Birds, Words, and a Requiem for the Omniscient Informant

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birds, words, and a requiem for the omniscient informant[1]

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the study

Despite the individual character of perceptual and other cognitive processes, experience leads us to expect a degree of conceptual sharing among the members of any enduring group of interacting persons. We would expect to encounter evidence of such sharing, for instance, in the content and ordering of verbal and nonverbal behavior, under both natural and experimental conditions.

Until recently, with only a few exceptions, the work of social and behavioral scientists seems to have been premised on the existence of general cognitive sharing within any given cultural system. Documentation of interpersonally variable beliefs and values goes back, nonetheless, to our earliest ethnography (e.g., Dorsey 1882), and detailed, explicit treatment of these phenomena can be traced to major early figures in anthropology (e.g., Malinowski 1916; Sapir 1921; Radin 1927), sociology (e.g., Simmel 1908), and folklore (e.g., von Sydow 1934, 1937). It was not until the 1950s and 1960s, however, that heightened interest in the issue and development of ethnosemantic and projective elicitation procedures opened the way to serious empirical enquiry into the nature and extent of cognitive variability. We are just beginning. Our understanding of variability and sharing remains limited. Work on causality has not proceeded much beyond positing the possible functional utility of certain types of cognitive diversity (Wallace 1961, 1970) and demonstrating its association with particular situational factors (e.g., maturation [Sanjek 1971:1133-1139] and education [Robbins, et al. 1973:115-117]) or simple, dialectical variation (Berlin, et al. 1974).

This paper is one of the first of a series of reports on a fifteen-month, collaborative study of cognitive sharing and variability among a northern Dene people (see also Christian n.d.; Durbin and Gardner n.d.). The originally stated objective of the project was enquiry into the nature, extent, and causality of the phenomena. For reasons that will be made clear, below, the present emphasis will be on the causes of sharing.

Dene of the Mackenzie drainage area were selected for the study because their reported concern for maintenance of individual autonomy and quiet interaction (Helm 1961; Honigmann 1946; Mason 1946) were hypothesized to render relatively visible both cognitive sharing and the processes and mechanisms that bring it about. Research was

Through the use of ethnosemantic elicitation procedures and stratified sampling, features of the variation in bird domain shape of forty-five northern Dene adults are shown tentatively to be modal. An approach to the study of the causes of cognitive sharing is suggested.

largely restricted to one riverine settlement. The populace of this settlement was composed overwhelmingly of speakers of one Dene language; they have a centuries old association with the immediate area. About 85-90 percent of the Dene families were active in trapping, hunting, and other exploitation of the bush; this was the percentage of the families that were spending at least two to nine winter months on traplines and in hunting areas at the time of the research (1974-1975).

It was integral to the overall research design that many behavioral realms and semantic domains be examined; we will, eventually, be making comparisons among them. For now, discussion will be limited to the data from one substudy on birds, a formal enquiry into domain shape.

After initial study of terms for some 163 species of Class Aves that should be found in the region, or migrating through it, twenty-six species were chosen for the substudy in question. These twenty-six species had been found to be among the most salient in the total set of 163, but slight adjustments were made to ensure a somewhat balanced representation of the thirteen orders and the many families of birds to be found in the immediate region. Twelve out of thirteen orders and over half of the families of birds are represented in the subset of twenty-six (see Appendix 1).

Sample selection, in a community with a population that peaks seasonally at only about 120 adult Dene, entailed two basic procedures. First, a survey undertaken by Jane M. Christian (co-principal investigator in the project) allowed categorization of all adults by (1) age, (2) sex, (3) kin association, and (4) linguistic and other acculturation. Details of this categorization are supplied in Appendix 2. Second, each investigator then selected four-way stratified samples of the size desired for each subproject. As we intended to work with about one person out of two or three, the final choice could seldom be randomized. A few people had politely made clear their disinterest in working with us; some were relatively unavailable when needed; some became fatigued and were replaced by alternates in midstudy; and some, had they been chosen, would have given us unnecessarily large numbers of primarily related persons in the eventual samples. Though not random stratified samples, the samples used might have been difficult to improve on without engendering rapport and elicitation problems of some magnitude. Work with forty-five persons, representing 37 percent of the adult population, will be reported on here.

lexical diversity

Lexical diversity is found on all levels of generalization in terminology for birds. It will be reviewed in the following way: variation in specific terms will be described first, because of major problems in methods that this caused; variation in the head term for the domain under study will be dealt with next; finally, variation in intermediate level terms will be taken up, leading us into the whole matter of domain shape—the major concern of this paper.

Probably the most variably labeled phenomenon encountered in the project as a whole was the tassel or "bell" on the throat of a moose. About thirteen different terms[2] for it were elicited from the first twenty-five informants. A pilot study on birds, undertaken in the area in 1973, demonstrated a high general level of variability in specific terms, specific in two senses (i.e., the terms are the most specific terms in common use and they do not meet Berlin, Breedlove, and Raven's criterion for being called varietal [1973:216]). Some of the patterns found then were: (1) personal (propriospective) or, at most, family terms based on personal experience; (2) idiosyncracy in pronunciation of onomatopoeic bird

terms, later interpreted as cultivated; and (3) variable ways of labeling an apparently widely recognized distinctive attribute of a particular species. Examples of each of these can be given:

(1) Personal and familial terms: One informant termed the American coot (*Fúlica americána*) /s*ex*atθ*onne/, 'my visitor or stranger,' after a particular encounter in the bush.[3] Another informant and her father labeled the pine grosbeak (*Pinícola enucleátor*) /canɨtθ*iqoc*uą/ 'the bird of /canɨtθ*i/ shoreline,' after the shore area it frequented, near their trap line cabin.

(2) The first five informants with whom work was done labeled the ruffed grouse (*Bonása umbellus*) thus:

/etsetsuę/,
/etsets*uę/,
/ets*ets*eśa/,
/θ*ets*uę/,
/ets*uɨts*uę/.

Subsequently, a rich array of additional terms was elicited for this species.

(3) The "pointed" head of the birds was alluded to in terms such as the following for waxwings (*Bombycílla* sps.):

/t*it*ots*ua/,
/tθ*ilats*ia/,
/c*uabetθ*ic*ośa/.

All three terms may be glossed similarly.

Variable species terms having been common in the pilot project, caution dictated that ethnosemantic enquiry, in the main study, be conducted in such a way that referents would be clear for all key terms used or elicited in interviews. Well formulated frame questions would not be enough. Jane Christian was able to use genealogical information, of course, to ground meanings in studying kin terms. In treating botanical and zoological phenomena, we utilized specimens and pictures[4] in conjunction with frame questions (after Conklin 1960, etc.); we even did the same, to advantage, in eliciting classificatory verb stems. In this way we helped maximize the probability that we knew each separate informant's denotata for the terms in question. The advantages of this method cannot be overemphasized, whether or not informants are literate in the language under study.

Bird terms were elicited with the aid of Arthur Singer's clear color paintings (Robbins, et al. 1966). Each species is portrayed in characteristic habitats. Frequently Singer shows two or more perching, swimming, flying, or courtship display poses, as well as sexual, maturational, and seasonal variation in plumage. It should be clear that natural sightings would have provided too infrequent and too unstandardized a source of information to have been relied upon for controlled elicitation from all of the many seventeen to seventy-five year old men and women who assisted in this subproject. Stuffed specimens could conceivably have been utilized, though, and further work is planned with professional recordings of bird songs.

In the main study, specific terms were found to be somewhat less variable than in the pilot study. More adequate sampling in the latter made it possible to see that, although propriospective terms were still in evidence, some of the variation could be expressed in terms of modes. These data will be analyzed, shortly, by computer.

Two related considerations that went into selection of the twenty-six bird species used to study domain shape were estimates of their familiarity to informants and the certainty

with which they were named. These help guarantee that the variation in domain shape which is revealed by a study of the twenty-six species is relatively unlikely to be a product of error, ignorance, or the inadequacy of the elicitation materials. After terms for the whole set of 163 species had been elicited from five informants in the pilot project and another ten informants in the main project, the results were tabulated in order to find the species that all or nearly all informants recognized and that appeared to be labeled with few if any errors (note: informants introduced the idea of errors in correcting themselves).

The species eventually selected were among those which had the most standardized terms. However, it is by no means the case that the terms are entirely consistent. One of the best known species that was used in the domain shape study is the hairy woodpecker (*Dendrocopos villósus*), a year long inhabitant of the area. Fifty-one informants in several subprojects of the main study gave the terms for it, which are shown in Table 1.

Many of the divergent terms were given by mature, bush-oriented individuals who gave considerable evidence of knowing the species in question (cf. the man who gave term 13, in Table 1, thinking mistakenly that he was looking at a picture of a related, migratory species).

Of the forty-five subjects in the domain shape substudy, forty-one were asked for a term that would cover all 26 species; "all these together [with gesture], their name is [called] what?" Not all considered the question reasonable. If they appeared puzzled, they were asked thus, "[genus A], and [genus B], and . . . , all of them together [with gesture], their name is [called] what?" Generic terms used in this question were strictly limited to those the informant had already provided. Responses are shown in Table 2.

Two informants stated that general terms were used only in cases of ignorance and empirical uncertainty.

> "When you see them from far, you call them. . ."
> "If from far you see him, you can't tell, so you call him. . ."
> "When you see something flying in distance and don't know, then you see it's big one."

Informants who smiled did so in a way which intimated that they were incredulous that they could be asked for a single term to cover all the twenty-six species. Discussion revealed in most cases that they did, in fact, regard the question (a standard one syntactically) as ridiculous. Informants who hesitated generally did so in the same spirit. Some were definite that there was no term for "all these": /besi x*ulle/, 'Their name is nothing.' Yet others gave a head term that we could gloss as 'bird' immediately, with great certainty (often voluntarily), and, in some cases, with approximations of an actual, fairly appropriate definition:

> "They got wings" [said in English].
> "They fly."
> "They all fly."

Insects, flying mammals, and airplanes were generally excluded from the domain in the course of further enquiry as to location of domain boundary. It should be noted, though, that for several of the informants who did not produce a head term approximating our term, "bird," in denotative scope, there is insufficient evidence to state with certainty that they have a general bird domain. Such gaps in the data can be attributed, in part, to our subjects finding some questions tedious and relatively unimportant.

As a prelude to examining the overall form of the domain(s) in question, we might

Table 1. Terms for hairy woodpecker (*Dendrocopos villósus*).

Term (with variants)	Number of informants
1. /1*o(c'|c)(e|e|a|x*|')(/|ϕ)	22
2. ditto + /–c*o/	1
3. ditto + /teq' a(a|/)	3
4. ditto + /teq'aalic*o/	1
5. /e(s*|c*)(i|e|ϕ) te(ϕ|x*)(q'|q*)a(a|ϕ|x*)li/	3
6. /tec*į te(ϕ|x*)q*a(ϕ|x*)li/	2
7. /tec*į c'aaq*aa/	1
8. /tec*į e(x*)q*a(x*)/	1
9. /tec*įtΘ*į/ (this term is brought in from an adjacent dialect area by in-marrying woman)	2
10. /etΘ*įle/	1
11. /etΘ*itetelli/	1
12. /teloc'ea'/	1
13. /tΘ*ax*aa/ (one of these 3 responses is known through collateral evidence to be an error)	3
14. 1 or 5 above	1
15. 1 or 6 above	3
16. 6 or 11 above	1
17. 11 or /tec*iq*aa/	1
18. did not know a term	3
	N = 51

examine the terms for intermediate level folk taxa, whether these are on the level of our scientific genera, families, or orders.[5] Intermediate level terms were elicited by using a standard set of questions. First, pictures of two species of perching birds (ones which usually have a "generic" term, /c*ụą/, as part of a two or more morpheme specific term) were presented to the informant, one at a time, and the questions were asked:

/besi tauśe ọt'e'/ 'its name is [called] what?'
/. . .s*į́c*ụą ọt'e'/ 'is. . .[a member of class] c*ụą?'

Then both of these questions were asked about a duck which had previously, fairly uniformly, been termed /c*its*ella/. This "specific" term includes a morpheme, /c*i/,

Table 2. Responses of forty-one informants to a request for a head term for a domain roughly equivalent to class Aves.

Term(s)	Character of Response			
	(a) definite	(b) hesitant	(c) smiling	Totals
no term (ϕ)	6	5	3	14
ϕ, /tet'ooni'/		1	1	2
/Θ*ella'/	1			1
ϕ, /tet'ooni'/, /Θ*ella'/	(1)*		(1)*	1
/tet'ooni'/	11	1	2	14
/tet'ooni'/, /q*eteΘe'/	1			1
/q*eteΘe'/		1		1
/q'eteΘex*/	1			1
/c*u̯a̯/	2	1		3
/c*u̯a̯elli̯x*/	1			1
other†	2			2
Totals	26*	9	7*	41

*One informant gave different responses in two different interviews.

†An unrecorded verb and an erroneous response that was subsequently revealed as such.

which is the most common "generic" term for ducks or waterfowl. The procedure allowed informants to reject classing the duck as /c*u̯a̯/. It established the general frame; most informants explained how /c*its*ella/ would be classed and went on through the remainder of the set giving "generic" terms with little prompting. Attempts were made not to introduce possible "generic" terms other than /c*u̯a̯/ until either the informant used them or until the first run through the set was complete.

Several main intermediate level terms were found to be used quite widely, and a number of additional ones appeared to be used somewhat less widely. The expression "appeared to be used" is advisable, because of the arbitrary boundary placed on our enquiry. If all 163 species had been studied, subsets would have been given more certain definition. Few of our informants would have been enthusiastic about enduring through the longer schedule of questions, though, as was demonstrated.

The most common intermediate level taxa are termed:

/c*u̯a̯/,
/c*i/,
/tet'ooni'/ or /tet'oonic*o/, and
/tix*/.

A less commonly mentioned intermediate level taxon is:

/esex*/ (or /ex*da/, or Ø lexeme).

Others include:

/bex*tΘ*i̯/,
/l*o̯c'e̯/, and
various other unlabeled classes.

Unlabeled classes were established on the basis of explicit informant judgments that

certain species were to be classed together. They usually verbalized it as, "they are the same," or, more speculatively, "maybe this and this." They then indicated in standard ways either that there was no name or that they did not know a name. Some informants created classes by taking the pictures and grouping them. This approach was not actively discouraged, especially if it was used near the end of the elicitation procedure. Attempts were made, however, to ascertain that groupings were intended as meaningful and were not just the by-products of exploratory sorting.

Because the term /tet'ooni'/ already appeared as a head term for Aves (and also as a specific term) and because its variability is of special interest in the discussion to follow, some idea of the range and scope of its various uses will be offered here. Whether we are seeing homonyms or something else can be taken up later, however.

The term, /tet'ooni'/, was not elicited at all from six of the forty-five informants. Three of these people were young and claimed little knowledge of bird terms; another gave incomplete responses due to a hearing problem.

Among the remaining thirty-nine informants, the following patterns of use were encountered. Four used the term solely for a particular species (among them, they so labeled three *different* species). Five used it solely for what might be called a genus (with two, two, four, five or eight member species, as elicited). Five used it solely for what might be called a family, or order (with four, seven, eight, nine, or an unspecified number of species out of the set used). Two used it for both a species and a family. Five used it for both a genus and a family. Eight used it for both a genus and the Class Aves. Two used it for both a family and the Class Aves. Three used it for all three of the following—a species, a family, and the Class Aves. Five used it for all three of these—a genus, a family, and the Class Aves.

Perchonock and Werner, in describing southern Dene food classification, have warned that, "intermediate levels of the taxonomy seem to leave the most leeway for individual variation" (1969:234). They go on, "We have rarely found two people classifying the middle levels in the same way" (1969:234). Let us see what apparent variation in individual, intermediate level terms does to the form of schematic representations of the northern Dene data under study.

domain shape: modes

Until that far distant time when we are able to know and describe the processes and content of cognition, other than by broad inference, when we speak of the "shape" of semantic domains we shall be referring in large part to characteristics of our own constructs. Accordingly, domain shape is defined here heuristically, in terms of the form to be seen in the ordered results of our enquiry. It is hoped that features of that form can be imputed to the thought worlds of our informants. Nevertheless, the very diagrams with which we begin, below, should be regarded as etic frames, frames for data that have been elicited in an experimental (i.e., controlled, therefore imposed) manner. Our mode of eliciting was imposed in more than one sense. While socially "proper," the questions asked about bird identity and classification were unprecedented, hence unnatural. Enquiry and learning are not customarily conducted in the fashion that our methods required (on the positive side, our questions did draw interviewees into a teaching role which many found pleasurable, despite certain elements of unconventionality[6]). Second, while syntactically correct, questions and answers phrased in terms of hierarchic class membership did not necessarily agree with the ways the people preferred to discuss those classes of phenomena treated here. In fact, the ideas of class focus, class marginality, and

class overlap were introduced over and over again by interviewees in several of the subprojects.

The lead they offered has been followed with some difficulty because the conventional ways in which taxonomies are represented do not permit representation of focus or class overlap (cf. Conklin 1962 and Werner and Fenton 1970). There is a lack of appropriate schematic models, other than John Venn's century-old contribution to Boolean algebra. To be sure, class overlap can be shown and all the content of a conventionally represented taxonomy can be readily portrayed in Venn diagrammatic form, but we have nowhere near the same repertory of analytical methods associated with this diagram's use. Venn diagrams will be utilized to demonstrate major features of bird domain shape for our sample of forty-five informants, but at some expense.

Two new conventions will be adopted: (1) If there is evidence that one class is the focal member of another, more inclusive class, the focal member will be centered. That is, concentricity will be used to symbolize focus. (2) Similarly, should there be evidence that one class, x, is a peripheral member of another, more inclusive class, y, where all x is y, then x will be shown against the perimeter of y (see Figure 1). No formal precedents for these added conventions are known. They are suggested so that class overlap and class peripherality can be related to one another in the visual representations that accompany cases to be discussed below.

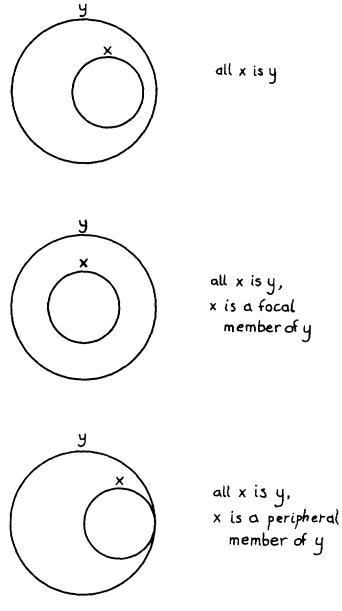

Figure 1. Focal and peripheral class membership shown by Venn diagrams.

A complete sample diagram of the form of one informant's terminology for the twenty-six salient bird species is shown in Figure 2(a). Abbreviations can be used of general terms (as in Figure 3) to facilitate comparison by scanning of different peoples' denotative meanings of the general terms. Specific terms are symbolized by lower case letters.

Where data on a large number of informants requires presentation, a simplified form of the diagram can be used, instead, showing only the number of species classed together,

not their separate identities. This is illustrated in two different ways in Figures 2(b) and 2(c).

Scrutiny of the contents of Figure 3, in which the bird domains of forty-five informants are shown, reveals that there are several small but clear modes to be found. For one thing, in many instances, two, three, or four informants agree very closely. For another, by eliminating particular variables from consideration (e.g., by ignoring head terms, which permits the coalescence of all diagrams in a row), we can demonstrate yet bigger modes.

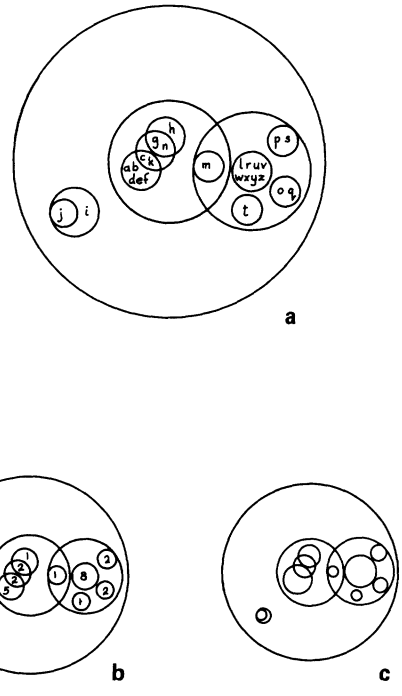

Figure 2. Size of membership of bird domains demonstrated for one informant by: (a) listing species (symbols as in appendix 1), (b) listing number of species, and (c) using relative size of circles.

domain shape: explanation

Modes of this kind have been demonstrated before. Wexler and Romney showed, for instance, that there were two main modal responses in U.S. college populations to triad tests of dissimilarity of kin types (1972). Pollnac (1972) and Robbins, et al. (1973) have demonstrated once more what is becoming a fairly well recognized association between degree of education and acculturation, on the one hand, and such things as organization of semantic domains, on the other. Their methods resemble those of Wexler and Romney, but they work with several relatively small (computer isolated) modes, the largest of which in the 1972 study were 28 percent and 20 percent of a total sample of ninety-four subjects. More recently, Berlin, Breedlove, and Raven have shown recurring modes in Tzeltal ethnobotanic taxonomy, recurring in the sense that they are found in several botanic subdomains. Due to their inadequate sampling methods, we can only say that some of the modes they identify *might* be explicable as cold and hot environment dialect

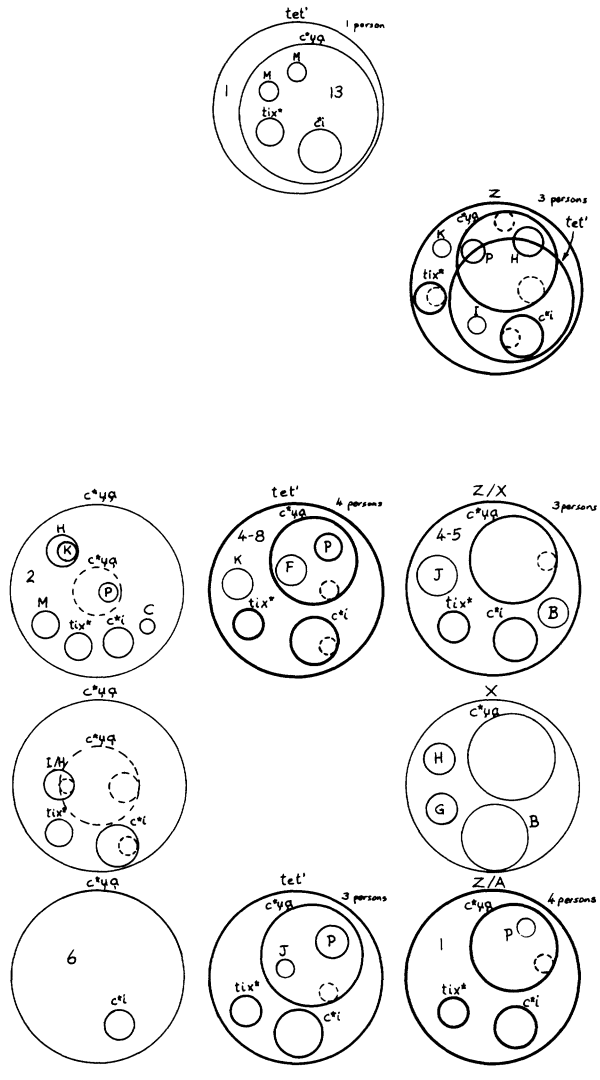

Figure 3. Bird domain shape of forty-five informants, part 1.

Key:

line thickness represents number of informants agreeing

dashed lines represent focal and peripheral members

tet' represents tet'ooni'

A verbs regarding flight

B unnamed waterfowl

C geese

D daatex*

F t*abaqoc*ụą (shore birds)

G unnamed chickens

H unnamed predators

I ex*da (eagles)

J c*ụąoś*ett*i, c*ụąotelli, tetellex* (carnivors)

K bex*tΘ*į (owls)

M unnamed scavengers

N c*ụą ats*ella (small perching birds)

P x*aśe (winter birds)

X not asked

Y possible error

Z unknown or no response

numbers: other species

lower case letters: other genera named as species

tet'oonic*o not shown

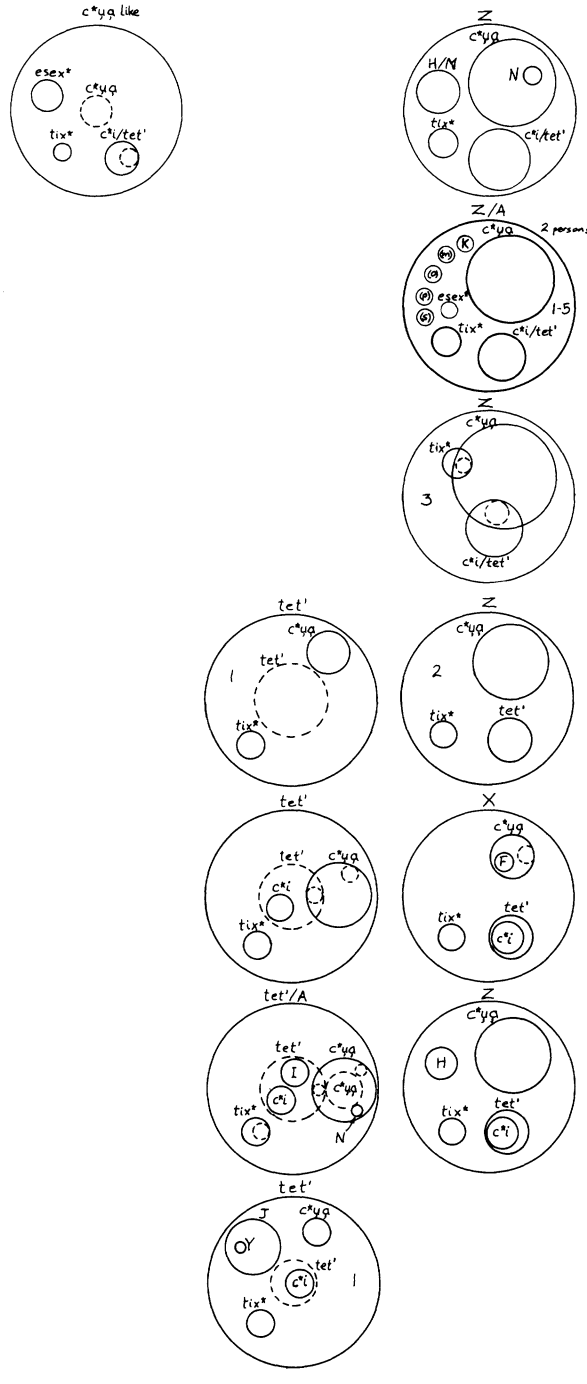

Figure 3. Bird domain shape of forty-five informants, part 2.

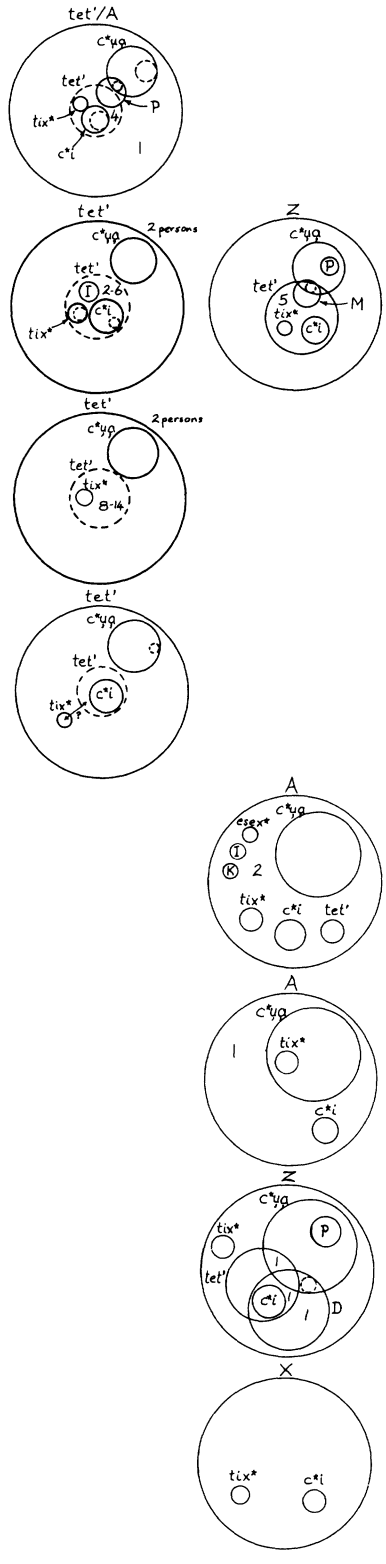

Figure 3. Bird domain shape of forty-five informants, part 3.

forms within the region surveyed (Berlin, et al. 1974:168, 205, 238, 250, 270, etc.).

We have no context for appreciating the findings of studies such as these. Notwithstanding almost a decade of serious empirical research on cognitive variability, we still have little knowledge of any of the following: (1) the relative prevalence and importance of interpersonal cognitive sharing and diversity cross-culturally; (2) the characteristics of cultural systems that could affect the general extent of cognitive sharing; (3) differences in the prevalence of cognitive sharing from one behavioral realm to another and from one semantic domain to another within a given cultural system; (4) the characteristics of cultural systems that might contribute to such differences between realms or domains; and (5) the characteristics and uses of realms or domains which manifest marked sharing and those which do not. As we move toward explanation, these global questions should be kept in mind.

Underlying these lacunae is a general problem of perspective which could profitably be given attention at the same time. Cultural, social, and linguistic anthropologists have mostly joined other social scientists in presupposing that there is widespread interpersonal cognitive sharing in cultural systems. Given the individual character of perceptual and cognitive processes, this could hardly be judged sound. Mounting empirical support for the half-century old alternative view, as to the prevalence and importance of cognitive variability, has shocked us into an awareness of our usual uncritical stance. We could ask in retrospect whether, by taking sharing for granted, we have forgone customary scientific procedures of seeking and documenting regularities and of testing hypotheses about the associations and possible causes of such regularities. The position taken in this paper is that we are in urgent need of examining the phenomenon of sharing. Accordingly, in the discussion which follows there will be little attention given to explaining the fascinating and rather extreme kinds of variability in the data here reported; instead, the emphasis will be on determining how to isolate the processes and mechanisms that might account for the sharing that is found. The recommended shift of perspective is not as subtle as it sounds.

What can be made of the modes that are apparent in bird domain shape? Provisional hand sorting of the materials indicates regularity along the following lines: (1) Not the topmost diagram, but diagrams for the next twenty-one people from the top in Figure 3, those in which the intermediate level terms are /c*u̯a̯/, /c*i/, /tix*/ (and, in some cases, /esex*/), account for eight out of ten of the unacculturated people of "southern" provenience within the area. (2) Diagrams having Ø as the head term include a disproportionate number of cases of people of "eastern" provenience. (3) Those who use /c*u̯a̯/ as a head term are young and relatively acculturated as a class. (4) Throughout the figure, there are clusters of two or three to six or seven people whose bird domains are structured alike. There are many arbitrary ways of constituting these modes. (5) Individuals not using /c*i/ at all are mostly linked by close kin ties to a person for whom this term is a socially delicate nickname. (6) Three very incomplete diagrams are those of either very young and fairly acculturated informants or an informant with impaired hearing whose interview should not have been included in the corpus.

These findings offer promise that multidimensional scaling methods applied to data in this and other subprojects will yield meaningful results in terms of explanations of sharing. The variables that will be accounted for in the eventual analysis are:

(1) informant characteristics: (a) age; (b) sex; (c) kinship background (expressed geographically and perhaps representing microdialectal variation); (d) fluency in English, also aspects of the acquisition of English (in school, regular employment, hospital, etc.); (e) fluency in native language; (f) degree and type (e.g., technological,

value orientation, etc.) of acculturation to Euro-Canadian culture.

(2) characteristics of referents of the terms in question: (a) frequency of occurrence in the area; (b) observability; (c) economic significance at present (or in recent times), as judged by each informant; (d) religious and other special symbolic significance; (e) other various attributes of the birds (e.g., their diet, style of flight, etc.).

(3) networks among informants and others in the community: (a) proximity in kinship relations; (b) proximity in a communication network that accounts for teaching-learning relationships; (c) proximity in a communication network that accounts for patterns of sociability and autonomy, centrality, and peripherality.

We have evidence that sharing is patterned in a way that makes it unproductive and perhaps even unreasonable *in this particular instance* to define the culture in terms of an average (cf. Sankoff 1971), the shared (Werner and Fenton 1970), the sum (Wallace 1961, 1970; Werner and Fenton 1970), or a mean around which there is variance (D'Andrade n.d.). Berlin, Breedlove, and Raven have reached a similar conclusion about their Tzeltal data (1974:58-59). Special note should be taken of the relative frequency of outright rejection by some informants in our study of patterns that others had offered, explicitly or otherwise. This was true even of preferred syntactic structures (Durbin, personal communication). Existence of modes, only a few of which might be written off as microdialectal variation; mutual incompatibility of the structures involved; absence in the system of specialists who might have offered more complete or more formal versions of the patterns; and deemphasis in the system of prestigious or standard forms that could serve as norms against which deviance might be measured—all these characteristics of the data discourage us from adopting a construct such as the ideal hearer-speaker or the omniscient informant.

domain shape: focus

Focus is an aspect of domain shape that warrants separate attention. Recognition of the phenomenon came too late in the study for it to have become the subject of deliberate enquiry. Information was obtained fortuitously, not systematically, and almost certainly fails to show us the actual prevalence of focusing as a means for ordering the content of cognition. Review of the data behind Figure 3 shows that existence of either a focus or a periphery was suggested by from 9 percent to 36 percent of informants for each of the major subdomains. Enquiry expressly into the subject is likely to increase the proportion of informants responding in this way.

In the case at hand, generalizing from the evidence available, to say that a (sub)domain or class has a focus is to say that one member is thought of as being central or typical, a reference member which other members resemble or approximate. This member can be placed centrally within the semantic space because it best embodies the defining characteristics of the subdomain. Correspondingly, to talk of peripherality is to talk of questionable membership in a (sub)domain or class. A peripheral member might possess just one of several of the defining characteristics of members of the class; it might embody only approximations of some or all the characteristics of a "real" member, thus occupying a marginal position in the semantic space in question.

Different kinds of evidence demonstrate the use or existence of domain focusing. It is possible to affix /-q*e|$^{x*}_{1}$|e'/ to almost any term to indicate that the referent is the "real" whatever it is, the "true" one. While this is highly suggestive of centrality within a domain, collateral information may be required to demonstrate focusing convincingly.

The suffix has become a permanent part of a widely used proper name, in some cases, such as that of the spruce grouse, /tix*q*e|$^{x*}_{1}$|le'/. The term for this grouse could be read as denoting that it is the "real chicken" among the four (or five) recognized species of /tix*/, 'chicken' (grouses plus ptarmigans). But, many who used the term evinced no evidence of regarding the other three main species of chicken as any less genuine, and so this interpretation has been rejected. Indeed, some have learned four species names in a formulaic way and ticked them off on their fingers as they detailed what the term /tix*/ subsumed. The order of listing the four usual component species could give leads as to differential salience, but there is little to indicate that informants, when using such formulae, were thinking in terms of subdomain focus. The suffix /q*e|$^{x*}_{1}$|le'/ was a more convincing indication of focus when used as a description and with emphatic intonation than when used as part of a fairly standardized term. Peripherality might also be described by a suffix. Thus, some people, in reviewing the twenty-six species, commented that the willow ptarmigan (the only other chicken in the set of twenty-six besides the spruce grouse) was /tix*looni/ 'like a chicken.' This was the most common, but not the only phrase used to indicate peripherality of an entity in a set. When one informant gave the response that Aves in general were "like /c*ụạ/," this suggested that she regarded /c*ụạ/ (which she defined variably as "small birds," and as "summer birds," the former definition agreeing better with the distinctive features which underlay her use of the term) as central to the domain, or typical, and other feathered creatures as peripheral to the general domain.

The suffix /q*ex*le'/ is not a necessary and sufficient indication of domain centrality. Mallard duck, simply termed /c*i(x*)c*o/, 'big duck,' by most (but with some variation), was offered again and again as the typical duck. It was frequently either listed first among ducks or waterfowl, or it was used as an example when ducks were under discussion. People also reacted with interest and enthusiasm when shown its picture. As it is a very common species and as people who have a choice shoot only large ducks, such as this one, we are being reasonable in treating it as central in the eyes of many. There was uniform failure, however, of an experiment with a few individuals to see whether they would respond positively when hearing it termed /c*iq*ex*le'/, 'real duck.' All were baffled.

A common manifestation of domain focus which has been mentioned by others (Frake 1961; Bright and Bright 1965; Black 1969; D'Andrade 1970; and Berlin, et al. 1974) is the nesting of "homonymous" classes. That is, typical or focal members of a domain either give their name to, or take their name from, the domain. The phenomenon is not as static as the term "homonym" implies. We might even hold that, to speak of a "homonym," in some instances, misrepresents the nature of what appear to be tenuous, *ad hoc* term extensions. Others find evidence of two processes: (1) "upward" extension of a fairly specific term (Black 1969:178; Berlin, et al. 1974:34), which Black attributes to the occasional need to refer to an unlabeled, more general taxon, and (2) "downward" extension of a term, either in order to refer to an unlabeled, less general taxon (Black 1969:178), or as one way of speaking of the "focal or most dominant member" of a general taxon (Berlin, et al. 1974:34). Black concludes that the shunting of terms in this fashion is a situationally specific problem-solving device. These processes have apparent analogs in the case under study. Options are exercised, but only limited options; we might, therefore, expect to see a limited number of variant domain shapes resulting when people are asked, in experimental situations, to label taxa for which they customarily use no term.

The labeling of predatory and scavenging genera by some subjects entailed just such upward extensions of terms. One informant claimed that great horned owls and northern

shrikes were "half hawk" but then labeled the genus that included bald eagle, nighthawk, and pigeon hawk by the term, /ex*da/, 'eagle.' Another stated for each, in turn, that bald eagle, great horned owl, and common raven were /esex* q*i l*ɬ̓et'ee/, 'same as hawk,' or /q*a q*i esex*/, 'just hawk.' A third person classed together the same four species, cast about for a term, referred to members of the genus as "like /esex*/," rejected that as a term, then, finally, called them by the English, "scavengers." Once he had finally grasped a term, he immediately added herring gull to the group. Yet another informant, having been asked if there were a term for a grouping he created of great horned owl, common raven, and pigeon hawk, first said of them that they were "big (things) of the winter," then formally termed them /x*aśeqoc*uą̓/, 'birds of the winter,' and added whiskey jack to the genus. In each case, the informant was not recalling terms; he or she was attempting to characterize unlabeled taxa.

"Downward" extensions were evidenced when five people first classed the twenty-six birds as /(tax*s*i̓)qoloą̓/ 'something living.' Four of them switched to /tet'ooni'/ when asked to differentiate more finely; they may well have been switching to "upward" extensions instead.

Bioforms are phenomenally complex. Closely related ones often have a great variety of potential distinctive features by which they could be differentiated. They are unlike phonemes in this respect. Medieval European philosophers notwithstanding, the attributes of related plant and animal species do not allow us to speak of them as making up a simple, tidy contrast set. In instances where there are no standardized terms for generic classes, individuals have considerable latitude in how they might go about constituting and terming genera. It becomes possible, within limits, for different people to utilize crosscutting distinctive features to establish genera (see Figure 4). It also

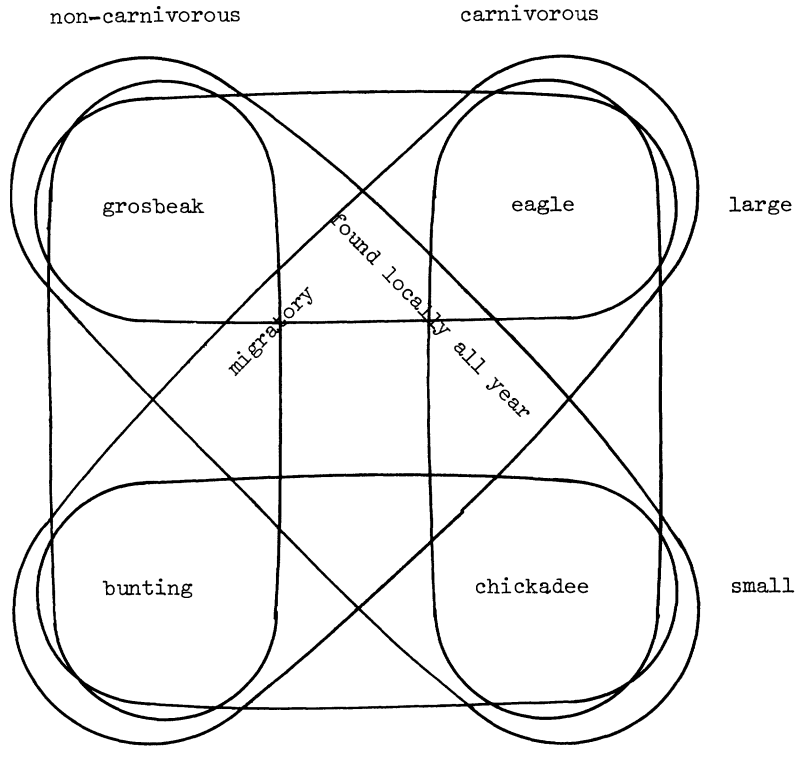

Figure 4. Cross cutting distinctive features of hypothetical bird genera.

becomes possible for a particular species to be classed in two ways by the same informant if it shares features with two particularly salient species that are focal to two different genera (Figure 5). Berlin, Breedlove, and Raven (1974:57) have found this to be the case on higher levels of Tzeltal plant taxonomy (see also Conklin 1962; Perchonock and Werner 1969; Werner and Fenton 1970). It is widespread on lower levels, too, in our study. Even the salient (often focal) hawk comes up biunique in the classifications of three mature, relatively unacculturated informants.

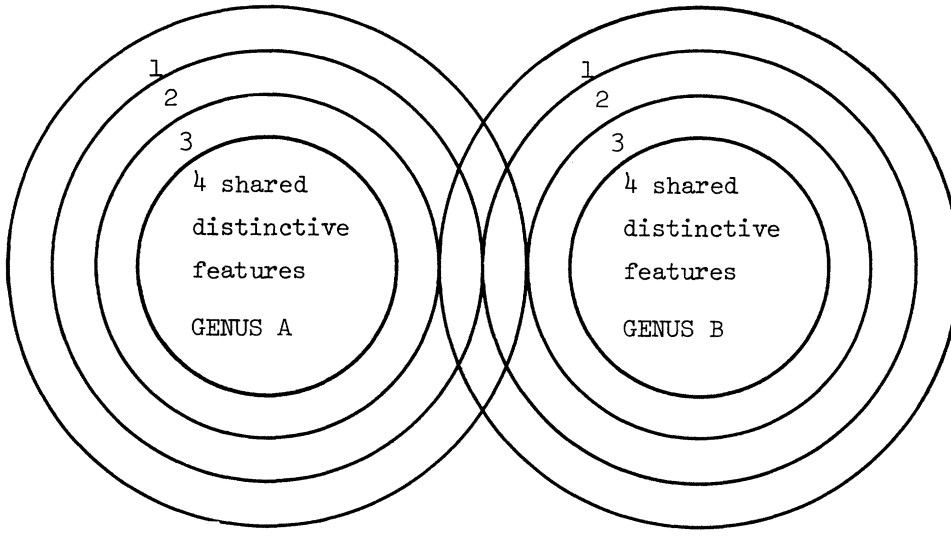

Figure 5. Distinctive feature sharing for two genera with some members in common.

In the forgoing sections of the paper, we have talked of shared lexicon and of shared domain shape. Whether this sharing is manifest as agreement over denotata of particular terms or apparent agreement over distinctive features (in regard to membership in classes or in focal or peripheral subclasses), the presumed agreement is concurrence about meaning. In some instances, as in the explicit or implied definition of hawks as dangerous, agreements on the order of beliefs and propositions are interpreted as underlying the patterning found in the data. These beliefs and propositions have not been explored, as such, with each informant, because of the difficulties experienced in interviewing in the language.

As we have defined it, domain shape is partly a function of choice of criteria for class inclusion and focusing (or peripherality) at the generic level. Considering the variability we find at that level and considering the extent to which generic taxa are defined and labeled as a result of the interaction between researcher and subjects, it is interesting to recall that Berlin, et al. have said that "generic taxa mark the most salient conceptual groupings of organisms in any folk taxonomy and represent the fundamental units in ethnobiological classification" (1973:240).

cognitive life history

Uncritical premises in anthropology as to the extent of shared cognition rest in part on simplistic understandings of learning processes. We commonly portray people as uncreative sponges which merely absorb culture or adopt its patterns. In the cultural system in question, some formal verbal teaching takes place, and there are possibilities for

just such "internalization" of cysts of preorganized information (e.g., as to the four species of "chicken"). Much learning, however, is not of this character. We have reason to hypothesize that the intellectual life history of informants is characterized by a series of stages during which there are communication and learning processes of types which have yet to become integral topics of anthropological enquiry.

One such process could be termed inductive or ampliative inferential learning. People hear others using terms in particular ways and, in time, are able to make assumptions as to the general meanings of these terms. Just as we speak of "presumed norms," so also we can talk of "presumed meanings." Depending on a young person's exposure to term use and depending on the extent to which new terms are either enquired about or used experimentally, with some kind of feedback, the learner can arrive at understandings of the terms which are idiosyncratic but, nevertheless, presumed to be shared. Feedback may not provide a challenge for inferred meanings that are operationally appropriate, or nearly so; it will also be inconsistent, particularly if it comes from different individuals who, themselves, vary somewhat in their presumptions as to meanings. The empirical orientation of the people studied has already been mentioned with respect to their occasional assertion that general nouns are useful in cases of empirical uncertainty. People with such an orientation will be expected actively to seek confirmation of their beliefs. Many of our subjects were found to have just such an interest in getting their beliefs tested. Time and again, interviews were reversed in a way that demonstrated this; our subjects turned the questioning around so as to elicit from us evaluative comments on particulars in their belief systems.

We might be able to describe the cognitive life history of any person in terms of a series of stages (differing by the referent individual's sex, etc.), during each of which the resources for acquiring new concepts and for confirmatory discourse have a certain character. In the cultural system under study, informants of both sexes were used, but I am more competent to discuss the cognitive life history of males.

Following infancy and early childhood, the characterization of which will have to be saved for a later presentation, there is a period of learning about trapline procedures. Teachers, in known cases, include father, mother, older brother, father's brother, mother's brother, adoptive parents, father's father, and mother's father. There may be a several-year-long association of teacher and learner, a winter spent together on the trapline, or just sporadic trapping and hunting trips. Much of the teaching consists of visual demonstrations (framed only very informally as such, but often of slightly idealized form). Thus, near the start of a seven-year-old boy's first trapline trip with his father, only six miles out from the settlement (i.e., before necessary), he was shown a relatively elaborate tea break, a tea break being a named and highly salient event. The learner watches as good sites for traps and snares are selected, as trap sets are built, and so on. Eventually, the suggestion is made to the learner, "now you do it." Little correction is offered even if minor mistakes appear to be obvious. What correction there is may be nonverbal—the teacher trimming up the product of the task or redoing parts of the procedure. Nelson has described almost identical teaching techniques as being customary further north (1973:9).

Men, from late teens to late middle age, often trap in partnerships that last from part of one season to several years. Limited experience suggests that concept testing continues, sometimes as a one-way process, without relationship to seniority in age.

This is also the time during which, for most people, there ensues a cognitive phenomenon second in importance only to child training, namely, married life. Husband and wife, in virtually every family studied, turn very quickly to one another when

uncertain of facts. They are direct in rejecting what they take to be incorrect information and open about accepting what they think to be correct. Unrequested information often appears to be totally ignored. Parents may turn to children in the same spirit; it happens less often. We shall be looking at possible effects of these phenomena when our data are computerized together with information about networks.

After innumerable possibilities for interpersonal convergence of cognition in young and middle adulthood, people frequently spend their later years under circumstances in which feedback is diminished and in which the impress of continuing personal experience provides a basis for slight divergence. Many are widowed and many work, if not in solitude, at least in relative verbal isolation. To some extent they choose this taciturnity. It is older people, in particular, who expressed the view that to talk too much is undesirable. To talk about a subject can lead to forgetfulness.

Just as we have life histories that are framed in terms of idealized social statuses (e.g., Bray 1913) and developmental (or life) histories of such phenomena as typical domestic groups (since Fortes 1949), so also we can have representative cognitive life histories that illustrate the genesis, flow, testing, modification, and so on of concepts. This will be an important part of an anthropology that deals adequately with the nature, extent, and causes of cognitive sharing.

conclusions

The data presented here have yet to be subjected to their final analysis. Preliminary hand tabulation of results of this one substudy on birds holds out promise that, with appropriate sampling methods, study of interpersonal sharing of cognition can help lead students of cognition back to questions of system dynamics.

Actual informants do not know everything; they manifest cognitive variability in many ways. Actual informants also appear to share concepts and propositions about a great deal. It is difficult to think of instances in which their sharing and nonsharing are not of immense importance to the structure of the cultural (or social) system in which they are found. While human cognition gives us one of our richest and most "relevant" realms for formal play, the intellectual rewards will be many, too, for those who pursue research on the communication processes which help link the phenomena of concept and action, on the roles played by cognition in the adaptation of individuals to their surroundings.

If the model of the omniscient informant is helpful in our analysis of some systems, like any other model it could be defended as a heuristic device. There are cultural systems, however, which are constituted such that cognition is most appropriately looked at in terms of modes. We will find modal sharing of cognition in all cultural systems. And, for no cultural system are these modes unimportant to system structure. Determining what such modes are and enquiry into their causes and implications is an enterprise that promises to bring us back, critically and productively, to one of the most essential questions faced by anthropologists, "Why?"

appendix 1: birds studied

Order	*Family*	*Subfamily*	*Genus and Species*	*Symbol*
Gaviiformes	Gaviidae		Gavia immer	a
Podicipediformes	Podicipedidae		Podiceps auritus	b
Anseriformes	Anatidae	Anserinae	Branta canadénsis	c
		Anatinae	Ánas platyrhýnchos	d
			Ánas carolinénsis	e
		Aythyinae	Bucéphala albéola	f

Order	*Family*	*Subfamily*	*Genus and Species*	*Symbol*
Falconiformes	Accipitridae	Accipitrinae	Accípiter gentilis	g
		Buteoninae	Haliaéetus leucocophalus	h
Galliformes	Tetraonidae		Cauachítes canadénsis	i
			Lagopus lagopus	j
Gruiformes	Gruidae		Grus canadénsis	k
Charadriiformes	Scolopacidae		Tótanus flávipes	l
	Laridae	Larinae	Lárus argentátus	m
Strigiformes	Tytonidae		Búbo virginiánus	n
Caprimulgiformes	Caprimulgidae		Chordeíles minor	o
Coraciiformes	Alcedinidae		Megacéryle álcyon	p
Piciformes	Picidae		Dendrocopos villósus	q
Passeriformes	Corvidae		Perisoreus canadénsis	r
			Córvus córax	s
	Paridae		Párus hudsónicus	t
	Turdidae		Túrdus migratórius	u
	Bombycillidae		Bombycílla gárrulus	v
	Laniidae		Lánius excúbitor	w
	Icteridae		Agelaíus phoeníceus	x
	Fringillidae		Pinícola enucleátor	y
			Plectróphenax nivális	z

appendix 2: sampling variables

Age: Four age ranks were used in sample selection:
17 to 29 years as of 12/31/74,
30 to 44,
45 to 59,
over 60.

Sex: The sexes were differentiated.

Kin association: Four main classes were recognized and most possible combinations of them. These were named, geographically associated, subdivisions of the community at large. For convenience they have been labeled in terms of the cardinal directions, with South subsuming the central area.

Acculturation: For sample selection, a combined index was used that took into account our tentative assessment of:
bush versus town orientation (three ranks)
fluency in Dene language (three ranks)
fluency in English (three ranks)
Three main clusters emerged.

The total population and the sample have the following profiles:

		total population		*sample*	
		N	%	N	%
age rank:	17-29	38	32	15	33
	30-44	42	35	16	36
	45-59	22	18	7	16
	60+	18	15	7	16
sex:	M	72	60	28	62
	F	48	40	17	38
kin association:	N/S	3	2.5	2	4
	N	6	5	2	4
	N/W	7	6	2	4
	W	18	15	6	13
	S/W	21	17.5	8	18
	S	23	19	9	20
	S/E	11	9	2	4

		total population		*sample*	
		N	%	N	%
	E	15	12.5	8	18
	E/W	16	13	6	13
acculturation:	unaccult.	69	57.5	24	53
	mid	37	31	16	36
	accult.	14	12	5	11
totals		120		45	

notes

[1]The collaborative study on which this paper is based was undertaken from May 15, 1974, to August 31, 1975, with the support of NSF grant GS 43057 and an Urgent Ethnology Programme contract from the National Museums of Canada. Preparatory and pilot projects in 1973 were supported by the University of Missouri University Research Council Grants URC NSF 1201 and URC NSF 1209. I wish to thank Jane Christian, Marshall Durbin, John Jessen, Michael Robbins, and various participants in the symposium, The Challenge of Cognitive Variability (74th Annual Meeting of the American Anthropological Association, San Francisco, 1975), for critical reactions to particular ideas expressed in this paper. A copy of the paper was made available to the members of the Band Council in the community studied, under the arrangement that they could ask for deletion or rephrasing of any general or specific matters that were judged to be offensive. No changes have been requested.

[2]Some of the terms are grammatical variants of the same basic verb. No more than four informants gave variants of any particular term; no modes of much significance are in evidence, yet few people actually lacked a term. Moose anatomy will be the subject of a forthcoming paper which reinforces several of the points made here.

[3]Orthography and phonemics will be the subject of a forthcoming paper. A re-evaluation of the phonemics of the language (cf. Howard 1963) has led us to adopt an orthography which is expressive of the distinctive features. The consonant paradigms may be rendered thus:

		lax	*tense*	*glottalized*
STOPS	(bilabial)	[b] loan words		
	(alveolar)	/t/	/t*/	/t'/
	(back velar)	/q/	/q*/	/q'/
	(glottal)			/'/
AFFRICATES		/tθ/	/tθ*/	/tθ'/
		/ts/	/ts*/	/ts'/
		/c/	/c*/	/c'/ (abbreviated tś, tś*, tś')
FRICATIVES		/θ/	/θ*/	
		/s/	/s*/	
		/ś/	/ś*/	
		/x/	/x*/	
STOPPED LIQUIDS		/tl/	/tl*/	/tl'/
LIQUIDS		/l/	/l*/	
		[r] loan words		

Lax forms are more often voiced than tense forms, but lax, tense, and glottalized all occur both voiced and unvoiced. Tense forms are characterized by turbulent air flow.

	bilabial	*alveolar*
STOPPED NASALS	/b/ [m] [mb] [b]	/d/ [n] [nt] [t]
NASALS	/m/	/n/

The stopped nasals could be rendered thus: /m*/, /n*/. Basic vowel phonemes and their main allophones are as follows:

/a/	[a] [ʌ] [æ]	
/e/	[e] [ɛ] [ɪ]	
/i/	[i] [ɪ]	([ɪ] is biunique to /e/ and /i/)
/o/	[o] [ɔ]	
/u/	[u] [ʊ]	

Vowels may be long (shown doubled) or short, nasalized (e.g., /ą/) or not, and of high (e.g., /á/) or low (e.g., /a/) tone. Although minimal pairs, differentiated solely on tone (/cíx*/ 'fishhook'; /cix*/ 'mitt'), are easily elicited, tone is overridden by intonation in discourse. It has been marked only where important in this paper (e.g., in rendering /s*í/ 'is it?').

Rules which account for use of consonant and vowel allophones are complex and will not be described at this time.

[4]The method is problematic because it entails translation of the domain (in that the boundary of the domain is imposed rather than sought [Conklin 1964]), and it invites translation of categories (in that it is manifestly clear to many informants that each species portrayed represents a separate class of phenomenon to the investigator [Conklin 1964]). As long as the method is used conjointly with others, these difficulties are offset by the crucial advantage already discussed.

[5]Berlin, Breedlove, and Raven propose some bold general principles of classification and nomenclature for folk biology (Berlin, et al. 1973). Their terminology for levels of classification—unique beginner, life form (unlabeled), intermediate level, genus, species, variety—will not be used here for two reasons. First, the data from this study indicate either the existence of more intermediate levels of classification than Berlin and associates claim to find cross-culturally or greater than the usual specificity and number of "life forms." Second, we wish to study variable informant classifications. Retaining, for now, an (admittedly troublesome) etic scientific terminology for levels allows us to talk comparatively about the content of different informants' classifications without framing the discussion in terms of a speculative, universal emic scheme, which is, after all, what Berlin, et al. offer.

[6]Our ages, the initiative we took in obtaining and "framing" the learning, the degree to which we required verbal tuition, and the hypothetical or artificial, versus practical, nature of our enquiry are among the elements that informants might have found unconventional about the teaching-learning relationships we drew them into.

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