5

Cognitive Anthropology

The Intellectual Background of Cognitive Anthropology

Unlike continental structuralism as promulgated by Lévi-Strauss, the American bred school of structural anthropology, known as cognitive anthropology, exhibits a more attenuated position, at least in its earlier incarnations, with respect to claims of strong innate universals of the human mind. While influenced by continental structural linguistics, American cognitive anthropologists also drew strongly from American structural linguistics, a tradition founded by Boas in the early part of the century and developed by such eminent linguists as Sapir, Whorf, and Bloomfield. Boas, Sapir, and Whorf are the pivotal characters within American anthropological linguistics of the theory of relativism, i.e. that lived practical experience molds categories of thought, and this relativist strain of thought is an important background in the early formulation of cognitive anthropology. Boas, the key figure in both American anthropology and linguistics at the beginning of the twentieth century, with a background in German post-Kantian philosophy of the nineteenth century, is pivotal here, for he imported these philosophical ideas into his framing of theoretical concepts in both linguistics and anthropology. The German post-Kantians of the nineteenth century were strongly influenced by the ideas of the Romantics (this will be discussed in more detail in the chapter 8), and, as such, were much taken with racial differences and cultural diversity. This created tension with Kant's postulation of universal, innate mental categories. They resolved this conflict when they introduced a degree of relativism into the theory: the nature of the categories were to some degree informed by the individual's experience in the world. Humans constructed the world through the categories, but the experience of the world could modify the categories, which, in turn, determined their construction of the world: a cybernetic interactive view of constructed mind and sensible world – in short, the position of relativism to be discussed in detail in Part IV. For Boas (and Sapir and Whorf behind him), this

post-Kantian position was a given: culture, then, was the setting in which these adjustments to mind through practical experience were carried out. Note that this type of relativism does not contradict the doctrine of the psychic unity of humankind: the categories given to humans at birth are identical for all; the diversity of human mental categories is due to the molding effect of experience upon these given categories.

How does experience mold these given categories? The mechanism Boas proposes is classification: from the infinite flux of sensible experience we abstract common and related elements and assign these to the same category of thought, typically labelled linguistically. These experience-derived categories modify and interact with the innately given categories of the human mind. Boas, and even more so his successors Sapir and Whorf, emphasized the social and conventional (Boas termed it "unconscious") nature of this process of category formation; these classifications are habitual within a particular cultural and linguistic system. The Boasian approach to linguistic categories (and by extension cultural categories) differs radically from later Bloomfieldian views in being unashamedly mentalistic: these classifications are mental categories of meaning, socially embedded. The linguist Bloomfield, following the behaviorist school in psychology, rejected all appeals to mentalism. For him the only theoretical constructs possible were completely observable physical phenomena; only directly observable behavior was to be studied. As meaning does not obviously have these properties, it was regarded as largely outside the purview of rigorous linguistic analysis.

Cognitive anthropology differs from European-inspired structural anthropology mainly in the greater weight given to the Boasian heritage in its formulation. The history of cognitive anthropology can conveniently be divided into two periods. The first from about 1950–70 (so-called "ethnoscience") is closely tied analytically to American structural linguistics and favors a relativistic reading of the Boasian heritage. The second period from 1970 to now was ushered in by the publication of Berlin and Kay's *Basic Color Terms* (see chapter 7). Much more strongly universalist and innatist readings of the Boasian theory of classification now emerged, influenced no doubt by the rise within linguistics of a strongly universalizing innatist theory of grammar, Chomsky's generative grammar (Chomsky 1968). Because rationalism and a universalist theory of mental concepts is the focus of this Part, I will focus in this chapter (and the next two) on work of the second period, providing a briefer survey of the first.

Work in cognitive anthropology of either period shares some basic assumptions. Culture is a mental phenomenon, "cognitive organizations of material phenomena" (Tyler 1969:3). Goodenough's early, but classic definition is a succinct a statement as any: "a society's culture consists of whatever one has to know or believe to operate in a manner acceptable to its members." (Goodenough 1964[1957]:36). Note the clear parallel to ongoing

work in linguistics salient in all structuralist approaches to anthropology. A culture is a mental system which generates all and only the proper cultural behavior. Culture, then, is the cognitive anthropologist's analog of the linguist's notion of grammar. As with the analysis of grammar, the goal of the cognitive anthropologist is to define principles underlying the organization of culture in the mind. Further, as linguists like Chomsky typically invoke logical and mathematical models in which to cast their descriptions of grammatical phenomena, cognitive anthropologists do the same. "A culture consists of a set of logical principles which order relevant material phenomena. To the cognitive anthropologist these logical principles rather than the material phenomena are the object of investigation" (Tyler 1969:14). Note that like Lévi-Strauss's this agenda is clearly Platonic; we want to go beyond mere material phenomena to the underlying logical components. One possible difference is that at least in early cognitive anthropology, in which the relativist flavor of the Boasian heritage is strong, there is no necessary assumption that the underlying components were the same in all cultures: "a culture consists of many semantic domains organized around numerous features of meaning, and no two cultures share the same set of semantic domains or features of meaning, *nor do they share the same methods of organizing these features*" (Tyler 1969:11, emphasis added).

Componential Analysis

The main formal logical methods adopted by cognitive anthropologists in their analysis of cultural domains are, as in Lévi-Straussian structural anthropology, those of structural linguistics. Indeed, if anything, the paradigmatic role of language in cultural analysis is even more central in cognitive anthropology, for it is believed, following Boas, that language categories are the most transparent guide to the cultural categories, classifications which emerge by the imposition by the Native people of order on their sensible environment. The methodology typically followed by cognitive anthropologists in their analysis of culture systems is to collect all the words in the native language denoting various categories within a particular semantic domain, for example, all the words referring to kin relations in the kinship domain or all the words for types of plants in the ethnobotanical domain. Such a domain of terms is called a *folk classification*. To elucidate the cognitive organization informing a folk classification, cognitive anthropologists performed a type of linguistic analysis highly derivative of the techniques of structural linguistics. The terms within the folk classification are analyzed semantically into their meaning components. Borrowing heavily from Jakobson's ideas of distinctive features, cognitive anthropologists claim to uncover the cognitive organization of the folk classification through *componential analysis*, representing the meanings of the terms through a set of semantic oppositions.

This is all best understood by working through an example, one modelled on Conklin's (1969) well-known componential analysis of Hanunoo pronouns; I will use Tagalog, a language with which I am familiar, but exhibiting the same pattern in this respect as Hanunoo. Consider the system of pronouns in Tagalog with their English glosses:

ako	"I"
ka	"you (SG)"
siya	"he/she"
kata	"I and you (SG)"
tayo	"I, you (SG) and he/she/they"
kami	"I and he/she/they"
kayo	"you (SG) and he/she/they"
sila	"they"

We could represent this system in the categories of the metalanguage of modern linguistics, drawn largely from the system of linguistic classifications developed by the ancient Latin and Greek grammarians:

		SG	DL	PL
1	INCL	—	kata	tayo
	EXCL	ako	—	kami
2		ka	—	kayo
3		siya	—	sila

But the gaps in this representation suggest that this system of semantic components of person, number, and exclusivity drawn from the Western grammatical tradition might not be the most insightful into the Native Tagalog categories used to generate the pronoun system. What we, as cognitive anthropologists, want to know are the Native Tagalog dimensions of semantic contrasts which organize this system of pronouns. Note first that the dimensions of number are rather different in Tagalog than English; there is a dual number, referring to two people, not just a singular and plural. Further, the notion of person is clearly different in Tagalog than English; there are three words *kata*, *tayo* and *kami*, all of which we would translate by English "we," two of these being true plurals. Clearly, then, we must go beyond categories like person and number to deeper, but simpler semantic components, out of which these concepts are constructed. Let us tackle person first. Note that Tagalog, like many languages of island Southeast Asia and the Pacific, has a fundamental opposition as to whether the speaker "I" is included or not. Let us call this the speaker included (S)

feature. If the speaker "I" is included in the meaning of the pronoun, it is specified + for this feature; otherwise, it is –:

S+: *ako, kata, tayo, kami*
S–: *ka, siya, kayo, sila*

The second feature in this componential analysis of the semantic domain of Tagalog pronouns is whether the addressee "you (SG)" (A) is included (+) or not (–):

A+: *ka, kata, tayo, kayo*
A–: *ako, siya, kami, sila*

These two features together give us the following partial analysis:

S+	*kata, tayo*	S–	*ka, kayo*
A+		A+	

S+	*ako, kami*	S–	*siya, sila*
A–		A–	

This system can also be represented in a paradigm similar to the representation used in structural anthropology, notably by Lévi-Strauss, a chart rather like a graph, in which the two features intersect and determine the forms by the proper cluster of features at each point (5.1).

5.1

		S	
		+	–
		kata	*ka*
A	+	*tayo*	*kayo*
	–	*ako*	*siya*
		kami	*sila*

Already, we can see some formal properties of the words by labelling the categories corresponding to the semantic contrasts revealed by the componential analysis. Clearly, the form *si-* in *siya* and *sila* is associated with the features [S– A–].

What simple feature will do for the remaining differentiation of the pronominal forms? Clearly, the English number categories, singular–plural, are not adequate because they will not distinguish *kata* from *tayo*, both meaning "we." We could invoke a three-way opposition, singular–dual–plural, but this is counter to the usual choice of binary oppositions in structuralist

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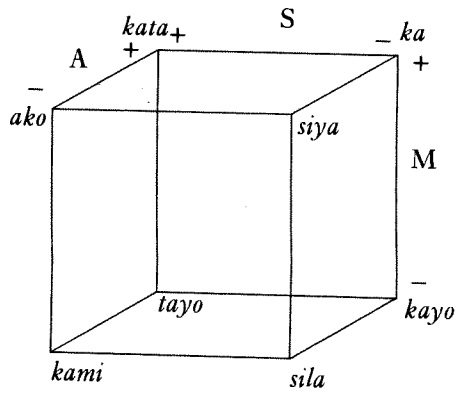

analyses like these, and furthermore is problematic in that the dual category has only one member *kata*, the [S+ A+] pronoun. Where are the dual pronouns for the [S– A+], [S+ A–] and [S– A–] groups? The language has none, and this suggests we are on the wrong track.

Note carefully the category in which the dual pronoun *kata* is found: [S+ A+]. Note further that these features require that both a speaker and an addressee be included; unlike the other categories which have at least one [–] specification, i.e. a person is excluded, this category cannot possibly be singular: at least two persons must always be included, [S+ A+]. Thus, dual is the equivalent of singular for this group of features; it is the minimal number of individuals in the group [S+ A+]. We can therefore define a feature of minimal membership in which singular and dual (+) contrast with plural (–). All eight pronouns can be defined uniquely in terms of these three features:

kata	S+A+M+	*tayo*	S+A+M–	*ka*	S–A+M+
kayo	S–A+M–	*ako*	S+A–M+	*kami*	S+A–M–
siya	S–A–M+	*sila*	S–A–M–		

Because there are now three semantic features of opposition, there are three axes of contrast, and a paradigm laying out the organization of this domain can be set out in the form of a cube (5.2). Again, this analysis reveals formal correlates not previously obvious; *-yo* is associated with [A+ M–] and *ka* with [S– A+].

The purpose of this type of structuralist semantic analysis in cognitive anthropology is to reveal the cognitive organization of this domain for the Tagalog Native speaker. The strong cognitivist view claims such a close correspondence between the results of such formal analyses and the Native's cognitive organization. This is impossible to verify without independent

psychological tests of competing formal analyses, as undertaken, for example, by Romney and D'Andrade (1969). Further, competing formal analyses of a semantic domain are by no means difficult to come up with. Even with a simple eight-term system like Tagalog pronouns, competing analyses with other features are possible, but with much more complex semantic domains like kinship (Romney and D'Andrade 1969; Wallace and Atkins 1969), the possibilities become daunting indeed. Burling (1969:426) in an important paper neatly summed up this fundamental dilemma in cognitive anthropology:

> students who claim that componential analyses or comparable methods of semantic analysis can discover a means for "discovering how people construe their world" must explain how to eliminate the great majority of logical possibilities and narrow the choice to the one or few that are "psychologically real" . . . I doubt whether any single analysis tells us much about cognitive structure, even if it enables us to use terms as a native does.

This suggests a more modest goal for cognitive anthropologists: simply to produce an explicit formal statement of the semantic features underlying the folk classification which will allow the non-Native to use it correctly. The logical principles underlying it, then, are those of the Western ethnographer, not the Native; to get at the latter, independent psychological testing is necessary.

Taxonomy

As mentioned above, cognitive anthropology follows a Boasian agenda in its interest in how diverse systems of classification of nature are encoded in Native languages. Componential analysis is a method to get at the semantically primitive concepts behind the classification provided by the Native terms in a given semantic domain. These are all relationships of contrast, as English *she* contrasts with *he* in the semantic feature of sex. The other type of semantic relationship of interest to cognitive anthropologists is that of inclusion, how particular terms are organized into larger groups to provide a more encompassing system of classification. Hierarchical relationships of inclusion like this form what is called a *taxonomy*. Terms are hierarchically related so that the meanings of more specific terms are included within the meanings of higher level/more general terms. According to Wierzbicka (1985), the more specific terms are "a kind of" the higher up more inclusive general terms. On the same level terms are in contrast, the semantic terms of the contrast to be arrived at by componential analysis. Thus, in English, *poodle* contrasts with *dachshund*, which contrast with *Labrador*, but all are included in the higher level term *dog*. Dog in its turn contrasts with *cat* and

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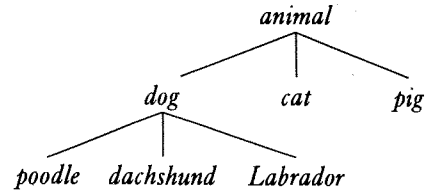

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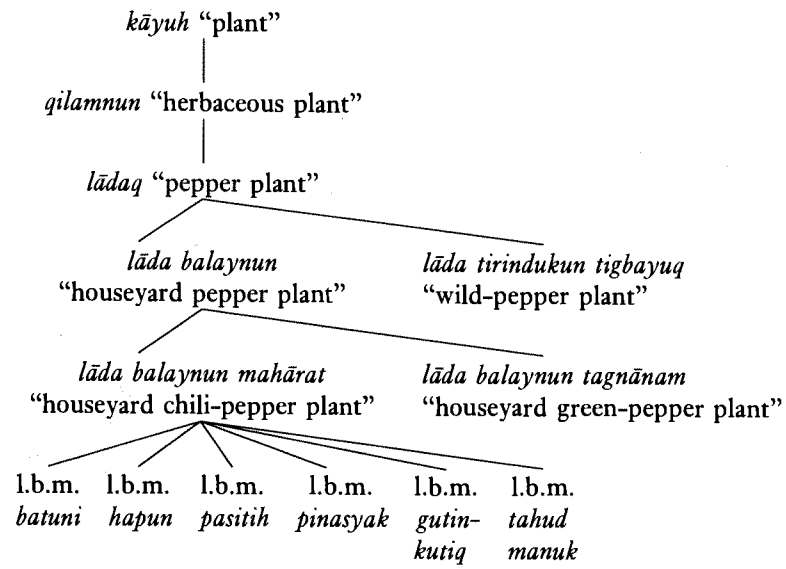

pig, but these are all included in the term *animal*. Using a familiar tree representation, this taxonomy can be represented as in 5.3.

A more extensive taxonomy can be illustrated by Conklin's (1969) analysis of Hanunoo chilli-pepper plants. All pepper plants are known as *lādaq*, but these belong to the more inclusive class of herbaceous plants (*qilamnun*), which in turn are included in the general class of plants (*kāyuh*). Pepper plants are divided into houseyard cultivated plants (*lāda balaynun*) and wild-pepper plants (*lāda tirindukun tigbayuq*). Houseyard pepper plants in turn are divided into houseyard chilli-pepper plants (*lāda balaynun mahārat*) and houseyard green-pepper plants (*lāda balaynun tagnānam*). Finally, there are no less than six types of houseyard chilli-pepper plants, for example, the "cat's penis" houseyard chilli-pepper plants (*lāda balaynun mahārat gutin-kutiq*). The taxonomy can be represented in tree form (5.4).

Taxonomies are generated by the logical relationships of contrast on the same level (*lāda balaynun* and *lāda tirindukun tigbayuq* are contrastive types of pepper plants), but inclusion on the next hierarchical level (both are types of *lādaq*). Occasionally, the same Native term may function at more

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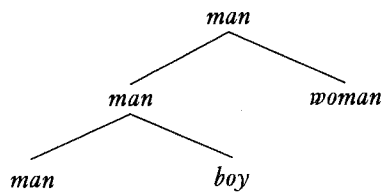

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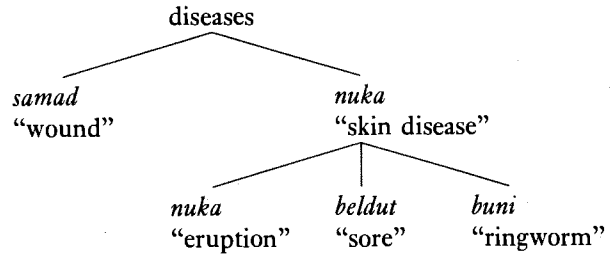

than one level. English *man* (Frake 1964) is a good example, as in the taxonomy shown in 5.5. The widest most inclusive sense of *man* includes all humans, but on a lower level it contrasts with *woman* according to sex. This second level, however, is also an inclusive category, for it contains at still a lower level yet another sense of *man*, which contrasts with *boy* according to maturity. Frake (1964) provides a parallel example in the Philippine language Subanun with the form *nuka*. At the most inclusive level it means "skin disease" contrasting with "wound" and including all pathological skin conditions. At a lower level, it means "eruption" contrasting among others with *beldut* "sore" and *buni* "ringworm" (5.6).

Universalist Trends in Cognitive Anthropology

While the earlier period of cognitive anthropology was somewhat empiricist and relativistic in its interest in the different systems of classification revealed in Native languages, there was a rationalist undercurrent in the claim that innate universal properties of the human mind provided the logical principles like contrast and inclusion which underlay the organization of these cultural systems (Tyler 1969:14). This rationalist and Kantian stance is very close to that of Lévi-Strauss (1966); it is also very clearly Platonic in its insistence on underlying logical concepts which generate sensible classificatory behavior. It is these strands of the cognitive anthropologist's endeavor which really come to the fore in its second universalist period from around 1970. Cognitive anthropology in its transition to this view was clearly guided by strongly universalizing theories in Chomskyan linguistics (Kay 1970)

and developments in artificial intelligence (D'Andrade 1981). In common with other disciplines in the cognitive science cluster like linguistics, cognitive psychology and neuroscience, cognitive anthropology became strongly enamored by the pervasive metaphor of the human mind as being like a digital computer. As a computer processes data fed into it according to the steps specified for it by the particular program running, the human mind was seen as an opportunistic information processor, doing so along the lines of psychological processes largely specified by innate universal human endowment (D'Andrade 1990). Culture, as the shared symbolic information transmitted through social groupings, is then to be studied from this psychological viewpoint. Cognitive anthropology is concerned with how cultural content interacts with psychological processes, how cultural information is constrained by the way the mind processes information (D'Andrade 1981). This agenda displays a marked kinship with that of Lévi-Strauss: "in the process of repeated social transmission, cultural programs come to take forms which have a good fit to the natural [read 'innate'] capacities and constraints of the human brain" (D'Andrade 1981:182). Strong rationalist or Platonist ideas now emerge to take central stage in cognitive anthropology: by deep investigation of the constraints on cultural systems of meaning, particularly as revealed in the comparative study of the terms and expressions of particular semantic domains in natural languages, the cognitive anthropologist can uncover the general psychological processes employed by the innate central-processing mechanism of the human mind in generating these cultural systems. Paradigmatic ground-breaking examples of such investigations are Lounsbury's (1965, 1969) kinship studies, discussed in detail in chapter 6, and Berlin and Kay's (1969) comparative study of color terminology, discussed in chapter 7. Both of these important studies claim to reveal universal constraints of patterning in the semantic domains of kinship and color, which had previously been thought to be randomly structured, according to a culturally and linguistically defined arbitrary classification – a strong blow for the rationalist, Platonist cause.

Biological Taxonomies: Berlin's Approach to Ethnobiological Classification

Berlin's (1992) work in folk systems of biological classification (ethnobiology) is yet another example of this type of work. Berlin (1992) claims to have uncovered universal constraints on the forms of the taxonomies representing ethnobiological knowledge. According to him all ethnobiological-classification systems are organized into a shallow taxonomic structure, with no more than six mutually exclusive ranks. The top level is the unique beginner or kingdom level, labelled as *plant* or *animal* by English, but often

unlabelled in other Native systems. Next are the life-form taxa which, while labelled, are typically few in number, from ten to fifteen. English examples under the unique beginner *animal* include *bird*, *snake*, *fish*, etc. Taxa included within a particular life-form taxon usually exhibit a high degree of diversity, for instance *ostriches*, *peacocks*, and *magpies* are all included in the life-form *bird*, but are markedly different.

The next level of taxa, generic rank, are for Berlin the core of any ethnobiological classification. The largest number of taxa in any classification system is found at this rank, but these rarely exceed 500 items in each kingdom. According to Berlin and work by Rosch (1977, 1978), taxa at the generic rank are the most salient for the Native: they are simple lexemes, most frequently used, learned early by children acquiring the Native language, and most easily elicited from informants. English examples of generic level taxa are *magpie* or *kookaburra* under the life-form *bird* in the *animal* kingdom or *eucalyptus* or *pine* under *tree* in the *plant* kingdom. It is possible to have generic taxa directly affiliated to a unique beginner without being a member of a life-form taxon; an example might be *octopus*, which, while clearly an animal, is also clearly not a fish, nor any life-form taxa (it is important to note that we are dealing with folk concepts here, not scientific ones; while *octopuses* are *molluscs*, this latter concept is a scientific one, not part of the folk biological knowledge of English speakers). As Wierzbicka (1985) convincingly points out, the inclusion relationship between generic taxa and life-forms can be paraphrased as "a kind of" (as, of course, can all relations of inclusion in taxonomies); so a *kookaburra* is a kind of *bird* and a *eucalyptus* is a kind of *tree*. The relationship between generic taxa is one of contrast, different kinds of the general type of thing denoted by the label for the life-form taxon. Unlike a life-form taxon like *bird* the membership of a generic taxon like *dog* is relatively homogeneous, corresponding approximately to biological genera, that is, natural groupings with many attributes in common (see also Wierzbicka 1985). Berlin claims that they are the basic level for all systems of ethnobiological classification, but this has been challenged (Dougherty 1981; Hunn 1985), and I will return to this presently.

Generic taxa are commonly monotypic i.e. terminal units of the taxonomy dominating no further taxa. However, some generic taxa are polytypic, inclusive of specific subgeneric taxa. These are typically few in number and for a given generic taxon are labelled by complex polynomial lexemes. Thus, the generic taxon *eucalyptus* in Australian English might have as included specific taxa: *snow gum*, *blue gum*, *stringy bark*, *yellow box*, and others. An exception to this principle is the English generic taxon *dog*, which, due to centuries of close human interest and carefully controlled breeding, has many specific taxa. Finally, a specific taxon may dominate varietal taxa; these are rare and have polynomial labels. The full taxonomy may be represented as in 5.7 (Berlin, Breedlove, and Raven 1973:215).

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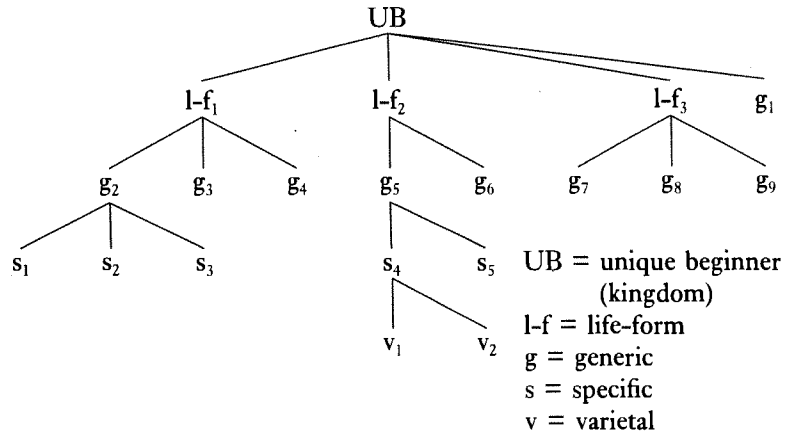

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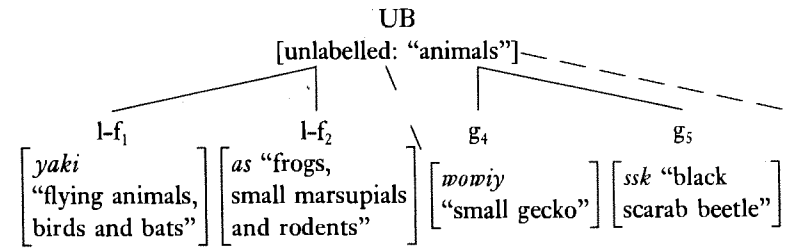

As an illustration of an ethnobiological system of classification let us consider Bulmer's (1967, 1968, 1970; Bulmer and Tyler 1968) work on the enthnozoology of the Kalam, a people of New Guinea. As with many languages, Kalam lacks a label for the unique beginner of the ethnozoological taxonomy, i.e. no word corresponding to English *animal*. Kalam has five life-form taxa and no less than 89 unaffiliated generic taxa, i.e. generic taxa not included in any life-form taxa and coordinate to them in being directly dominated by the unique beginner. Part of the system thus far could be represented as in 5.8. The life-form *as* in turn includes 25 generic taxa. These are labelled by simple monomial lexemes and all but three are monotypic (i.e. are not divided into specific taxa). Those which are polytypic have between two and four specific taxa; for example *jejeg* (tree frogs) includes four specific taxa (5.9). Bulmer and Tyler (1968) report that the specific taxa of the generic *jejeg* (tree frog) contrast only in a single dimension of color.

The crucial claim of Berlin's (1992) work with respect to the innatist universalist agenda of cognitive anthropology is his insistence that innate and universal perceptual and cognitive faculties underlie these organizations of biological forms, *independent of any cultural mediation*. The basic idea is

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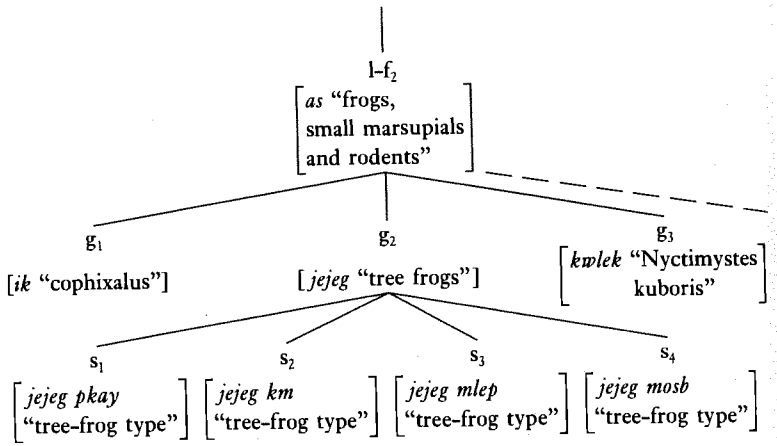


that humans come biologically preprogramed to create biological categories along lines dictated by natural similarities and discontinuities. This bears a family resemblance to the innatist Chomskyan theories of language acquisition discussed earlier. Human information-processing abilities lead them to spontaneously know the world as it naturally is, and this is reflected in the commonalities of organization found in ethnobiological classification systems the world over. There is a universal human cognitive structure that reveals itself in ethnobiological classification, as it does in kinship terminology and color term systems. Humans everywhere distinguish *dog* from *cat*, and they do this on the basis of innate cognitive capacities, not human interests; "ethnobiological systems of classification are based primarily on the affinities that humans observe among the taxa themselves, quite independent of the actual or potential cultural significance of these taxa" (Berlin 1992:31) and "human beings are drawn by some kind of *innate* [emphasis added] curiosity for those groupings of plants and animals that represent the most distinctive chunks of biological reality" (Berlin 1992:290).

This is a strong claim and one, as we shall see, that has not gone unchallenged, but let us explore its implications first. The crucial atom of all ethnobiological classification is the level of the generic taxa and the relationship some of these have to their more inclusive life-form. For Berlin, generic taxa constitute a "specifiable and partially predictable set of plant and animal taxa that represent the smallest fundamental biological discontinuities easily recognized in any particular habitat . . . its members stand out as beacons on the landscape of biological reality, figuratively crying out to be named" (Berlin 1992:53). Generic taxa are the basic level categories in any ethnobiological system. As in his joint work with Kay on color terminology (Berlin and Kay 1969), Berlin argues that certain exemplars of

a generic taxon are more representative, more focal, than others. This is the basis of prototype theory, well known from the work of Rosch (1977, 1978). The idea behind this theory is that categories are fuzzy, with some exemplars being prototypical members, close to the focal centre of the category, and others less prototypical examples, more toward the vague border of the category. Meaning in prototype theory is not represented in terms of a critical list of defining properties, as in the classical Aristotelian tradition, but in a cognitive schema to which a given exemplar fits more or less well (see chapters 6 and 7). Thus, to use a famous example (Fillmore 1975) we might define *bachelor* as "unmarried male human." But although the Pope and a 55-year-old man in a coma since age 12 meet these criterial features, do we want to label them bachelors? Clearly not, for they are so far from the prototype we have for this concept in contemporary cultural schemas of courtship and marriage. Berlin invokes the idea of prototypes to explain the nature of generic taxa; the discontinuities of the natural world represented by these taxa are cognitive foci of human-processing mechanisms.

Generic taxa are configurational categories, nearly immediately apparent; whether something is a tiger or not is not normally a matter of debate (a generic taxon), but whether it is a Siberian, Bengal, or Sumatran tiger (specific taxa) might very well be. A generic taxon can be described by a large cluster of distinctive attributes (Wierzbicka 1985), something we might describe as an object schema (Casson 1983), but in Berlin's view and in keeping with prototype theory, this description is not its meaning. For him generic taxa "elude linguistic definition" (Berlin 1992:61); they are ostensively defined terms for perceptually salient foci in the natural world. The meaning of a word like *tiger* is its reference, the object in the natural world or the sensible experience thereof labelled by this term. In this sense it is exactly parallel to a word like *red*, which simply identifies a color but which cannot reasonably be said to be definable by a list of criterial features; again, however, some shades of red may be more prototypically *red* than others (see chapter 7 and Berlin and Kay 1969).

A life-form taxon contrasts with a generic taxon in being conceived of as a supercategory, one with many different categories, each of which is an exemplar of it, prototypical or not. It is thus a category composed of many different kinds, the generic taxa included in it. A generic taxon, on the other hand, is simply a category, a thing, not normally understood as being composed of subcategories. Wierzbicka (1985:228–9) explains clearly:

> While concepts such as *animal*, *bird*, *tree* or *flower* [i.e. life-form taxa] are thought of as having many different kinds, concepts such as *cat*, *lion*, *parrot*, *swallow* or *spruce* [i.e. generic taxa] are not. When they give the matter some thought, native speakers of English will no doubt agree that there are different kinds of cats, parrots or spruces, and that there might even be different

> kinds of lions and swallows. But this differentiation is not essential to their understanding of the concept *lion*, *swallow*, *parrot* or *cat*. On the other hand, if someone doesn't know that there are different kinds of . . . birds or flowers then I think he doesn't really understand the full meaning of the words *bird* or *flower*.

Life-form taxa commonly group together generic taxa which seem biologically highly diverse: Kalam *as* covering frogs, small marsupials, and rodents is an example. This has led some researchers (Hunn 1985; Randall and Hunn 1984) to argue that life-form taxa are "biologically arbitrary" and "artificial" (Hunn 1985:124–8). Contrary to generic taxa, it is claimed that life-form taxa do not encode clearly discriminable foci in the natural world; "there is no perceptual discontinuity motivating the recognition of *tree*" (Hunn 1985:126). Berlin strongly disagrees: "life-form taxa form rather large *groupings of perceptually similar* folk genera . . . based on a *small number of biological characters*" (Berlin 1992:189). For example, Kalam *as* "frogs, small marsupials, and rodents" could be perhaps defined as "small four-legged foraging animals with more hind leg strength than fore leg." Although defined by a set of characteristics, Berlin claims that such groupings are no less perceptually salient than a generic taxa like *wowiy* "small gecko." He claims, then, that life-form taxa are formed on the basis of the same innate universal cognitive faculties as are generic taxa: by labelling biological foci, salient perceptual discontinuities in the natural world.

Classification and "Hidden Nature"

Recent work by other investigators (Atran 1985, 1990; Gelman and Coley 1991; Wierzbicka 1992b), while concurring with Berlin's view of strong innate and universal constraints underlying ethnobiological classification systems, has questioned his use of prototype theory in describing taxa, especially generic taxa. These researchers claim that generic taxa are characterized by distinct boundaries, not fuzzy ones, as prototype theory would hold. They argue that a generic taxon contrasts with a life-form taxon in having a hidden underlying "nature" manifested in the sensible properties of the category, but distinct from them. Human categorizers presume this hidden underlying nature to be present equally in all exemplars of the category; thus, the boundary of the category is sharp, and the claims of prototype theory are refuted. This hidden underlying nature is what is held responsible for the characteristic form and behavior of the taxon, and it is by this nature that humans assign variant forms to a particular generic taxon. For example, Wierzbicka (1992b) provides the example of a purple cow which does not give milk or say "moo," but which English speakers still

categorize as "cow" because it can be thought of, through this hidden underlying nature, as an animal of the type which does do all these things. Atran (1990) notes that it is again this presumption of a unique hidden underlying nature that allows English speakers to fit juvenile forms like tadpoles to a taxon like *frog*. Although the relationship is perceptually not obvious, we do so by a process of inference based on the presumption of an underlying nature. This presumed underlying nature is what causes organisms of a particular kind to develop in a set way and display the traits they do. This presumed underlying nature appears to be linked to living beings and is due, no doubt, to the fact that they reproduce among themselves along *genetic lines* – by passing the underlying nature from one generation to the next. This discontinuity between natural entities and artificial ones created by human culture and technology is a universal perceptual focus of human cognition (see Wierzbicka 1985, 1992b), and as such, is the basic organizational principle of ethnobiological classification. Further, because the underlying nature is passed by reproduction, we may safely infer non-obvious, but pervasive similarities between genetically related living beings. For example, if we believe that snakes are genetically related to monitor lizards by a process of evolutionary change we may be led to seek traces of legs in snakes (and we will find them among those most "primitive" of snakes, pythons and boas). It is processes of inference like these which are the basis of all systems of classification of living beings, ethnobiological or modern scientific.

Life-form taxa probably lack hidden underlying natures, but rather are characterized by diagnostic semantic features which define them. Consider an example adapted from Wierzbicka (1992b). If I see a kookaburra, I will probably quickly identify it as belonging to that generic taxon. But if my companion, a habitual bird watcher, insists that it is not really a *kookaburra*, that it just looks like one, I will probably defer to her judgment, assuming that the hidden underlying nature of this living being was not that of a kookaburra, a move aided no doubt by the fact that this nature is both underlying and *hidden*. But if I have identified the creature I saw as a *bird*, a life-form taxon, and my companion similarly insists otherwise, I am very likely to put up much stronger resistance. Why? Because there is a list of criterial diagnostic features which I can appeal to in assigning a given exemplar to a life-form taxon, and in this case the creature sighted meets all requirements for the taxon *bird*. Various generic taxa are assigned to a particular life-form taxon by meeting these diagnostic requirements, as life-form taxa are inclusive groupings that generic taxa are *kinds* of. To determine whether something is a kind of something else, explicit classificatory criteria are needed, but note that the fit of particular generic taxa to these may be more or less good, with possible resultant prototypicality effects in life-form taxa.

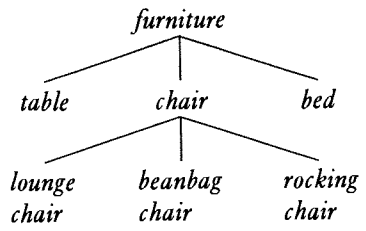
Challenges to Berlin's Approach

The strong claim by Berlin and others that the principles underlying the organization of systems of ethnobiological classification are universal has not gone unchallenged. Berlin argues that the basic, most perceptually salient taxa are those of the generic level in all systems. Dougherty (1981) has challenged this on empirical grounds. Which are the most salient categories can be established by psychological testing and observation: the most frequently used in talk, most easily recalled or identified, and first learned by children. In a comparison of Tzeltal with English, Dougherty demonstrated that, while generic rank categories were indeed the most salient for Tzeltal speakers, it was the life-form taxa which were in general most salient for English speakers. For English speakers, the life-form taxon *tree* scored higher on all these dimensions than did its included generic taxa, *oak*, *maple*, or *birch*. On face value this refutes Berlin's claim of a universal perceptually driven basis for the salience of generic taxa in natural discontinuities. Rather, it introduces a strain of relativistic thinking into studies of ethnobiological classification. The fundamental level of classification, the most salient categories, are not fixed by innate, universal predispositions. They vary with human interests, the way the members of the culture interact with the entities in the semantic domain. In horticultural societies like the Tzeltal, with close links to the natural world, certain natural discontinuities of that domain are highly apparent to them, so that the generic level is the most salient. But for modern urban speakers of English, interaction with the natural world is highly attenuated (many urban speakers of English would be hard put to identify an *oak*), so that the more inclusive life-form level is the most salient. Salience in ethnobiological classification reflects human interests, not panhuman psychological constraints.

The work of Hunn (1985) and Randall (1987; Randall and Hunn 1984) also builds upon this relativistic idea of categorization as reflecting human interests. They highlight this function: "the fact that cultural knowledge of the natural world might also be of use practically has been treated as beside the point, almost as an embarrassment" (Hunn 1985:117). This view argues that biological taxonomies only lexicalize a small portion of the available flora and fauna, but what is lexicalized is of special importance to the Native. Thus, we find many residual life-form taxa, like *bush* in English, which label entities that we have little interest in dividing further, but many generic taxa like *cat*, *dog*, *pig*, etc. which reflect the special importance these have for us. Further, in some languages, the word for a well-defined life-form taxon may be polysemous, reflecting human concern with it. For example, the Watam word *padoŋ* "tree" also means "wood" indicating the function this life-form serves in the human economy. Functional human concerns may be primary over biological features: "vegetables" and "farm animals" may yet turn out to be more psychologically salient and evolutionarily important than "bushes" and "snakes" (Randall and Hunn 1984:346). Berlin (1992:184–5) challenges this assertion, arguing that the direction is the other way around: trees are known by innate human psychological processes to possess certain physical properties, i.e. woodiness, to which secondary functional attributes are attached. For Berlin, innate rational human information-processing capacities are primary over any relativistic concern with human interests. But the position of Hunn and Randall is closely parallel to the view of Rosch (1978) and the enactionist or embodied practices view of cognition discussed previously. Rosch demonstrates that disinterested intellectualist human processing does not uniquely inform the basic level categories, but that they are where "biology, culture and cognitive need for informativeness all meet . . . the basic level of categorization, thus, appears to be the point at which cognition and environment become simultaneously enacted. The object appears to the perceiver as affording certain kinds of interactions and the perceiver uses the objects with his body and mind in the afforded manner" (Varela, Thompson, and Rosch 1991:177). I will return to these issues with the discussion of relativism in the next Part.

Hunn and Randall also argue for replacing Berlin's taxonomic model of ethnobiological classification, with its relations of contrast and inclusion, with what they call a "natural core model," in which this domain is composed of a dense central core of multipurpose complex-linked taxa, mostly Berlin's generic taxa, and a special purpose periphery consisting of unaffiliated generic taxa and residual life-forms. In this model inclusive taxonomic relations, kinds of *trees*, kinds of *birds*, are actually very atypical, and the taxonomic relationship is greatly downplayed; "(inclusive life-forms) are simply core taxa of exceptional heterogeneity [so contrasting with the usually simple core generic taxa], and their developmental priority is due to their perceptual salience, the same cognitive principle that underlies the recognition of folk generic taxa" (Hunn 1985:198). Hunn's view suggests a flexible use of inclusive taxa like life-form taxa, which may arise spontaneously and creatively in the dense core area for particular perceptual or functional needs, whereas Berlin's more rigid taxonomic model does not easily accommodate this (Berlin 1992). The phenomena of intermediate taxa argues for Hunn's view. These typically occur between life-form and generic rank, and are largely *ad hoc* classifications of generic taxa into a mid-level ranking under the life-form taxon. To take Dougherty's (1981) example, the generic taxa *pine*, *spruce*, and *fir* may be classed in the intermediate taxa "needle-bearing" (*evergreen*), contrasting with "leaf-bearing" (*deciduous*) and "frond-bearing" (*palms*?), all under the life-form taxon *tree*. This reflects an *ad hoc* classification of generic taxa in the dense-core area, either on perceptual or functional (garden needs, Christmas trees?) grounds. Within Hunn's flexible, constructive core–periphery model such *ad hoc* intermediate

5.10



categories make perfect sense; within Berlin's rigid taxonomic model invoking contrast and inclusion, they do not.

Taxonomies in Other Domains?

Taxonomies have been invoked to organize other semantic domains, particularly those of artificial human creations, but recent work (Atran 1987; Gelman and Coley 1991; Wierzbicka 1985, 1992b) now indicates that this move was probably misguided, as taxonomies, if valid at all, are probably restricted to the biological realm. Rosch (1977; Mervis and Rosch 1981; Rosch and Mervis 1975; Rosch, Mervis, Gray, Johnson, and Boyes-Braem 1976) undertook research to investigate the cognitive organization of humanly created artifacts and detected what she took to be a taxonomic structure like that of ethnobiological classification. On the basis of a battery of psychological tests she isolated a *basic level category*, parallel to generic taxa, which refers to classes of intrinsically separate things, with many common attributes, highly similar motor sequences for human manipulation and interaction and strong similarities in shape. Examples of such basic level categories in English are *table*, *chair*, *knife*, and *fork*. The basicness of such categories for speakers of English in American culture again is a reflection of the fundamental tenet of enactionism; they realize grounds in which environment and cognition are simultaneously enacted. It was noted that these basic level categories have specifics: e.g. *lounge chair*, *rocking chair*, *beanbag chair*, *dining chair*, *desk chair*, each with a distinct subset of attributes. There are also inclusive supercategories, like *furniture* or *cutlery*, that the basic level categories were believed to be *kinds* of, generating the now familiar taxonomic organization (5.10). Rosch (1977; Rosch, Mervis, Gray, Johnson, and Boyes-Braem 1976) and others (Kempton 1981; Kronenfeld, Armstrong, and Wilmoth 1985) claim strong prototype effects (a *lounge chair* is a core exemplar of *chair*, as opposed to a *beanbag chair*), with the usual fuzzy boundaries of these categories (is a *refrigerator* a kind of *furniture* or not?).

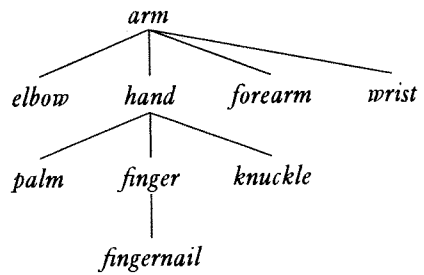
Recent work (Atran 1987; Wierzbicka 1985, 1992b) strongly argues against taxonomic organizations, like that above, in any area besides ethnobiology.

This claims that there are no true inclusive "supercategories" like *furniture* or *cutlery*. A chair is not a kind of *furniture*, nor a knife a kind of *cutlery*. These are not taxonomic inclusive categories like *bird*; a kookaburra is really a kind of *bird*. Rather, *furniture* labels a kind of function in a particular location (Wierzbicka 1985); objects to which this label can be applied can be humanly created artifacts designed for ease of living and found in places where humans live. A chair can serve this function, but that is not what it is. Consider *cutlery*, which labels humanly created objects which are used to eat food. A knife can serve this function, but it can just as easily serve the function of being a weapon, an object used to harm living things. An object cannot be both a *kind* of *weapon* and *cutlery* at the same time, for the true notion of *kind of* is inherent to the object itself: a *kookaburra* cannot be both a kind of *bird* and a kind of *snake*. This is ruled out because true taxonomic relationships are exclusive, defining characteristics. But a knife is not in a taxonomic relationship to *cutlery*. It is a functional, attributive relationship: a knife can function as *cutlery*, but also as a *weapon* and perhaps even a *tool*. Wierzbicka (1992b) argues that the fuzziness and prototypicality effects of artificial "supercategories" like *furniture* and *cutlery* is due to the fact that they are not taxonomic; the uses to which things are put is much less sharply defined than the kind of thing that something is.

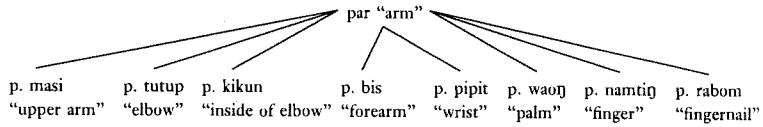
Partonomy

Another type of cognitive organization studied by cognitive anthropologists is the part–whole relationship, sometimes called a partonomy. Similar formal principles are invoked to structure this relationship as with a taxonomy (Andersen 1978; Brown 1976; Burton and Kirk 1979), but such a representation ignores the critical semantic difference: a taxonomy is built on the notion of *kind* of – a kookaburra is a kind of bird, while a partonomy is predicated on the notion of *part* of – the hand is part of the arm. Recognizing this, however, there are still some parallelisms; for example, a higher level category can be inclusive of a lower one, generating occasionally a complex hierarchy (5.11).

5.11



5.12



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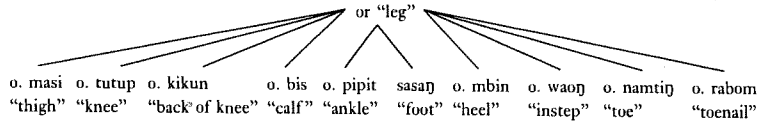

Note that for English speakers, while the hand is part of the arm, it is lexicalized separately. Yimas is the same, contrasting *nŋkwara* "hand" with *maŋkaŋ* "arm." Watam, however, has a single word *par* "hand, arm" covering the entire domain, so its partonomy of the arm would look like 5.12. Note the reduced hierarchical structure in the Watam partonomy as opposed to that for English. Interestingly, the partonomy for *or* "leg" shows close parallels, usually using the same modifying lexemes (5.13). Note that in Watam nails, fingernails, and toenails are conceived as part of the whole arm and leg, *par rabom* "fingernail" and *or rabom* "toenail," not the hand or foot, as in English, in spite of the fact that Watam has a distinct lexeme at least for "foot," *sasaŋ*.

It has been claimed (Andersen 1978; Casson 1983) that partonomies are also like taxonomies in possessing basic level, high salience categories (similar to generic taxa) dominating specific categories and being dominated by inclusive "supercategories." Examples of the basic level categories are said to be *hand*, *foot*, *eye*, etc., with *arm*, *leg*, and *face* inclusive supercategories and *finger*, *toe*, and *pupil* specific ones. While English supports such claims, Watam at face value refutes it, since there is no evidence for a basic level category *hand* as part of an inclusive supercategory *arm* and having a specific subordinate category *finger*. There is no unitary category *hand* at all; rather, it is analyzed into areas designated as parts of *par* "arm." Further, while Watam does possess a lexeme *sasaŋ* "foot," none of its parts are described in terms of it. They are named as parts of *or* "leg," exactly parallel to the situation for *par* "arm." The Watam data suggests there may be much more language-specific relativity in partonomies of the body-part domain than some current strong advocates of universal principles underlying systems of ethnoanatomy would care to admit.

Scripts and Cultural Practices

As mentioned above, much of the later work in cognitive anthropology has been inspired by ongoing developments in the field of artificial intelligence.

One of the most pervasive ideas imported from artificial intelligence is that of scripts (Casson 1983; Schank and Abelson 1977). Scripts are cognitive-event schemas, how actions are intended to unfold in the normal course of things. They represent the standardized knowledge a Native has of how to accomplish things in the culture. In this sense, they are not typically claimed to be strongly underlain by innate universal principles and represent a partial return to earlier goals within cognitive anthropology: "culture consists of whatever one has to know or believe in order to operate in a manner acceptable to its members" (Goodenough 1964[1957]:36). A commonly cited example for American and other Western cultures is *Eating Out at a Restaurant*. All of us by being socialized as members of these cultures have clear expectations of how this should unfold, from the process of getting seated, ordering, eating, paying, and leaving. Even variations from the most stereotypical enactment of this script is standardized: e.g. getting the waiter's attention for sending undercooked food back to the kitchen. The script concept, then, is a powerful idea for thinking about the cognitive organization of cultural information, and not surprisingly has been enthusiastically embraced by cognitive anthropologists (Agar 1972; Dougherty and Keller 1985; Holland and Skinner 1987; Lutz 1987).

Some earlier ethnographic work can profitably be recast in the script framework, and for illustration purposes, I will do just that, rephrasing Frake's (1972) well-known study of Subanun drinking practices. The Subanun engage in drinking bouts of a beer-like alcoholic beverage *gasi* as part of particular festivities. Just as Americans have clear standardized expectations as to how dining in a restaurant should proceed, the Subanun have set idealized cognitive representations, a script, for these drinking bouts. An analysis in terms of the concept of script hopes to lay out clearly the cognitive understanding the Subanun have of these occasions.

The drink, *gasi*, is drunk through bamboo straws from a Chinese jar. The source of the beer is a mash made of rice, manioc maize and/or Job's tears mash. Water is added to this mash filling the jar to the brim to produce a drinkable liquid. Each drinker takes a turn in drinking from the straw, after which the jar is filled again to the brim. A round is completed when all drinkers in the group have had a turn; a new round then commences. The drinking bout is divided into three periods, each with its own distinctive expected behavior, especially verbal behavior. The first period is the tasting stage. The drinking behavior consists of brief turns with little attention to gauging individual consumption. The verbal behavior at this stage is concerned with setting up social rank. The provider of the jar with *gasi* invites someone to drink first, thereby signalling that the recipient is the person to which he and his kin in the group owe the greatest deference. The recipient asks permission of the others one by one to initiate drinking. The term of address, kin terms or otherwise, that he uses to address each member of

the group delimits his view of their social relationship. After drinking, the initial drinker normally invites the person who invited him to drink first to go next. This is the normal expectation, the most stereotypical script, but he may do otherwise, in this case signalling a particular kind of marked social relationship.

After the preparatory stage one, the drinking bout proceeds to the major phase, stage two of competitive drinking. The drinking behavior consists of much longer turns, with careful gauging of individual consumption. Each drinker keeps a mental record of each other's consumption in a round, and successive drinkers must equal the consumption of the initial drinker of the round. As the brew gets weaker, the required mark of consumption gets progressively raised. Some individual drinkers may retire from the group at this stage. Further, other types of non-linguistic behavior may now co-occur with drinking, such as music, dancing, and singing. The verbal behavior associated with competitive drinking is more varied than at stage one. Drinkers exchange information and discuss the quality of the brew, and their individual drinking performance is evaluated by others. The amount of verbal responses a drinker can elicit from the others indicates the amount of drinking and talking time the others will give him. If he feels discouraged he will drop out, and typically the group gets reduced to less than half-a-dozen men.

At this point a second substage of verbal behavior, which we might call discussion, emerges within stage two of competitive drinking. The face-to-face verbal interaction intensifies, with gossip being freely exchanged. At first confined to relatively trivial topics, it shifts in many cases to more weighty ones, concerned with what we might see as legal questions, as there is no organized juridical system in Subanun society. Drinkers compete with each other in effective legal decisions, but this requires commanding a dominating role in the drinking bout, both verbally and drinking wise. He who succeeds by cogent argumentation in getting his legal arbitration accepted thereby increases his social status.

Finally, the drinking bout proceeds to stage three, game drinking. Turns become shorter again, drinking games occur and opposite-sex pairs team up for drinking together. The verbal behavior too signals this change to a less serious and more jocular vein of interaction, although competition among drinkers is still central. The phonological form of the utterances may be creatively played with through verbal games, using stylized song and verse patterns. Verbal duelling occurs and unfinished legal questions may be settled in this manner, replacing cogent argumentation with displays of verbal artistry. The whole point of stage three is to conclude the drinking bout on a note of conviviality, and drinkers who displayed hostility during earlier stages of the bout may receive special attention to minimize rancor.

The script for Subanun drinking may be summarized as follows:

Subanun Drinking

		Drink	*Talk*
Stage 1:	Tasting	Brief turns; don't gauge consumption	Invitations: set up social rank
Stage 2:	Competitive drinking	Longer turns; gauge consumption closely; some drinkers retire; sing, dance	1. Exchange information: brew, performance, "light" topics 2. Discussion: gossip, "serious" topics, legal questions. Winning argumentation in resolving disputes
Stage 3:	Game drinking	Shorten turns. Engage in drinking games	Engage in language games: verbal duelling used to resolve disputes

This is the idealized cognitive script that a Subanun Native has for drinking bouts of *gasi*. Individual bouts may diverge somewhat from the stereotypical script, but if they diverge too far, they will no longer be recognized as appropriate bouts of *gasi* drinking in Subanun culture (see the discussion of genre in chapter 18). It is in this sense that such a script may be claimed to represent the cognitive organization of this behavior for Subanun Natives. And it is the determination of such Native cognitive representations which at base is the goal of all cognitive anthropology. Those who claim robust innate and universal ideas within the human mind simply argue further that these function to constrain severely the form of any such Native cognitive representation. Two semantic domains where such robust innate and universal constraints have been posited are kinship and color terminologies. The next two chapters will present case studies of each of these domains.

Summary

Cognitive anthropology is an American school of structuralism that developed out of earlier Boasian work in linguistic anthropology. It holds that culture is to be reduced to cognition and is interested in the mental representation of cultural practices, rather than the behavior itself, a clear Platonic position. Various analytical procedures and systems of representation drawn from structural linguistics or cognitive psychology, such as

componential analysis, taxonomies and scripts, are employed to represent explicitly this cognitive organization of cultural phenomena. In its earlier period, cognitive anthropology exhibited relativist tendencies, but ultimately became thoroughly rationalist and universalist. This is clearly illustrated in Berlin's and others' descriptions of systems of ethnobiological classification. All ethnobiological classification systems are organized in the same way, a shallow taxonomy of no more than six mutually exclusive ranks. Further, Berlin claims that these classifications are determined by universal perceptual and cognitive faculties, with no mediation of cultural practices. Others have traced this putative universal basis of classification to a "hidden nature" universally apprehensible by all human cognizers, while some have challenged the strong universalist claims for the basis of ethnobiological classifications and argue that cultural practices do indeed have a role in their framing. Other areas in which cognitive anthropological research has been productive are in partonomies, the relations of parts to whole and the application of the artificial intelligence idea of scripts as a way to describe culture practices.

Further Reading

The history of cognitive anthropology up to the present is well reviewed in D'Andrade (1995). Tyler (1969) anthologizes key articles in its earlier relativist period. For more recent developments, see Casson's (1983) and Dougherty's (1985) collections of articles. Berlin (1992) is a thorough treatment of his work on ethnobiology, while Atran (1990), Gelman and Cooley (1991), and Wierzbicka (1992b) develop the theory of natural hidden essences and its implications.

6

Kinship

The Terms of Kinship Analysis

Of all topics within anthropological linguistics, kinship has probably attracted the keenest and most sustained interest. It is also a favorite semantic domain in which cognitive anthropologists like to demonstrate the usefulness of their approach. Like many other semantic domains, the analysis of kinship has been studied from two perspectives, universalist (Goodenough 1970; Lounsbury 1965, 1969; Murdock 1949) and relativist (Leach 1958, 1962; Needham 1971; Schneider 1980, 1984). On the face of it, kinship would seem to be a good domain in which to demonstrate universals, for mating and reproduction is a necessary feature of any viable society. Surprisingly, then, the kinship systems of the world's languages, the way Natives classify their kin, while falling into a number of types, are quite variable. The purpose of the work of cognitive anthropologists has been to argue that beneath this apparent variation is a system of universal categories to which any kinship system can be reduced. In keeping with the theme of this Part, I will confine myself mainly to analyses of kinship systems based on universalist assumptions, turning at the end to a brief consideration of relativist critiques.

An approach to the analysis of kinship systems based on strong universalist assumptions is a venerable tradition in anthropology, clearly traceable at least to Malinowski (1929), if not Morgan (1871). Malinowski (1929, 1930) saw the genesis of kinship within the nuclear family, with its primary kinship relationships being the basis of all kinship, the wider kinship relations in the society being derived from these by a process of extension. This view was reiterated by Murdock (1949:92–3), who sees the nuclear family as a cultural universal:

> The point of departure for the analysis of kinship is the nuclear family. Universally, it is in this social group that the developing child . . . learns to