned in Chapter 2, the Groote Eylandt Mining Company is mining manganese on the island. The company has a responsibility to rehabilitate mined areas and has done its utmost to cooperate with the Aborigines of the island in planning their rehabilitation programme. The Aborigines are keen for the land to return as much as possible to its earlier state. To assist in establishing growth of native species on rehabilitated areas, there has been considerable effort in research, both locally and in controlled experiments at the University of Melbourne (e.g. Langkamp, 1981; Farnell, n.d.). Our herbarium collection at Angurugu has been extensively used as a primary source of identification of plant specimens for the rehabilitation programme.

But an exciting development was that in 1982 Nangurama, the one from whom I have learnt so much of what is in this book, was awarded a contract by the mining company to collect local seed for their rehabilitation programme. Largely as a result of the awareness of Aboriginal expertise generated through my research and through the publication in 1981 of Miss Levitt's book on the plants of Groote Eylandt, the rehabilitation officers recognised that they could use the Aboriginal names of plants to specify the seeds they required and rely on the Aboriginal people themselves to find the seed – and the best sources of seed.

For many years the mining company organisinged one– and two–day seminars for its staff members to encourage an awareness and a greater appreciation of Aboriginal culture. An introduction to clans, their totems and their land was always included but more recently those participating in the two–day seminars were made aware of the biological and food taxonomies. Many people have been amazed as they began to appreciate the complexity of the various classification systems. They gained a new respect for Aboriginal people. These courses have done much to foster understanding between Aborigines and non–Aborigines on the island, something which is sorely needed in a country where there has been so much racial prejudice and misunderstanding.

The work on the classification of foods is directly applicable to the teaching of nutrition, particularly the need for a balanced diet. Home science teachers in

the local school and nurses in the local community health centre have been encouraged to utilise the Anindilyakwa food categories as a basis for nutrition education rather than using European categories alone. It is the introduced foods such as flour, sugar and other processed foods which have contributed so much to poor dietary standards in many Aboriginal communities today. The dietary balance has changed from that of earlier years and this needs to be understood in the terms of the food classification system in use in the community, not in the terms of an introduced system of classification. To ignore the folk classification system is to reinforce the idea held by many Aborigines that there is something intrinsically superior about anything that is introduced from European culture. In fact bush foods, being basically unprocessed, are naturally fresher and contribute to a healthy diet when eaten in the right balance from the perspective of the folk classification system.

The development which has excited me most in the application of this study is in the area of science education. In October 1980 I was invited to participate in a workshop, organised by the Northern Territory Department of Education, on the adaptation of the N.T. primary school science curriculum for use in Aboriginal schools. As a result of the workshop, I resequenced the concepts of the curriculum with the assistance of one of our local Aboriginal teaching assistants, so that the concepts were more appropriate to the learning experiences of Aboriginal children. We then listed examples from the local environment which could be used to illustrate each of these concepts (Waddy, 1982b; n.d.) One of the main themes of the science curriculum is classification. The studies reported in this book on biological and food taxonomies are directly applicable to this area of the curriculum. Totemic classification is more appropriately covered in the social science curriculum. I have also worked with a team of teachers and Education Department advisers on the preparation of a pupil workbook and teachers' notes covering Groote Eylandt clans, their land, their songs, their totems, their myths, their economy and their environment (Oldham, 1981).

One of the basic tenets of education is to proceed from the known to the unknown. For the Aboriginal child, the known facts in relation to plant and animal classification are his own culture's taxonomic systems. He may need to be made consciously aware of those systems but if they are discussed at the appropriate grade level he will have no difficulty in recognising the appropriate vocabulary. He may then, at a later stage, be introduced to alternative forms of classification as in English folk classification and scientific classification, with the expectation that he will gain a far better grasp of the concepts of hierarchical classification than appears to have been achieved in the past.

The ideas which arose out of the 1980 workshop have been circulated to a number of Aboriginal schools in the Territory in the hope that they would act as a stimulus to others to become aware of and to utilise Aboriginal knowledge in their own teaching programmes. But I would hope that the knowledge of classification systems reported in this book will not just be applied in Aboriginal schools. It has a place in non-Aboriginal schools and colleges throughout Australia in the teaching of classification. Groote Eylandt Aborigines have hierarchical systems of classification which deserve to be placed alongside other systems of classification. Theirs is not just a primitive system to be ignored but a complex system which deserves to be recognised.

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Appendix 1

METHODS

This appendix outlines and evaluates the various methods used in collecting data and recording information in a variety of forms suitable for use in the community. Wherever possible details have been given which would enable other researchers to follow similar methods. A list of Anindilyakwa assistants and their significant contributions is given at the end of the chapter.

I arrived on Groote Eylandt in September 1975 in response to the invitation of the local Aboriginal community council to continue the work of Miss Dulcie Levitt who was due to retire. The council recognised the contribution made by Miss Levitt in recording so much information on the plants of Groote Eylandt from the older people of the community. They acknowledged that it was only the people who were then in their fifties or older who had lived as young adults in the bush and who therefore had an extensive knowledge of plant and animal lore. They were anxious that as much as possible of the old people's knowledge about not only the plants but also the animals should be recorded before it was too late. My thesis, on which this book is based, arose directly out of the work of recording information from the old people and was not even contemplated until 1979.

Initial period

The initial emphasis in my research was on obtaining Anindilyakwa names and uses of plants and animals from knowledgeable Aboriginal women in the field. This approach entailed taking several of the women on one day trips at two or three week intervals to appropriate habitats.

The Groote Eylandt women are very shy - and especially those at Angurugu. They do not take easily to strangers. It is the general experience of non-Aborigines that they are not accepted until they have been there two years, gone on leave and returned. Their genuine interest in Aboriginal people is then recognised. I was very fortunate that I was able to work alongside Miss Dulcie Levitt for the final five months before she retired. I was thus introduced to the Aboriginal women through a respected friend and I am sure that this greatly assisted the development of trust and rapport with the women.

Despite the difficult nature of the language I began learning and using it immediately as the old women knew little English. My attempts at using Anindilyakwa were - and have continued to be - greatly appreciated. Today it is only the older people who lived as young adults in the bush who have the breadth and depth of knowledge that was required for this study. Thus it has been essential to gain a grasp of Anindilyakwa although I am by no means fluent in it.

Sometimes, especially in the earliest days of field work, I suggested the destination for trips with the women but I soon realised the value of allowing the

women to suggest it since they knew the best place to visit at a particular time of year. However the choice of destination was frequently limited by the lack of an appropriate vehicle. This resulted in only a small number of places being visited.

As I got to know the women better I was able to go camping with them from time to time, usually only for a weekend but on one occasion in 1978 for a full week.

When out with the women I accompanied them whenever possible when they went in search of food. They willingly answered my questions as I sought to recognise the animals and plants I encountered. Having seen something or had something explained the women expected me to recall the information and the occasion. However it was a rather slow method of gathering data.

Filing system

Much thought was given during the first year of the project to the most suitable means of recording data. There were two basic considerations:

i) information had to be readily accessible and retrievable, and
ii) information had to be available to the local community.

It was decided that sorter cards should provide a reasonable system to fulfill both needs. In retrospect, whilst the first aim has been reasonably achieved, the second aim was rather optimistic for a community which is barely literate and whose members are far more oriented to learning from people than from inanimate reference systems.

The system was set up with alphabetically ordered entry cards for every Anindilyakwa name, English common name and scientific name (Fig. 22). Each card shows all the names for cross-referencing purposes. The base card was the scientific name card since it was expected that every specimen would have a scientific name even if it did not have an English or Anindilyakwa name. Only the scientific name cards have been punched for the purpose of sorting. In point of fact, whereas in the plant kingdom it is reasonable to expect a scientific name to be available, this is not always the case in the animal kingdom, especially amongst invertebrates.

Information is arranged on the cards according to a fixed format which is indicated on the master card (Fig. 23). This was done so that one could expect to find the same kind of information at the same point on each card, regardless of the amount of detail. Miss Levitt's descriptive notes for the 400 plant species collected by her were affixed to the back of their respective cards to save typing them again. However other details were extracted and summarised on the cards.

In designing the cards I took the opportunity to consult with Miss Alison McCusker who was involved in the Australian Biological Resources Study. I was concerned that the cards should contain all the information that would be needed from a scientific viewpoint if the data could eventually be computerised and fed into an Australia-wide data bank. That possibility is now being realised in part. Many of the data, including the historical data, have now been recorded on a Digital PDP 11 microcomputer, using an RT-11SJ operating system.

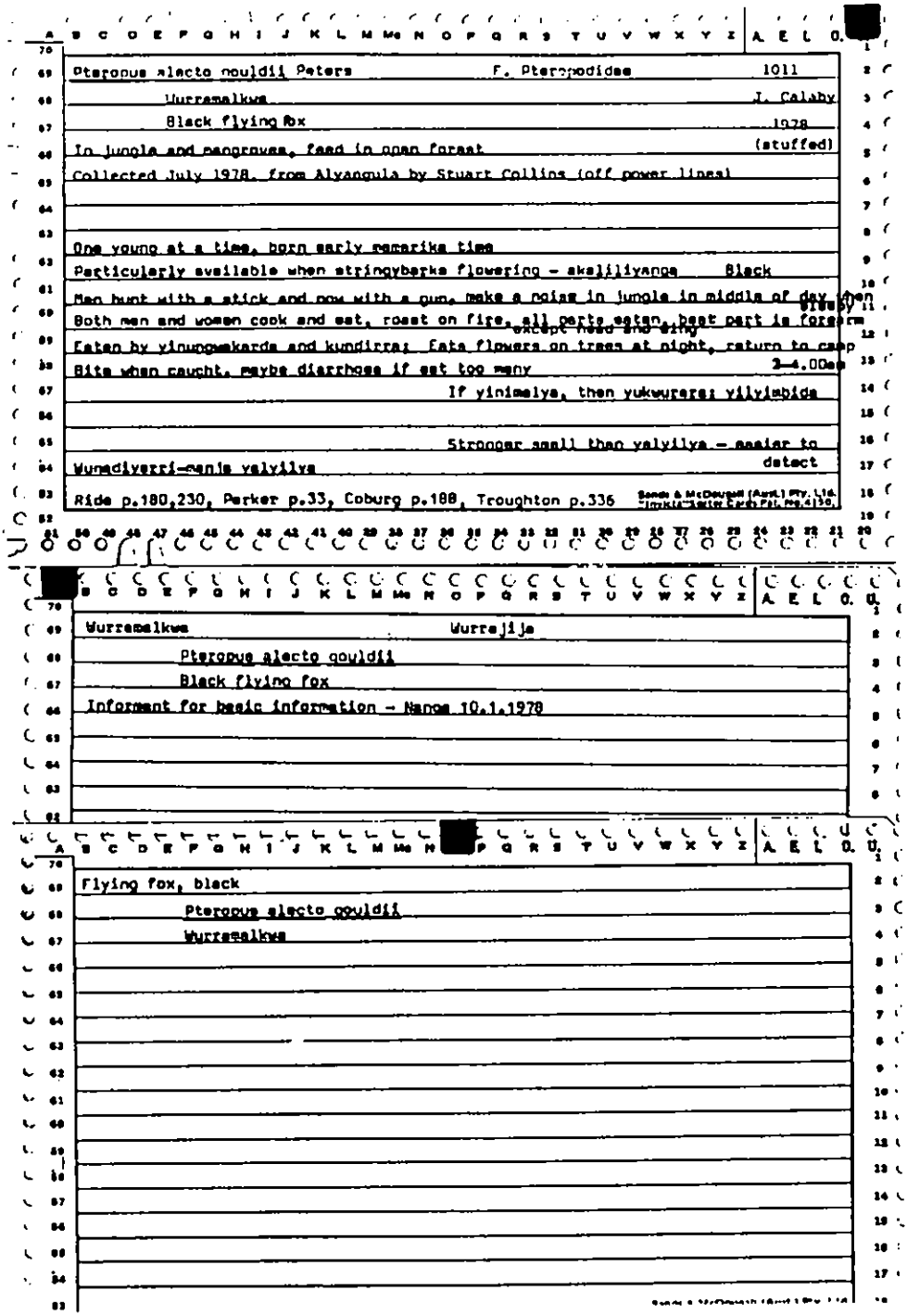
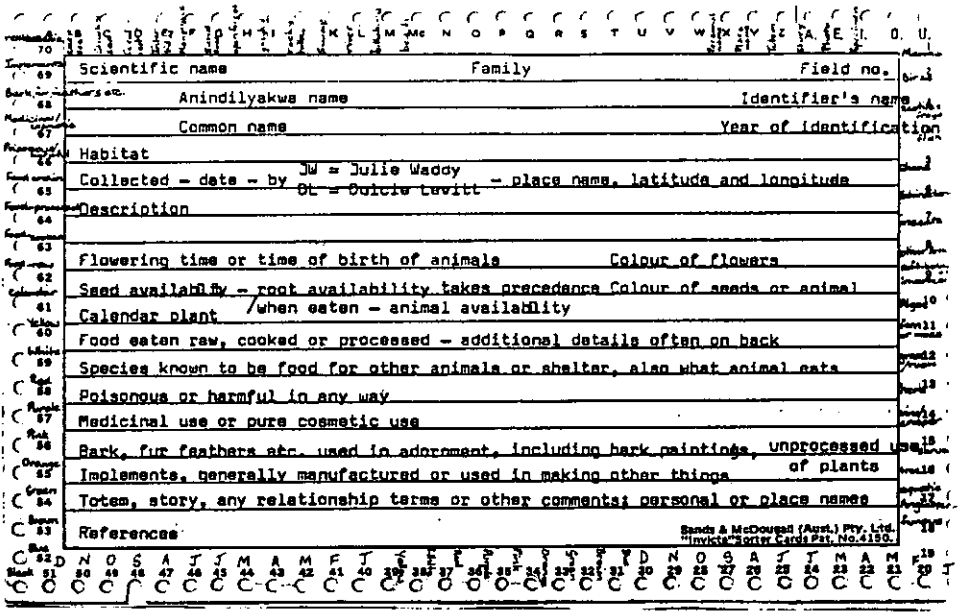


Figure 22 Examples of Anindilyakwa name, English common name and scientific name entry cards in the filing system.



Habitat notes: Deep sea = mukwumukwa, shallow sea = makarda, coral reef = ayeba, milirre, intertidal zone = ?mabilala, mangroves = anima, dune = angwa ie. sand ridges, sand plain and inland dunes on east coast, open forest = arriberriba, jungle (monsoon forest) = mirungwena, rocky hillsides = yinijirra, swamp = permanent or seasonal swamps, including margins of swamps, river = adelyima, including river banks and flood plains, billabong = awurukwa, beach = mijiyalya, including just above high tide mark (ekbulkwurrariya).

Personal or place names connected with animal or plant name
Story recorded on tape
Photo obtained or actual specimen collected (generally but not always held at Angurugu)
Echinoderms = star fish, sea urchins, trepang
Shells include octopus, squid, chitons
Other Arthropods = spiders, crabs, prawns and other crustaceans, centipedes, millipedes
Grass or rush includes other sedges and similar species
Herbs includes orchids and other plants with bulbs, and some plants that spread over grou
Aquatic Angiosperm = plants growing entirely in water, including some seaweeds
Jan–December – 20–30 = Flowering time or time of birth of animals
Colours – 31 – 39 = Colour of flower
Jan.–Dec. – 40–51 = Seed, root or animal availability
52 – 60 = Colour = colour of seed or animal
Calendar plant = plant used to indicate time of year when other food available or winds
Food chain = any information on place of plant or animal in food chain, also plant used as shelter
Bark, fur, feathers includes firewood and uses of leaves in covering food or as plates

Figure 23 Master card of filing system.

Field data

Initially the recording of plant data continued in the same format used by Miss Levitt. Printed field record sheets had been supplied by the then Department of Primary Industry. Although field numbers were allotted consecutively, Miss Levitt reallotted a number if she found she had collected a duplicate specimen. Since then it has been pointed out to me that standard scientific practice is to maintain a field specimen number for the specific specimen collected - field numbers are therefore no longer reallotted. Similar information is now recorded in a field notebook.

Allocation of field numbers, and thus recording of data, for animals has been tied in with the file card system. The first nine digits on the cards were allocated to animals as follows:

1 Mammals
2 Birds
3 Reptiles and amphibians
4 Fish
5 Molluscs
6 Echinoderms
7 Insects
8 Other arthropods
9 Other invertebrates

I now realise that the choice of categories was by no means the most suitable for the local community since it did not take account of the Anindilyakwa classification system. However there seems to be little point in changing the system since the whole system of field numbers would change. The confusion which would result does not seem to be justified since field data numbers already allocated could not be changed.

The grouping might have been better as follows:

1 4-footed land mammals and reptiles (snakes could be separated)
2 Other animals on the land
3 Birds and flying mammals — split for the practical reason
4 Insects, spiders etc. — that there are so many insects
5 Fish
6 Shellfish
7 Other animals in the sea

Four-digit field numbers were allotted for animals such that the first number corresponded with the number from the file card and the remaining three numbers were allocated consecutively, i.e. 000-999. Should the need arise, the number would be expanded to a 5-digit number, but maintaining the significance of the first digit.

Date, location collected, collector, Aboriginal name of specimen and the person who informed me, and any other relevant details are recorded at the time of collection. Other details are added as available. File cards have been typed at a later date from this information.

Questionnaire

After the initial two year period I realised that it was going to take a long time to encounter all the various forms of animal life on my trips out with the women. What was more, animals such as crocodiles would be definitely avoided! And knowledge about larger animals such as wallabies and turtles was more likely to be obtained from the men than the women.

Thus at the end of 1977 I designed a questionnaire (Fig. 24) for the purpose of obtaining information on those creatures which could be readily identified but were not so likely to be encountered. Initial success using this questionnaire with one of the older men soon led me to appreciate the possibility of using it to elicit information on the birds, using as a reference source the Readers Digest complete book of Australian birds (see p.218 for further comment). The use of the questionnaires was later extended across the whole range of the animal kingdom using reference books wherever possible as a stimulus to gaining additional information. I found that by reading about various creatures and thus extending my own knowledge I was able to ask more informed questions about a particular taxon (see also pp.218–19). A total of approximately 500 questionnaire forms was used.

Whilst the need to check information in the field and to verify the scientific identification given for a particular Anindilyakwa taxon was recognised, nevertheless a vast amount of valuable information was obtained by this means. The questionnaire forms provided a systematic framework through which the information could be elicited.

The design of the questionnaire was influenced in part by some of the papers contributed to the Ethnobotany workshop held in Canberra in 1976 (see p.62). A number of workers suggested questions which should be asked in eliciting information (Chase and von Sturmer, 1980; Heath, n.d.; Peile, 1980; Sutton, 1980).

An evaluation of practical problems encountered in using the questionnaire has been given in Table 26, together with suggested improvements. Some comments are also included on the rationale for the design.

Summary sheets

As the number of questionnaire sheets mounted to approximately 500 the need for more rapid access to the accumulated data became apparent. Additional data on totemic species could only be obtained from the appropriate clan leaders and it proved difficult to know which bits of information were needed for which creatures.

Thus late in 1978 I designed a summary sheet (Fig. 25) on which all the most significant data from the questionnaires could be indicated. These sheets were intended to serve two purposes:

i) to show me where there were gaps needing to be filled, and
ii) to provide immediate access to the basic facts already obtained, both for my own benefit and for the benefit of teachers and others in the local community and at the same time to indicate that further information was available.

Anindilyakwa name: _____

English name: _____ Scientific name: _____

Informant: _____ Date: _____

Habitat: Mukumukwa _____ Makarda _____ Ayeba _____

Milirra _____ Mabilala _____ Mijiyalya _____

Ayikbalkalya ayikbulkwurreriya _____ Anime _____ Angwa _____

Adalyima _____ Awurukwa _____

Erriborriba _____ Yinijirra _____

Mirungwena _____ Mirungwena akwudangwa mijiyalya _____

Particular places: _____

Abundance: Arakbawiya - ababirna.....? _____ ambawura.....? _____

Aduwaba - ababirna.....? _____ ambawura.....? _____

Food: (A)kalyalyibara? _____

Who cooks it? _____ Arakbawiya? _____

Is there any special fire? _____

Which parts are removed before cooking? _____

_____

Do you eat these parts? _____ How cooked? _____

Is anything added for flavour - arakbawiya? _____ aduwaba? _____

Which is best part? _____

Which parts are left over when everyone has finished eating? _____

_____

Is any part given to anyone in particular - aduwaba? _____

arakbawiya? _____

Is any part taboo? _____ If so, for whom? _____

and when? _____

Taste: (A)kwurara _____ (a)lyimbida _____ (A)ngwurrkwuwarrwalya _____

(A)mbuna _____ (A)ngwurrkwarda _____ (A)ngkariyarra _____

other _____

Food chain: Yimungwungwangba-langwa aninga? _____

Wurrajija-langwa aninga? _____

Yingarna-langwa aninga? _____

Akwalya-langwa aninga? _____

What does it eat? _____

Is it harmful? _____

Does it make you sick if you eat too much? _____

Any medicinal use? _____

Fur / feathers / Skin used? _____

Adidira? _____ Yayorra? _____

Horns? _____ Akarrnga? Marimba? _____

Claws? _____ Awalya? _____

Who hunts? _____

Implements used - arakbawiya? _____

aduwaba? _____

Where do you look for them? _____

At what time of day? _____ .../2

Figure 24 Questionnaire used to elicit information on the animal kingdom (page 1).

- 2 -

Availability: When is the best time for eating? for using?

Reproduction: When are young ones born?

	Eating	Using	Young ones
Akilarrkalyukwa			
Akilarrkamarika			
Akilarrkwumirndada			
Akaliliyanga			
Akilarrkaburarruwa			
Akilarrkardadarra			
Akilerrkamurrariya			
Others			

Signs indicating availability: _____

How many young at a time? _____

Where are nests? _____

Have you seen nests? _____

What sort of nests? _____

Classification of animal in Anindilyakwa: _____

Relationship to other species? _____

to human beings? _____

Connected with any personal names? _____

with place names? _____

with a ceremony? _____

Is it a totem species? _____ Angkabirra-langwa? _____

Alawudawarra? _____ Title? _____

Erribirra? _____ Owned? _____

Angkabirra-langwa? Group or individual? _____

If group, 1 clan or shared? _____

Any mainland connection eg. Nunggubuyu? _____

Localities mentioned in story? _____

_____

Best person to tell story? _____

Commonly known? _____ Old story? _____

Wurriyukwayuwa-langwa? _____

Teaching? _____

Amamalya? _____ Awurrmalya? _____

Amaba? _____ Erribirra? _____ Akwurdukwurda? _____

Alukwanja? _____ Erribirra? _____ Akwurdukwurda? _____

Figure 24 Questionnaire used to elicit information on the animal kingdom (page 2).

Table 26 Evaluation of Questionnaire

Question or category	Comments
Anindilyakwa name	first entry because this was the starting point
English name	when initially designed I was still expecting one-to-one correspondence with Anindilyakwa names – should be space for 3–4 scientific and English names
Scientific name	
	add scientific family
	add reference source
	add early name(s) and reference source
Informant	important to record informant's name; information from additional informants usually given when data on summary sheets – thus only one line needed
Habitat	Anindilyakwa concepts of habitat are used
Particular places	intended to give indication of distribution but not very productive
Abundance	intended to give indication of change in abundance but not very productive
Food	cooking details tend to be the same for each group of animals, e.g. birds
Taste	some taste words only used to refer to plants
Food chain	intended to tap ecological knowledge; **aninga** 'non-flesh food' was wrongly used instead of **akwalya** 'flesh food' since the Questionnaire was designed for use with the animal kingdom
What does it eat?	should precede other questions on food chain
Who hunts?	should precede food questions
Where do you look for them? At what time of day?	should precede implements used
Availability Reproduction	data best collected at appropriate time of year, rather than by elicitation

Table 26 Evaluation of Questionnaire...

Signs indicating availability	I anticipated calendar plants would be given but these proved difficult to elicit in reverse
Have you seen nests?	intended as verification of data given
Classification of animal in Anindilyakwa	should follow Anindilyakwa name at beginning of Questionnaire (what does it fit with?)
Relationship to other species	intended to refer to non-totemic relationships – I was often given totemic relationships
Relationship to human beings	should be deleted since relationships are the same as those for totemic relationships with people and are therefore based on the kinship system
Connected with any personal names	names come from totemic songs, also some nicknames
Connected with place names	usually connected through activity of totemic creature
Connected with a ceremony	this information was made available to me but not for general distribution
Is it a totem species?	should precede Connected with ...names
Ownership of story	if story is owned it will be owned by the clan whose totem it is – thus these two lines not needed
Any mainland connection?	connections not generally recognised by Nangurama – information better obtained in other contexts
Localities mentioned in story	not really relevant in initial elicitation – more applicable to summary of story
Teaching?	stories were not recognised as specifically having a teaching purpose despite the theme of some of them
Amamalya?.... Awurrmalya...	most stories were recognised as **amamalya** 'real or true' though to non-Aborigines they would generally be considered as myths or legends
Emeba...('songs') **Alukwanja**...('dancing')	should precede **Alawudawarra** ('story')

Table 26 Evaluation of Questionnaire used to elicit information on the animal kingdom, including rationale for design and recommended improvements.

LARGE SEA-BIRDS

Classification : wurrajija warningumakardi-langwa

Anindilyakwa Name(s)	English Name(s)	Reference	* Habitat(s)	Eaten	Other Uses	Totem	** Story	Song	Related Names: Places	Related Names: People	Relationship: Totem	Relationship: Similar	
dumabiyadangwa	brown booby	p.64b	muk,mak		feathers	Jaragba		✓	Angamburnu-manja				8-9
yinibirra	lesser frigatebird	p.73	muk,mak			Jaragba		✓	Ajarrirru-manj				6-7
dumakbula	pelican	p.62	yiningilya mij,anu	✓	feathers		✓		Dumakbulu-manja	Makbula			6-7
dumekalya	jabiru	p.86	mak,mul, mab,mij, anu,ada, awu	✓ *eggs	feathers		✓ T						8-9
manda	great-billed heron	p.76b	mak,mul,mab mij,anu,ada awu,ekb	✓		Warningumakar-jirrakba Durila Wurramarrba	✓ T		Mandumurru-manja				8-9
dumanda	blue reef heron	p.81b	mul,mab,mij ekb,anu,ada (awu)	✓ *eggs		Warningumakar-jirrakba Durila Wurramarrba							8-9
amarrirla (amarrarla)	large egret little egret white reef heron	p.79b p.80a p.81a	(mul),mab mij,ekb,anu ada,awu	✓	feathers								6-7
milyengwa	pied heron white-necked heron* (also warningaribu-langwa*)	p.78 p.76a	mab,mij,ekb anu,ada,awu	✓ *eggs									8-9
alikira	darter	p.66	mak,mul,mab mij,ekb,anu ada,awu	(✓)		Jaragba							8-9
mawulburda	cormorants	pp.67,70 71 a&b	mak,mij,ekb anu,ada,awu	✓		~~Mamerika~~							6-7

*Habitat Abbreviations: *muk = mukamuka, mak = makarda, aye = ayaba, mul = mulirra, mab = mabulala, mij = mijiyalya, ekb = ekbulkarrariya, anu = anuma, ang = angwa, ada = adalyuma, awu = awarukwa, err = erriberriba, yin = yinijirra, mur = muruguena.*

Reference : Reader's Digest Comp.Book of Australian Birds.

** T = taped

Figure 25 Example of summary sheet for animal kingdom data

The summary sheets were intended as a temporary measure before data could be transferred to filing cards. I have since realised that they are likely to continue to fulfil the second purpose on a more permanent basis, particularly as an additional column now indicates the grade level at which children could be expected to be familiar with a particular animal.

Anindilyakwa taxa are grouped on each summary sheet firstly on the basis of named Anindilyakwa higher level taxa and secondly on the basis of similarity in form and/or behaviour. Later studies on classification have indicated that my initial sorting on the latter basis was not always in accord with Anindilyakwa perception.

Because of repeated requests from schoolteachers for information about plants before the publication of Miss Levitt's book, a summary of all the known edible plants and twenty-two of the best known plants with other uses was prepared and printed locally for school use (Waddy, 1980).

Reference collections

One of the major aims of the research project which gave rise to this book was to establish a collection of specimens which would be available as a reference source for the Angurugu community. Most of the specimens are now housed in the Angurugu Community Library and Resource Centre.

Plants

When I took over from Miss Levitt there was already an extensive herbarium collection of the 400 species which she had collected. I have continued to add to this collection. The specimens are pressed and dried and mounted on white paper, 206mm x 337mm, and inserted in clear plastic envelopes. Each sheet is annotated with all available collection data and all available names, i.e. Anindilyakwa, English and scientific names.

The sheets are bound in two- or three-ring folders, arranged in numerical order according to habitat and/or form, with the lowest field number being at the back of each folder. The best characterised groups of plants have been separated out, viz.

Seaweeds (and sea grasses)
Ferns
Grasses
Rushes and sedges
Lilies (and other monocots)
Hibiscus family and Grevilleas etc.
Wattles
Peaflowers
Gums
Paperbarks
Convolvulus family

Other plant specimens are arranged according to habitat and plant form, as indicated in Table 27. This system was designed by Miss Levitt, and extended by me, to aid the non-specialist who brings in a plant and wants to know what it is. However there are several distinct disadvantages, the greatest of which is that the same plant species may grow in a number of different habitats. This means either that specimens of the same species can be located in several different folders and are thus difficult to compare, or that otherwise it has previously only been collected from one habitat and the identification of a new specimen may not be recognised even though there is a specimen of that species in the system. The same thing may happen if the form of the plant is variable. Decisions about habitat and plant form are often difficult for plants at the boundaries of categories.

	trees	shrubs	undergrowth	vines and creepers
jungle (monsoon forest)	✓	✓	—	✓
open forest	✓	✓	✓	✓
rocky hillside	(✓	✓	✓	✓)
beaches (and coastal dunes/scrub)	✓	✓	✓	✓
swamps and rivers	✓	✓	✓	—
mangroves	✓	—	—	—

Table 27 Distribution of folders of plant specimens according to habitat and plant form.

Since overall form of the plant cannot be preserved and the colour generally fades, a photographic record has been established of as many species as possible, but especially of those with Anindilyakwa names.

I have added seaweeds and sea grasses to the herbarium collection. These have been soaked in formalin prior to 'floating' over white paper and drying under gauze. The sheets are then annotated in the normal manner. Mangrove species have had to be soaked in boiling water before pressing and drying in order to avoid the loss of leaves on the specimen.

Animals

Every specimen is numbered with the appropriate field number, as explained on p.209. Numbers are normally punched on dymo tape and tied to the specimen. Field numbers have been inscribed in black ink on shell specimens, and are written on card labels and mounted underneath pinned insects.

Mammals

The aim is to have a representative stuffed specimen of each scientific species of land mammal. Only two specimens are in the collection thus far, though at least four specimens are being held awaiting taxidermy. The collection has been established because the identification of rodents and bats in particular is too difficult by means of photographs, and reference books were inadequate until publication of The Australian Museum complete book of Australian mammals (Strahan, 1983). The limited number of species on the island should ensure reasonable accuracy of identification.

Marine mammals will only be represented by photographic record, as it becomes available. Until Watson's Whales of the World (1981) became available it was difficult to obtain satisfactory reference photographs from which Nangurama could identify the various dolphins.

Birds

No bird specimens are being held on Groote Eylandt. All specimens are forwarded to Museums and Art Galleries of the Northern Territory. The quality of photographs in the Readers Digest complete book of Australian birds (1976) is such that identification can be made with a high degree of reliability from the photographs. The only areas of confusion have been where a number of scientific species are grouped within the one Anindilyakwa taxon, e.g. the hawks, kites and goshawks; the terns and waders; and the cuckoos and shrike-thrushes. From the book, the Anindilyakwa identification of the shrike-thrushes was uncertain. When a specimen of the grey shrike-thrush, Colluricincla harmonica, was produced three years later, its identification was confirmed as **wurrumabajakba**, the name which I had predicted to be more probable on the basis of similarity in form.

There was one instance only of an Anindilyakwa name which Nangurama could not link with a bird in the above book. He was looking for a red patch on the rump of a small bird called **dakwerrukwerra**. Eventually we located the bird in Slater's field guide, viz. the rainbow pitta. The photograph in the Readers Digest book did not show the red rump. The main advantages in using the latter were that the photographs were more realistic than the paintings and each photograph showed only one species instead of a group of similar species on the one page, some of which were not present on the island.

Reptiles

The aim is to display a representative specimen of each species set in formalin and preserved in alcohol. Younger specimens of larger species have been selected in many instances because of the constraints of the size of containers available for display purposes. Preservation in this way has the disadvantage of colour fading and so a photographic record is also being made to supplement the preserved specimens. Where possible the photographs are of adult specimens. The best available reference books have not included photographs of all species.

Amphibians

A number of frog specimens have been collected, set in formalin and preserved in alcohol. It does not seem to be so important to develop the frog collection since:

i) there is only the one Anindilyakwa taxon for frogs,
ii) there is now an excellent reference book on frogs, and
iii) the colour fades so rapidly.

Fish

The aim is to establish a photographic record of as many scientific species of fish as possible. Specimens have been preserved in formalin and forwarded to C.S.I.R.O. fisheries expert, Dr I. Munro, in Sydney for identification. The Anindilyakwa identification of every specimen is checked with a local authority before the specimen is preserved. Available reference books such as Grant's Guide to Fishes (1978) have been of immense help in elicitation of Anindilyakwa taxa, but I do not consider the resultant identification to be as reliable as those for the birds. There are a number of reasons for this, viz.

i) size of fish is not always clear,
ii) colour of fish in book is sometimes that of dead fish, sometimes of live fish – a source of confusion at times,
iii) species in Groote Eylandt waters may resemble those in Queensland waters without being the same, and
iv) not all species are illustrated and thus some identifications may have been a 'best fit' to available illustrations.

Molluscs

The aim is to display a representative specimen of each scientific species found around the island. Shells are displayed in small cardboard boxes (unit trays), one scientific species per box, with the Anindilyakwa, English and scientific names on typed cards in each box. The boxes are housed in glass-topped drawers in an entomological cabinet, this being the only method we could see which would provide the necessities of light-proof storage and ready availability of the display to children and others in the community.

Many of the shell specimens were obtained from earlier collections made on the island, a large number from shells collected by Aboriginal women at Umbakumba and stored in the rectory for several years and a smaller but valuable collection from Mr H.L. Perriman, an early missionary on the island.

Octopus, squid and cuttlefish specimens are preserved in alcohol as well as being photographed.

Echinoderms

This group includes trepang or sea cucumbers, sea urchins, sand dollars and starfish. They are not an easy group to have identified nor to preserve satisfactorily. I have dried several starfish specimens and preserved other specimens in alcohol. Photographs seem to provide a more realistic record of trepang and sea urchins.

Insects

The aim is to display a representative specimen of as many species as reasonably possible. Smaller species have not been sought unless significant, such as sandflies. Since most Anindilyakwa insect taxa include a number of scientific species it was felt important to collect a reasonable range of specimens in order to help ascertain the boundaries of each taxon.

Each specimen is pinned as recommended in the handbook written by C.S.I.R.O. entomologists, Norris and Upton (1974). Scientific names and field data are printed on cards mounted underneath the specimens. Specimens have been displayed in a 10-drawer entomological cabinet, mounted on white polyethylene foam. The drawers are arranged partly on the basis of scientific classification and partly according to Anindilyakwa classification. Anindilyakwa and English names are displayed on typed cards for each Anindilyakwa taxon.

Caterpillars and grubs have been photographed. Caterpillars have been allowed to complete their life cycle whenever possible as the adult is easier to identify. Some grubs have been preserved in alcohol.

Spiders, centipedes, millipedes and ticks

I have not placed a great emphasis on collecting spiders partly because there is only the one Anindilyakwa taxon for spiders and partly because of the difficulty of preserving spiders satisfactorily. The specimens which we have are preserved in alcohol with glacial acetic acid and glycerin.

Centipedes, millipedes and ticks have been preserved in alcohol with glycerin.

Crustaceans

The aim is to display one or more representative specimens of each species preserved in alcohol. It is hoped eventually that this series of specimens might be replaced by a series of freeze-dried specimens. The emphasis has been on collecting crabs from the shore and littoral zones, and any freshwater crustaceans, although some crabs and prawns have been obtained from prawn trawlers. A photographic record has also been established since the colour of specimens fades so much in alcohol.

Coelenterates

Jellyfish, sea anemones and related creatures are very difficult to preserve. I have thus concentrated on obtaining a photographic record of any specimens encountered.

Worms and leeches

I have had difficulty in obtaining specimens of these creatures. Such specimens would be preserved in alcohol.

Scientific identifications

The importance of accurate scientific identification in a work of this nature could not be overemphasised. It is the only basis on which the data from the Groote Eylandt perspective can be compared with data from any other folk classification system. The only fields in which sufficiently comprehensive reference books applicable to Groote Eylandt have been available for identification are birds, reptiles and amphibians. However even in these fields I have needed to refer the more difficult specimens to an expert for identification. In point of fact, most specimens which I have identified have been previously collected from the island by other researchers.

Thus I have sought and obtained the cooperation of the top experts within each field in Australia. I have been fortunate in having the opportunity to discuss my work with most of those who have assisted in identification and each one has given valuable assistance in making me more aware of the significant identifying features appropriate to his or her field. A list of all those who have identified specimens is given in Appendix 2, together with the data arranged according to the scientific classification hierarchy.

Reference books

Although reference books have generally not been adequate for identification purposes, they have nevertheless been useful as a source of additional information once the identification has been provided. However, as already stated on p.210 reference books have been an invaluable aid in elicitation of data about Anindilyakwa taxa, particularly for birds and fish.

A complete listing of reference books used in both these ways is given in Appendix 3. The list is annotated to indicate the usefulness of the reference source.

Dictionary listings

Whereas the summary sheets provide a summary of all the practical information available on each Anindilyakwa taxon, it became apparent that a dictionary listing was needed which showed the scientific names as well as Anindilyakwa and English names. Ideally I realised it would be helpful to have available alphabetical listings of all three sets of names. Such lists only became

available as the data were computerised. A complete alphabetical listing of Anindilyakwa plant and animal names is given in Appendix 4.

In the interim a topical dictionary was prepared for the animal kingdom, arranged firstly according to the higher order Anindilyakwa taxa but within each of those taxa largely paralleling the ordering of scientific taxa. This was particularly so for the birds and fish. The order for these two groups follows the order in the corresponding reference books. All the Anindilyakwa names have been recorded by Nangurama Peter Wurrawilya on tape. The main reason for following the reference books was that one could pick up the reference book and listen to the tape, turning to the appropriate pages in sequence.

Anindilyakwa identifications

The importance of obtaining Aboriginal names of plants and animals in the nearest possible proximity to the specimen in question had been firmly established in my mind by Miss Levitt. She rightly pointed out that to point to a particular plant was not enough. There was room for doubt unless one had one's hand on the tree, for example, and could say, '**Amiyembena eka?**' 'What kind of tree is this?' As Hunn (1973:41) has stated, the 'ideal stimulus is the living organism in its natural habitat observed at close range and at length'.

Miss Levitt's work grew out of a natural interest in plant and animal life. When she began to systematically prepare her work for publication, she made considerable use of lists of names collected by the linguist at Angurugu, Miss Judith Stokes. Miss Levitt added to that list and I in my turn added a few additional plant names.

The initial identification of plant specimens by both Miss Levitt and myself has almost always been carried out in the field where the plant is growing. For more common plants there has been the opportunity for repeated observation of the use of terms in natural settings with a very wide range of people as well as for specific checking in the field with different groups of people. While older Aborigines accepted my checking and expected me to be able to give the appropriate names, those younger than 40–45 tended to feel I was checking up on their knowledge and felt ashamed if they could not give an answer. They felt that I knew more than they did even though I may have had genuine doubts about the Anindilyakwa identification of a plant. I was no longer the naive investigator. As Dwyer (1980:226) has said, 'A posture of sustained ignorance is not entirely practical.'

In the process of checking her work, in about 1974 Miss Levitt gathered a group of six or eight older women and systematically went through the plant specimens that she had collected, checking the names with them. I understand that it may have been in this context that she was specifically given some of the binomial names, particularly those for grasses.

On one occasion I was asked to do the identifying. It was in 1976 when I was out with some of the Aboriginal men on a tour of inspection of rehabilitation work being carried out by the mining company on the island. The party had been split and I returned to find that the men had carefully laid out some twenty different leaves on the ground and asked me to identify them – in Anindilyakwa! For one

trained in scientific botany where flowers and fruit are the more significant factors in identification, that was quite a task. But it highlighted that the basis of Anindilyakwa identification of plants is leaf shape and texture and, I would add from further experience, the bark of a tree. The significance of leaf shape and texture has been noted by Hays (1974:265) and others.

It has been more difficult to obtain names of animal specimens in their natural habitat, although every opportunity was taken when animals were sighted in the field. Again extensive lists of names were available from Miss Stokes with observational notes from Miss Levitt together with lists gathered by earlier workers, notably Worsley (1961:181–89). Anindilyakwa identification of insect, shell and fish specimens has generally been done by asking one or two Aborigines to name a whole batch of specimens in turn, the insects being pinned, the shells cleaned and the fish thawed after being kept frozen for some time. Smaller numbers of mammals, birds and reptiles have been handled similarly to fish specimens. Most animal specimens tend to have been brought to me by non-Aborigines or, in the case of insects, collected by young Aborigines under my supervision. Any edible animals collected by Aborigines when I have been with them have been consumed for food. While such specimens may be photographed, the photograph may provide insufficient detail for positive scientific identification, particularly in the case of fish.

When seeking Anindilyakwa identifications under such conditions, I was asked for habitat details for all but the best known specimens and in addition I supplied behavioural details whenever possible. For example, in identifying the whirligig beetle, Dineutus australis, I described its action on the surface of the water. Nangurama also requested behavioural and habitat details when I was systematically eliciting information from him using reference books.

Obviously the ideal situation would have been to seek the Anindilyakwa identification of each animal specimen alive in its natural habitat and then to capture and preserve it for scientific identification – a highly impractical ideal in today's situation. A more practicable alternative was to retain all preserved specimens of all species and compare them all at the one time, assuming minimum loss of colour and maximum number of species represented. While this was possible to a large extent for insect and shell specimens, the hundreds of fish and birds involved made this alternative quite unworkable, quite apart from the difficulty in obtaining specimens of all the creatures. Consequently there were difficulties in identification, especially of fish but also on occasion for other specimens. There were several sources of difficulty in identifying fish, viz. the change in colour after a fish is caught, the lack of behavioural details and the small size of many of those specimens which were obtained from the trash trays of prawn trawlers. Nangurama often commented when eliciting information on the fish that the picture in the reference book must be of a dead fish because of its colour.

Since my knowledge of fish was limited, I had to rely on expert assistance in scientific identification which normally took some months to reach me. When working on the fish from the prawn trawlers I handled batches of as many as fifty or so possible species at a time. Nangurama provided the Anindilyakwa identification of the specimens and I photographed each one before preservation. When the scientific identifications were returned I realised there were some discrepancies, (i) between Anindilyakwa identifications given for the specimen and

those elicited using the reference book, and (ii) between Anindilyakwa identifications of the same scientific species at different times.

The latter situation only occurred with a few specimens and generally where the specimens concerned were very small or were borderline examples of a particular Anindilyakwa taxon. In the former situation, it would seem to me that when we went systematically through the whole reference book Nangurama was concentrating on the differences between the various taxa. He was consciously thinking of any other possible taxon which ought to be included. When presented with one or two specimens of a particular covert category two or three years later, he was not thinking of all the possible taxa in that group and on occasion appeared to misidentify specimens.

The clearest example of such an error was of a large tusk-fish specimen which Nangurama immediately named **yembirrkwa**. When the scientific identification was given as Choerodon schoenleinii, I realised that this was the identification elicited for **yukwunimur.da**, the black-spot tusk-fish, (**amur.da** 'dirty'), whereas **yembirrkwa** had been elicited as the Venus tusk-fish, Choerodon venustus. When I checked with Nangurama using the photograph and the reference book, he readily agreed that the specimen in question should have been **yukwunimur.da**. He had overlooked the black spot. **Yembirrkwa** is the most important taxon in the covert category of tusk-fish and parrot-fish.

In several instances where there was a discrepancy between the Anindilyakwa identification given for the specimen and that elicited using the reference book, it seems probable that the pictures in the book were misleading. For example, **amekekilyuwa** was elicited as the black pomfret, Parastromatus niger, but several specimens of the Queensland halibut, Psettodes erumei, were identified as **amekekilyuwa**, checked and double-checked with the photos and the book. It was originally included with **memirrerra** 'flathead, flounder and sole'.

In reporting his study of Ndumba ethnobotany in Papua New Guinea, Hays (1974:12-14) made the following statements:

> In any community or population studied by an ethnographer, knowledge, or information, is variably distributed; i.e., different people do not necessarily know exactly the same things, hold the same beliefs, or share exactly the same values. The assumption that a 'key informant,' or several of them, will possess the information an ethnographer is seeking, or that his version of that information is representative of anyone other than himself (let alone the whole community), completely disregards this basic fact of variation, which concern for systematic sampling can not only control for but also lay bare for examination.
>
> ...Hunn has pointed to the little-recognised additional power of systematic sampling:...it makes possible the discovery of the patterns of variation which exist in the population. I contend that it is these very patterns of variation which manifest the cultural systems the ethnographer is trying to describe.

I can now recognise and accept the significance of Hays' plea to take note of the variations obtained in naming responses. Unfortunately I dismissed many such

data that might have been recorded, particularly in the initial stages of this study, as being in error through lack of knowledge in one way or another on the part of the informant, for example, a bird name given by the women which differed from that obtained from the men. By the time I realised that such data could be significant it was too late to do anything about it. However it should also be remembered that my brief for this study was to record information from the old people, and in practice this meant from the old people who were considered to be the authorities. I should add that there was remarkably good agreement between people's identification for most specimens. Just what does constitute an error is a question raised by Dwyer (1980:223), though he did not suggest an answer.

In discussing variation, Ellen (1979b:341) distinguished

> three basic kinds of variation:
>
> i) variation in the relationship between lexical items and scientific taxa
> ii) variation between informants; and
> iii) variation according to rules appropriate to specific contexts.
>
> These can be described, respectively, as consistency, sharing, and flexibility.

Each of these three types of variation may be found both in identification of specimens and in classification of taxa into higher order categories. Consistency in identification and classification would appear to be very much dependent on informant variability. Ellen (1979b:346–48) has discussed five factors affecting the latter, viz., age, gender, status and kinship position, linguistic competence, and ability and special skills. It will be apparent from the list of Aboriginal assistants given on p.229–31 that I have selected assistants in such a way that these factors have been optimised for the task in hand.

Flexibility in identification, according to the context, does not appear to be a problem. Perhaps included under this heading would be specific names given to part of an animal or plant that is eaten, where the name of the whole specimen is different, and names of an animal or plant which are only used in clan songs but in all other respects can be regarded as synonyms.

With regard to the task of identification, Hunn (1975b:27–28) has suggested that there are at least two aspects of which only the first has generally been considered. The first task is 'to define the named categories of the domain being analyzed by comparing the range of denotation of the folk taxa with that of the scientific taxa partially or entirely included in each folk taxon.' The second task is 'to define all folk taxa in terms of the criteria actually employed by the folk in question.' When eliciting data, and subsequently when checking the identification of specimens, many instances of defining criteria were spontaneously given and noted. However the size of the task precluded obtaining such data on a systematic basis, let alone determining the actual process of identification.

There have been many occasions when two and sometimes three names have been consistently applied to the one Anindilyakwa taxon. Such names have been interpreted as synonyms.

Within most superordinate taxa there remain some Anindilyakwa taxa which so far have eluded definite scientific identification. Many of these have been given probable or possible scientific identifications from reference sources, but some have only been likened to other Anindilyakwa taxa as they did not appear to be pictured in the reference books I was using and I was unable to obtain a specimen.

Anindilyakwa classification systems

I became aware of some of the superordinate taxa which existed within the animal and plant kingdoms through the work of the linguist Miss Judith Stokes. We explored the known taxa with Nangwara during 1977, simply getting an overall picture of what was included within each taxon. Subsequently, in designing the questionnaire, I included a question on Anindilyakwa biological classification and so I was able systematically to elicit the higher order taxa for each Anindilyakwa generic taxon by asking 'What does it fit with?'

However it was not until 1981 that I began to examine the classification systems as such and to consider the hierarchical relationships between each of the higher order taxa. I did this through systematic discussions with Nangurama, working through the whole of the animal and plant taxa, determining covert taxa and their place in the total system as well as the role of named taxa (see Chapter 3).

Having first established the vertical relationships between each of the higher order taxa we then worked through each of those taxa, named or unnamed, which included generic taxa, and discussed the horizontal relationships between generic taxa within the superordinate taxon. I had originally hoped that the question 'Relationship to other species' on the questionnaire forms (Fig. 24) would provide information about horizontal relationships but it was not possible to apply the question usefully in this way. By this time I had a large number of photographs which could be used as a stimulus to sort the taxa which went, or 'belonged', together. In the case of insects, shells and reptiles, we were able to use the actual specimens. Although neither the photographs nor the specimens were exhaustive they appeared to give adequate stimulus for the task and other taxa could readily be inserted in the appropriate places.

The above method could be seen as a variation of the slip-sorting technique used by Berlin, Breedlove and Raven (1974:60) in establishing covert categories. Since their informants were at least semi-literate they were able to provide the names of all the plants on separate slips of papers and then ask the informants to group those which went together.

Hays (1976) has suggested that the problem of illiterate informants can be handled by taking note of the variation in response to identification tasks. He found that the variation in response to a given collection of plant specimens was confined to a limited number of names. He interpreted this to mean that the taxa represented by these names more than likely belonged to a covert category, the likelihood increasing according to the number of times the names were associated. Berlin, Boster and O'Neill (1981:101) used a similar approach to assist in the identification of mid-level complexes, both named and covert, for Aguaruna bird classification. Such a method was inappropriate by the time I became aware of it.

I rejected the possibility of triad testing, developed by Romney and D'Andrade (1964), and used by Berlin, Breedlove and Raven (1968:293), as being too cumbersome for the number of taxa involved and also because many triads would have seemed rather obvious and I would therefore have been expected by my informants to know the relationships. This method involves asking the informant to identify the taxon which is most different in successive sets of three taxa. Perhaps I should have attempted to use triad testing to distinguish between more closely related taxa. From my early reading of Berlin, Breedlove and Raven's book (1974), I do not think that I realised that they restricted their use of this test to covert complexes established on the basis of slip-sorting (Berlin, 1974:329).

Two other procedures were used by Berlin, Breedlove and Raven (1968:293) in substantiating their covert categories, viz. the construction of folk keys and comparisons of similarity and difference between all logical pairs in a set. Both were used with informants who were at least semi-literate. Since the informants with whom I was working most intensively were illiterate, these procedures would have been too time-consuming despite their initial attractiveness. As noted earlier, distinguishing criteria were noted whenever they were given spontaneously.

Since a more or less complete listing of Anindilyakwa taxa was obtained through the use of collected specimens, previous lists and reference sources, it did not seem appropriate to use the type of question frames suggested by Metzger and Williams (1966) for establishing the various class inclusion relationships. Besides, through using the questionnaires, Nangurama knew that I had already obtained the named superordinate taxa for each generic taxon.

When the biological classification system had been investigated, I then turned my attention towards the food classification system and proceeded to elicit information in a similar manner (see Chapter 4). Opportunities to check the classification systems with others were taken whenever possible.

In discussing classification with Nangurama and others, I asked them to think of the animals and plants just as animals or plants, not as food, when determining the biological system and then as food when determining the food classification system. I felt that this constraint was justified given that not all animals and plants are edible and that it had become apparent that there were relationships based to a large extent on form in addition to relationships based on utilisation as food.

I have already commented in the previous section on consistency and informant variability in identification responses. I would interpret flexibility in classification according to the context as another way of saying there is more than one classification system. For example, the same taxon may be included in both the biological and the food classification systems. The totemic classification system is different again. It is another way of ordering plants and animals and other phenomena.

Lists of totems for each clan were drawn up using every available reference source (Tindale, 1925a; Worsley, 1954a, 1955; Mountford, 1956; Rose, 1960; Turner, 1974; Stokes, unpublished lists). These lists were referred to the respective clan leaders to check their accuracy and discuss the sharing of totems between the various clans. Additions and deletions were made where appropriate.

Aboriginal assistants

As already noted on p.205, it was only the older people, i.e. those fifty-five and more in 1983, who lived as young adults in the bush who had sufficient breadth and depth of knowledge to assist adequately in this study. The number of such people has rapidly declined since I went to the island in 1975. Amongst those in the appropriate age group not all were suitable as informants for various reasons. Some were chronically ill. Some did not take such a great interest in animal and plant lore in the past and thus lacked the necessary depth of knowledge. Some found other pressures and distractions within the community too great to be able to assist, even though they had the knowledge.

A few Aborigines in the forty-five to fifty-five age range have a good knowledge of animal and plant lore and were able to assist in specialised areas. Younger people have had much less opportunity to learn from their elders and I did not consider them to be reliable informants. It should be noted that my brief from the local Aboriginal community council in carrying out this study was to record information from the old people, i.e. the ones who were considered to have the knowledge. If I tried to check the knowledge I had gained with adults younger than about 45 years they became embarassed, either because they did not know or because they thought I knew more than they did.

No Groote Eylandt Aborigine born before 1925 has had any training in literacy. The level of functional literacy in English increases slowly as age decreases, in keeping with the introduction of formal schooling in 1933 for those who were living close to the former Mission. Training in Anindilyakwa literacy did not begin until the mid-sixties. Due largely to problems in establishing an acceptable orthography, the number of Aborigines fully literate in their own language is still very limited. Many have learnt to read but relatively few are able to write with any fluency in Anindilyakwa. Those who can write are mostly under 30 years old. This lack of literacy skills limited the possible options in obtaining data.

It should be noted that older informants have been gradually exposed to printed matter and photographs and more recently to 16mm movies and television so that they have become used to two-dimensional representation of the real world but the oldest women experienced occasional problems interpreting photographs.

The patterns of behaviour acceptable to older members of the community placed some restrictions on the ease with which I as a woman could obtain information. I was allowed to work with a man provided we were in a public place. I could not go off on my own into the bush nor alone with a man so that I could not readily check a specimen in its field location even if it grew within easy walking distance of our place of work. If I visited a man at his home it was wise to let his wife know beforehand if possible so she could be present. The community accepted that the nature of my work called for trips with both Aboriginal and non-Aboriginal men from time to time but there were almost always three or more persons present. On some extended trips, made possible by the assistance of GEMCo personnel, one of the men brought his wife with him.

As a woman I could not be told most information regarding the ceremonial significance of animals and plants. I was told which animals were significant but

instructed not to make such information available to school children. I was often told that there might be mainland myths but none on Groote Eylandt. Sharing of totems was freely given with no hint of additional information being withheld. Apart from these restrictions the men were tremendously helpful and open with me, doing all in their power to ensure that I had all the relevant facts correctly recorded. Again and again they stressed that they wanted information recorded 'straight' for their children.

Information on plant and animal names and their uses, including medicinal uses, was and is freely available to all in the tribe. However in practice, as in Western society, there were those who took a special interest in plant and animal lore, whether as a whole or in specialised areas. In my experience the men had a wider ranging knowledge than the women. I did not feel confident in asking the women for names of fish, birds and snakes in particular.

Principal assistants

Nangurama Peter Wurrawilya, b.1927–1986, the acknowledged local authority on animal and plant lore and most associated topics. He lived at both Angurugu and Umbakumba and as a young man travelled extensively over the whole island. Although he lacked any formal schooling it was said of Nangurama that he was like a university professor in his own field, a comment I would wholeheartedly endorse. However he knew his limitations and did not hesitate to admit he didn't know something and to refer me to others when the need arose, particularly to other clan leaders when discussing their totems and associated stories. I began working with Nangurama in May 1978. The local Community Council agreed to release him from other duties as necessary and to pay him while he worked with me, generally for two to three hours a day. Nangurama was also able to be present on a number of extended trips to different parts of the island to collect data and specimens. Nangurama's command of English was fair so that we could communicate using a mixture of English and Anindilyakwa. He always demanded a very high standard of phonetic transcription from me.

Nangwara (Nanga) Wurrabadalamba, b.1925, a respected clan leader with an extensive knowledge of plant and animal lore and a good command of English. Nangwara was of particular assistance in 1976–8, from which time on he has had periodic bouts of illness and other family and community pressures which have restricted the opportunity to do further work with him.

Nerrachunga Alec Barabara, b.1922–1984, a respected clan leader normally resident at Umbakumba and more recently at his homeland centre. Alec made a very worthwhile contribution on a number of extended trips from 1979–1981.

Dababuma Amagula, b.1908, and her half sister, Dangganya Amagula, b.1913, acknowledged local authorities on plant and animal lore, though their knowledge of the latter, especially of animal life in the sea, is not as extensive as Nangurama's. I have worked entirely in Anindilyakwa with them.

Dumandaguba Yantarrnga, 1921 –1977, a former resident of Umbakumba (by the sea) and an acknowledged authority on shellfish. I worked through the first 120 or so shell specimens with her in January 1977.

Darugwabandja Wurrawilya, b.1924, a gifted storyteller, and her sister, Damangiarawa Wurrawilya, b.1927, with a wide knowledge of plant and animal lore but not as extensive nor as reliable as that of the older women. Their knowledge of English is limited and we have generally communicated in Anindilyakwa.

Additional clan leaders

Nandjiwara Amagula, b.1926, a respected clan and community leader, at one time chairman of the Aboriginal Cultural Foundation.

Nanggadjaga Durila, b.1934, a respected clan leader with a good knowledge of his clan's stories, particularly those of mainland origin. I was referred to him as the authority on dugong anatomy. He has been living at a homeland centre for most of the last few years.

Garganda Durila, b.1939, a clan leader who was able to assist in checking his clan totems and stories.

Nanungunda Jaragba, b.1911–1985, a respected clan leader who spent a good deal of his time in recent years at one of the homeland centres on the adjacent mainland. Before that, he lived at Umbakumba.

Nagulabena (Gula) Lalara, b.1923, also recognised as a local authority on animal and plant lore as well as being a clan song leader, a man with a very keen mind and very good English. Unfortunately opportunities to work with Gula were limited by the distraction of other interests.

Nandjirrkinna Mamarika, b.1931–1986, a clan leader at Umbakumba.

Nengbinarra Mamarika, 1901(1899?)–1980, a respected clan elder who lived at Umbakumba. He appeared to retain a good knowledge of clan totems and stories despite failing health in old age.

Nabambalma Clancy Maminyamanja, b.1942, a clan and community leader at Umbakumba.

Didjidi Wurragwagwa, b.1923, a woman who is highly respected within her clan and the Angurugu community. She was orphaned as a child when her family were lost in a tragic canoe accident. As a result, Didjidi spent a lot of her time in the care of missionaries. While she has a good knowledge of stories and general plant and animal lore, her Anindilyakwa seemed less reliable than that of others of her age.

Jawaranga George Wurramara, b.1926, a man who had a good knowledge of his clan's stories.

Mangangina Macka Wurramara, b.1919–1984, a clan song and dance leader.

Nagunu Jock Wurramara, b.1926, a clan song leader.

Najaluwa Joe Wurramara, b.1930, a respected clan and community leader who has established an excellent homeland centre on Bickerton Island. He was very willing to assist but recognised that his half-brothers, George and Jock, had a better knowledge of clan stories than he did.

Numinanga Murabuda Wurramarrba, b.1934, a respected clan leader and leader in the church. He has a wide knowledge of plant and animal lore but other responsibilities precluded the possibility of his assistance in other than clan stories and totems.

Mangwida Jack Wurrawilya, b.1922, an older brother of Nangurama, living at Umbakumba, who was of assistance in checking stories and totems, largely for the Mamarika and Durila clans in the presence of the respective leaders.

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