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CONTEXT, CULTURE, AND STRUCTURATION IN THE LANGUAGES OF AUSTRALIA

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■ **Abstract** Using Australian languages as examples, cultural selection is shown to shape linguistic structure through invisible hand processes that pattern the unintended outcomes (structures in the system of shared linguistic norms) of intentional actions (particular utterances by individual agents).

Examples of the emergence of culturally patterned structure through use are drawn from various levels: the semantics of the lexicon, grammaticalized kin-related categories, and culture-specific organizations of sociolinguistic diversity, such as moiety lects, "mother-in-law" registers, and triangular kin terms. These phenomena result from a complex of diachronic processes that adapt linguistic structures to culture-specific concepts and practices, such as ritualization and phonetic reduction of frequently used sequences, the input of shared cultural knowledge into pragmatic interpretation, semanticization of originally context-dependent inferences, and the input of linguistic ideologies into the systematization of lectal variants. Some of these processes, such as the emergence of subsection terminology and moiety lects, operate over speech communities that transcend any single language and can only be explained if the relevant processes take the multilingual speech community as their domain of operation.

Taken together, the cases considered here provide strong evidence against nativist assumptions that see linguistic structures simply as instantiations of biologically given "mentalese" concepts already present in the mind of every child and give evidence in favor of a view that sees individual language structures as also conditioned by historical processes, of which functional adaptation of various kinds is most important. They also illustrate how, in the domain of language, stable socially shared structures can emerge from the summed effects of many communicative micro-events by individual agents.

INTRODUCTION

The nexus between language, culture, and thought has seen a revival of research interest in the last decade. Most research efforts have concentrated on the influence of language on habitual thought, mustering new evidence that language structure can shape cognition (Lucy 1997, Levinson 2000).

This neo-Whorfian renaissance has not been accompanied by a body of work on the complementary question: By what mechanisms do cultural preoccupations find their way into linguistic structures?[1] After all, the language structures now being found to play a role in shaping thought have to come from somewhere. Whorf's predecessors had long assumed that "the form of the language will be moulded by the state of the culture" (Boas 1966, p. 63), but the processes that would achieve this are not being incorporated into new developments in linguistics, which are beginning to theorize how structure emerges from use.

The universalizing bias of this new body of approaches has obscured the way language and culture can be viewed as coevolving systems, with cultural practice selecting for particular patterns of structuration within the language system. That is, in addition to coevolution on the more widely discussed twin tracks of cultural and genetic transmission (Durham 1991, Tomasello 1999), there is coevolution at a second level, between the dual lines of cultural and linguistic transmission. For example, a cultural innovation, such as generational moieties within the kinship system, may end up feeding into a linguistic innovation, such as the grammaticalization of a "different generational moiety" category within the system of pronouns, as discussed below.

This article reviews two strands of research in a way that illuminates these issues. I first draw on recent research within general linguistic theory on the emergence of linguistic structure. Then I review work on the indigenous languages of Australia, focusing on three levels that offer a particularly sharp challenge to universalizing approaches to the emergence of structure: lexical polysemy (see Semanticization and the Emergence of Lexical Polysemy), grammar (see Culture Selecting for Grammatical Structure), and lectal systematization (see Language Ideologies and Lectal Systematization). At each of these, cultural selection applies in a rather different way. I conclude by touching on the broader implications of culture-specific structuration for currently dominant universalizing theories of human linguistic competence and ways in which language documentation needs to be extended before this approach can move beyond the programmatic.

STRUCTURATION AS AN INVISIBLE-HAND PROCESS

Evolution, Adaptation and the Emergence of Linguistic Structure

There is increasing convergence among linguists that evolutionary approaches are valuable in explaining not only the evolution of language and the human language faculty in early hominids but also the ongoing evolution of language structures from use. The question "Why are languages the way they are?" on such approaches translates into "How do languages become the way they are?,"

[1]An exception is Hill & Hill (1998), who discuss a case where culture, in the guise of Hopi matrilineal social organization, has reshaped the inherited structure of noun categorization.

refocusing explanation from structure itself to structure-generating process. There are two periodicities to this program.

The first underlies the original evolution of the language capacity and in its more plausible form sees a coevolutionary intertwining of biological evolution, in the form of increased neurological capacity to handle language, and cultural evolution, in the form of increased complexity in the language(s) used by early hominids. Both evolutionary tracks thus urge each other on by positive feedback, as upgraded neurological capacity allows more complex and diversified language systems to evolve, which in turn select for more sophisticated neurological platforms. A crucial goal of coevolutionary approaches, then, is to account both for the capacity of humans to learn a wide variety of language structures and for the possibility of many distinct language "softwares" evolving against the same neurological hardware. As Levinson (2000, p. 5) puts it, "we are built to handle the diversity: language is a bio-cultural hybrid. The way to naturalize this duality of traditions, genetic and cultural, is through the theory of coevolution."

The second periodicity concerns the patterned variation in modern tongues, now all spoken by groups assumed to have the same neurological capacity, and focuses on how the kaleidoscopic reshufflings of linguistic structure result from interactions between communicative, cognitive, and processing constraints, which, against the background of differing cultural emphases, reshape existing systems in the context of use.

In both, notions of evolutionary theory are applied to the emergence of linguistic structure from use. Following Keller (1994, 1998), language structure is seen to emerge as an unintentional product of intentional communicative acts, such as the wish to communicate or to sound (or not sound) like other speakers. The way language structures emerge, in other words, is analogous neither to structures in the natural world (such as eyes or wings), which arise without any intention at all, nor to products of intentional human design, such as cathedrals or symphonies. Rather, like other "objects of the third kind," such as shortcut paths across lawns, they arise as invisible hand processes operating on what speakers produce as they strive to achieve other goals: Speakers do not plan to create accusative cases, pluperfects, or ejective stops, but they do intend to communicate clearly, locate what they describe in time, or sound like (or unlike) particular target groups. Observed structures arise, through time, by summing the outcomes of many communicative acts by individuals (Haspelmath 1999).

Tomasello (1999, p. 527), discussing the ratchet-like way in which cultural transmission allows the gradual accumulation of cognitive complexity, emphasizes the way changes occur on two timescales: cultural/historical and individual/ontogenetic. A major preoccupation of functionalist approaches has been to map out the complex temporal subprocesses by which grammar emerges, as frequently used patterns sediment into conventionalized patterns (Bybee 2000). The terminology developed within functionalist approaches typically focuses on one or another level of linguistic structure, at which "a large number of micro-events give rise to a macro-structure in a surprising way" (Haspelmath 1999, p. 204): lexicalization, semanticization, grammaticalization, phonologization, etc. To abstract away

from level-specific terminology, I use the general term structuration, originally coined by the sociologist Anthony Giddens (1984) in a somewhat different context.

Within linguistics, functionalists generally see themselves as ideologically opposed to the nativist position articulated by Fodor (1975) and Chomsky (1980), which assumes a hard-wired language of thought and a universal grammar that generates constrained diversity through a number of parameter settings against a background of fixed principles. Instead, functionalist approaches argue against the need for a universal grammar and see similarities across languages arising from general constraints on language use. The preoccupation with offering an alternative explanation for these "linguistic universals," however, has led to a focus on how the limits on surface diversity can be explained though the constraining effects on language change of universals of communicative architecture, shared constraints on our species-specific vocal apparatus, and shared human cognitive structures such as biases on metaphor-formation stemming from similar patterns of embodiment. But the cost of this focus has been the bracketing out of possible culture-specific effects on language structure.

There is nothing inherent in this emerging new paradigm, though, that requires cultural selection to be ignored in this way. In fact, by zooming from our first-level double track of genetic and cultural transmission to a second-level double track of culture (in general) and language (as part of culture, but transmitted to some extent independently), we can develop a more anthropologically satisfying coevolutionary approach better able to account for the true diversity of the world's linguistic structures.

Getting Cultural Selection into the Emergence of Structure

Two key mechanisms postulated by functionalists have the clear potential to show how culture can select for the emergence of structure.

The first mechanism concerns the impact of frequency of use on language structure: Grammars code best what speakers do most (Du Bois 1987), and

> repeated patterns become part of 'grammar' in terms of ritualization, showing that the effects that repeated stimuli or repeated action has on an organism—automatization, habituation [. . .]—are also operative in the process of grammaticalization or the creation of new grammar. (Bybee 2000)

Though Bybee doesn't exploit the possibility, this approach can be as readily adapted to culture-specific patterns as to those patterns that are universal. In cultures that talk frequently about kinship, for example, kin-based categories could be structured into the core grammar, as brute frequency of token appearance leads to phonetic erosion through Zipfian effects, resulting in the reduction of free words to grammatical morphemes.

A second mechanism for getting culture into language structure comes from work on pragmatic inferencing and grammaticalization. Since Grice's pioneering work on conversational implicature, we have known that utterance meaning

is enriched by inferences in context: Besides the lexicogrammatical or semantic meaning of a given sign, inhering in linguistic items regardless of their particular context, there is the pragmatic meaning contributed by sign users in context, using inference procedures that draw on mutually shared knowledge—which may well be culture specific. And the last two decades have shown numerous cases where conversational implicatures become "semanticized," i.e., absorbed into the conventional meaning of the sign, and thus freed from particular contexts. Frequency of use plays a role here as well: "[F]or inferences to play a significant role in grammaticalization, they must be frequently occurring, since only standard inferences can plausibly be assumed to have a lasting impact on the meaning of an expression" (Hopper & Traugott 1993, p. 75). Semanticization may lead to the transfer of information from ellipsed material to that which remains, as frequent mention enhances the ability to presume recoverability from elliptical contexts. Alternatively, frequent discussion of particular topics may embolden a speaker to presume a desired figurative inference by the hearer, again owing to the presumption of shared knowledge. Both ellipsis and figurative language may thus lead to culture-specific patterns of polysemy.

The Boundaries of the System

Research on language change has increasingly looked beyond the boundaries of the one-language speech community for the sources of innovation, and there are several Australian examples where the phenomenon can only be explained with reference to communities of practice at broader regional levels. A good case is the emergence of subsection terms in Australia, which classify all members into one of eight sociocentric categories that schematically represent descent and marriage relations. The wide diffusion of a common system enables strangers to establish classificatory kin relations without the need for a common link relative. Because of its elegant algebraic characteristics, the subsection system can be represented in a number of ways. In Figure 1 it is shown as two four-generation matricycles linked by preferred marriages between pairs of subsections. Though different modern languages have different phonological variants of the terms, the original forms as reconstructed by McConvell (1985a) are used here.

Von Brandenstein (1982) had suggested that the subsection system was a deliberate invention by a single individual. However, McConvell (1985a,b) showed how this complex structure could arise, without intentional planning, through the interaction of two distinct linguistic systems within certain ethnographically well-attested assumptions regulating section transmission, the bestowal of spouses, and code choice in bilingual settings.

McConvell begins with two observations. First, groups to the west and north of the area using subsections employ systems of four sections, and the subsection system is the union of these two four-section systems. Second, the eight terms of the subsection system can be broken down into four patricouples—pairs of terms between which members of a male descent line oscillate generationally—and, of

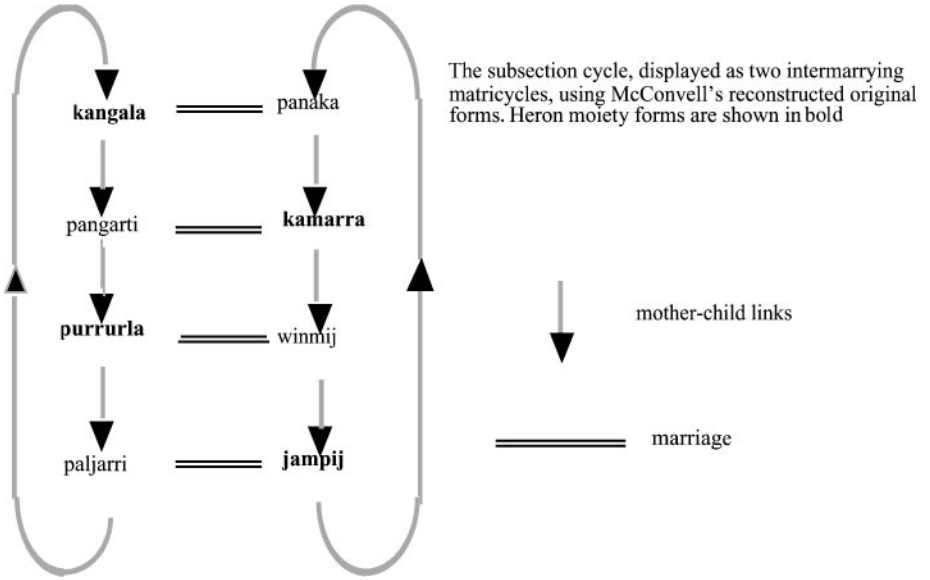

Figure 1 The subsection cycle.

these four patricouples, two contain pairs drawn from the same set (one patricouple draws from the northern set, another from the western set), whereas two mix pairs from both sets. He then shows how a subsection system with just these properties could have arisen in a socially integrated bilingual community, with intermarriage between adjoining groups possessing structurally equivalent but terminologically distinct systems of four sections.

Figure 2 gives the terms from the two-section systems (western and northern), made up of two intercycling endogamous generational moieties intersecting with marriage across two exogamous patrimoieties (we employ the patrimoiety names used in mythological accounts from the region). In fact, within the system we

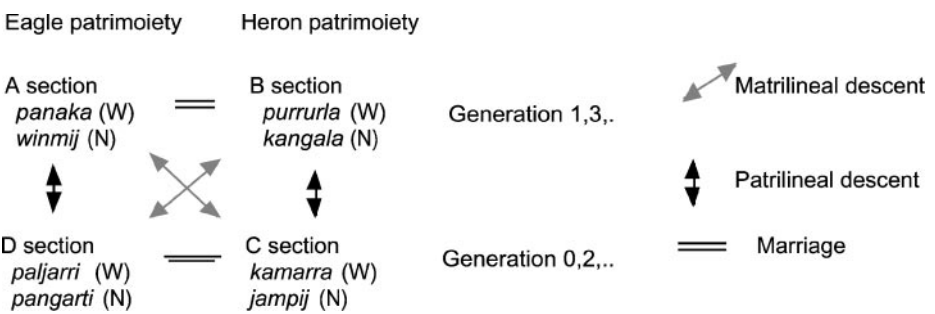

Figure 2 Structural parallels between the western and northern section systems.

can toggle between patrimoiety groupings, linking the pairs of sections joined in Figure 2 by vertical arrows, and matrimoiety groupings, joining the pairs of sections linked by diagonal arrows in the same figure. This means that descent rules can be phrased either patrilineally (*A* fathers beget *D* children) or matrilineally (*A* mothers conceive *C* children). Another way of viewing this system is as regulating the circulation of women among social groups: *A* women are given as wives to *B* men, giving birth to *C* daughters who are then given as wives to *D* men.

Now imagine a situation where speakers of languages employing the western and northern systems live side by side (Figure 3) and participate in a common system of spouse exchange based on a shared system of sections. Imagine further that wives are bestowed in a circulating fashion (as in Eastern Arnhem Land), such that women belonging to the two Eagle sections are bestowed within their respective language groups (the language boundary is shown in the figure by a double wavy line), whereas women belonging to the two Heron sections are bestowed to the other group. Assume further that residence is primarily patrilocal, with wives taking up residence in their husband's territory. The circulation of wives between social categories, arranged in lingual space, will then be as shown in Figure 3.

At this point we still have a four-section system, albeit bilingual: An individual from *A* section may be known as either *wirnmij* or *panaka*, according to the language used. McConvell's account of the transition to an eight-class (subsection) system relies on the following further assumption involving a codification of

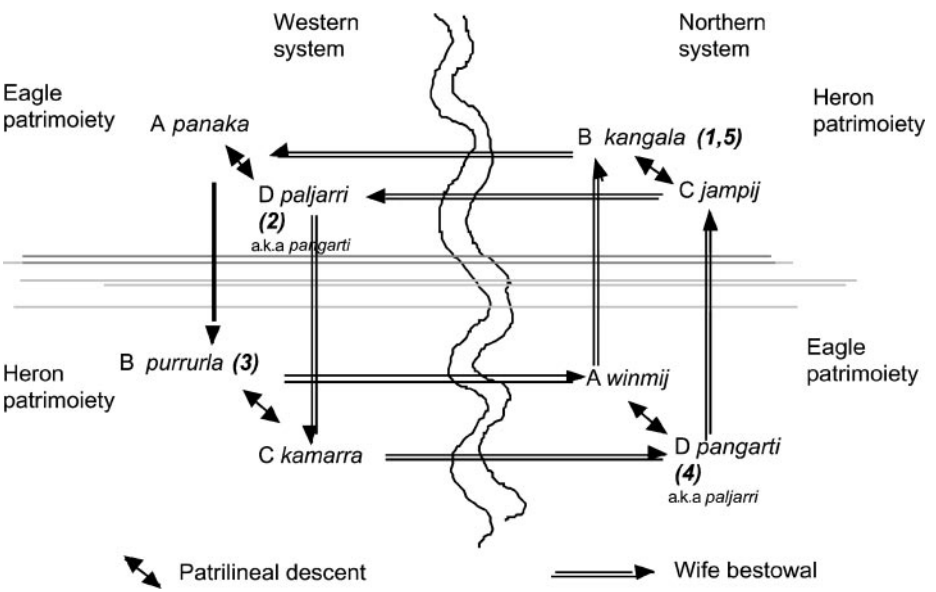

Figure 3 Integration of the western and northern section systems into a single eight-term system.

language choice in this bilingual community. In monolingual marriages, children will be known by the term from both parents' language. Thus the child of a western heron *B* (*purrurla)* man and a western eagle *A* (*panaka*) woman will be known by the appropriate term for a *C* child in the western language, *kamarra*. However, in bilingual marriages—which all comprise eagle men and heron women—practice is assumed to favor terms from the wife's mother tongue to denote the child, where a person's mother tongue is determined by place of birth. Thus, the daughter *D* of a *panaka* man (*A*, western) and a *kangala* woman [*B*, northern, shown as (*1*) in Figure 3] will be known by the northern term *pangarti*, even though she appears in the figure in the western half, on the basis of where her mother was born (*2*). She, as a western *D* woman, will now marry the western man *C*. Their daughter (*3*) will be *B* and known by the appropriate western term *purrurla* because both parents are western born. (*3*) will now marry a northern *A* man, and their daughter *D* (*4*) will be known as *paljarri* in the mother's (western) language. This northern-born *D* (*4*) will then marry a northern *C* man, and their daughter *B* (*5*) will be known by the northern term *kangala*, thus completing one matricycle. The genesis of the other four-term matricycle can be traced in a similar way.

All that remains is to elevate the ad hoc terminological choices made within each participating marriage to the status of a prescriptive norm, and we reach a single, integrated eight-class subsection system for reckoning marriage and descent, integrating four from each erstwhile section system.

Crucially, the emergence of this eight-class subsection system does not require intentional design; it arises as the unintentional collective outcome of other intentional acts (regulating descent in a four-section system, arranging a circulating system of spouse bestowal, and choosing language terms from one language rather than another in bilingual marriages).

Moreover, the structuration process cannot be explained by reference just to a monolingual speech community but requires reference to two interacting languages, as what begins as conventions of language choice in a bilingual community turns into an elaborated and systematized terminological system drawing on both contributing languages. In Language Ideologies and Lectal Systematization we return to other cases where an overarching multi-lectal community is the locus of sociolinguistic structuration.

SEMANTICIZATION AND THE EMERGENCE OF LEXICAL POLYSEMY

The meanings embodied in a language's vocabulary have long been seen as the most appropriate site for studying the impact of culture on language. Spitzer, studying the conceptual underpinnings of the Judeo-Christian world, wrote that "of all linguistic branches, it is in semantics that the changes due to cultural development can best be seen at work, for 'meaning' is the best barometer of cultural climate" (Spitzer 1947, p. 2).

During the Chomskyan turn, where the deep questions of language were held to concern grammar rather than lexicon, this often led to a quarantining of culture-specific elements to the vocabulary. Hale (1986, p. 233), writing on the relations between language and worldview in Warlpiri, first singled out a "World-View-1"—"the primary logical principles upon which a philosophy is based—the central propositions or postulates in a people's theory of how things are in the world"—going on to note that "its connection to language tends to be superficial, in the sense that it is reflected primarily in the elaboration of certain lexical domains. . . . It may or may not be shared by all speakers of a language, being something which is learned separately from the grammar of a language." (We return below to his "World-View-2," seen as more deeply embedded in grammar.)

However, recent developments have blurred this convenient boundary between grammar and lexicon. As the emergence of grammar(s) has come to be seen as an evolutionary process at the social-historical rather than the biological level, it has become clear that, since the same learning mechanisms apply right through the lexicon, including the functor words that turn into grammatical elements, these grammaticalizable notions display general properties of concept formation (Slobin 2001, p. 439). The issue of how broad principles of pragmatic inference interact with encyclopedic knowledge to generate particular interpretations in context, which may go on to become depragmaticized to yield conventionalized polysemy, then becomes potentially relevant to the study of grammar as well as the lexicon.

Creative speakers who first use novel figures of speech must be confident that the particular cultural knowledge needed to generate the appropriate implicatures is mutually manifest and is therefore part of the shared knowledge of the speech community[2]: Figurative language gives "access to an encyclopaedic schema with one or two dominant and highly accessible assumptions" (Sperber & Wilson 1986, p. 236). The need to characterize the culture-specific aspects of these encyclopedic schemas to understand Kwaio figurative language has been articulated by Keesing (1979, p. 27):

> By explicitly articulating semantic analysis to ethnography, and hence to pervasive cultural assumptions about the cosmos, causality, time and being, we begin to capture not only the subtleties of meaning accessible to native speakers but the creative powers of language in metaphor and symbolism as well.

Consider the problem of explaining how a single word can mean both "hear" and "know" (Evans & Wilkins 2000). This is a problem of motivating lexical

[2]This is not to deny that particular tropes or semantic connections may also be used more esoterically. See Morphy (1991) and Keen (1994) for two interesting accounts of the Yolngu concept of *likan*, literally "elbow" but thence "joint, connection," and the way that "*likan* names" are used, in contexts of art and ceremony, to indicate more allusive readings to the culturally knowledgeable. On the issue of how far the same semantic connections underlie polysemy in everyday and other semiotic registers (ceremonial language, sand-paintings, hand-signs) see Evans (1992) and Wilkins (1997).

polysemy—why particular forms conventionally have two meanings, *p* and *q*, and are known not to be just chance homophones because of the recurrent pairing of these meanings, with different forms, in a good number of languages. A related problem is explaining inferred semantic shift historically between a cognate meaning *p* in one language and *q* in another—e.g., whether and how the Nyangumarta word *paja.rli* "fat, dripping" is related to the word *palya* "good" in Pitjantjatjara (O'Grady 1990, Evans 1997). A third problem is explaining how a word *p*, in particular individual contexts, is creatively endowed with special interpretation *q* by processes of inference—e.g., how the Yidiny word *binanga-L*, listed in Dixon's (1991) dictionary of Yidiny as meaning "hear, listen to," can be enriched, in context, by reading "remember and know," as in example (1), where Dixon's translation is reproduced exactly (material in square brackets supplies contextually inferred meanings). This is a problem of explaining the implicatural extension (symbolized +>) from *p* to *q* in a given context.

(1) *bamaan guwal jarral galiingal/garru* ***binangalna*** *bulmba wanyja galing*
"People's names must be given to places all along the way.
So that by-and-by [people] can **listen to** [and **remember** the sequence of place-names along a route and **know**] where the places are going to."

These three problems are all related, and Evans & Wilkins (2000) argue that they arise from implicature in particular "bridging contexts" by the following four-step process (Figure 4): A form *f* has an original meaning *p* (*1*), then extended, by implicature, to an additional contextual reading *q* (*2*), with *q* then becoming semanticized or released from contextual dependence, so that it becomes a regular part of other speakers' mental lexicons (*3*), possibly followed by the loss of original meaning (*4*).

For the crucial first transition, from *p* to $\{p, +>q\}$, we are dealing with the pragmatics of situated individual communicative acts: Which contexts, and which

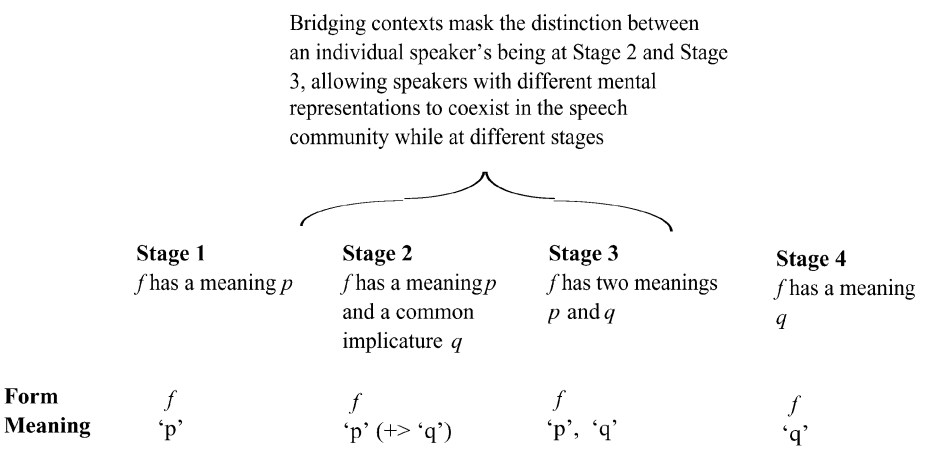

Figure 4 Stages in semantic change (diagram adapted from Enfield 2003, p. 29).

cultural scripts, allow particular pragmatic extensions to occur. The fact that polysemy is generated by such implicatures links lexical polysemy to the problem of how to represent the culture-specific encyclopedic knowledge upon which pragmatic inference draws.

Extending from "hearing" to "knowing" or "remembering," for example, may be mediated by widespread cultural scripts in Aboriginal Australia in which travel routes are remembered and known through lists of place (names) in mnemonic stories or songlines, so that (mentally) replaying these enables one to "know" or "remember" the way. This common cultural practice may then engender frequent texts in which knowledge and memory are reported in terms of "hearing (+> names of) places," so that utterances like example (1) become frequent enough to serve as templates for semanticizing this extension: For new learners, the (originally implicated) meaning is now paired directly with the signifier without requiring pragmatic deduction. That this extension does not simply reflect universal principles of embodiment is clear from the fact that it is culturally and areally patterned. Sweetser (1990), for example, in an influential study based only on Indo-European languages, found only "see," never "hear," as the source of verbs for "knowing" and "understanding."

From the point of view of pragmatics, which examines the contribution of context to the interpretation of meaning by human users, implicatures result from the constant need to mean more than conventionalized signs allow us to say. But as speakers exploit the interpretive abilities of hearers, new conventionalized signs emerge. Over time, individuals' attempts to communicate thus become enshrined as conventionalized patterns of polysemy. This interplay makes polysemy a key site for studying how language systems can incorporate culture-specific knowledge into language structure as an "unintended result of the communicative use of signs" (Keller 1998, p. 239).

CULTURE SELECTING FOR GRAMMATICAL STRUCTURE

Though its effects can be seen most easily in the lexicon, the structuration of culture into language systems does not stop there. Hale (1986, p. 234), in the article referred to above, went on to discuss a "World-View-2", defined as "the 'analysis of phenomena' embodied in the system of lexico-semantic themes or motifs which function as integral components in a grammar." Unlike his "World-View-1," it must be shared by all speakers of the language and is necessarily learned as part of the language-learning process. The term ethnosyntax, defined by Enfield (2002a, p. 2) as the direct encoding of cultural meaning in the semantics of morphosyntax, essentially refers to the same class of phenomena that Hale considered as "World-View-2."

The Emergence of Kintax

In this section we discuss one such phenomenon in Australian languages—the obligatory encoding of kinship or moiety relations in core grammar, sometimes

called kintax—with an emphasis on the structuration problem. Such phenomena were first described by Hale, who pointed out that

> in some Australian languages a principle which is a proper part of the kinship system also functions as an important principle of opposition within a grammatical paradigm. . . . The intrusion of the kinship system into this portion of the grammar results in the circumstance that a syntactic rule is required to make reference to features normally regarded as outside the domain of grammar. (Hale 1966, pp. 319–20)

Hale showed that, in Lardil, there are two sets of free pronouns in the nonsingular: a harmonic set, for referents related in even-numbered generations, such as siblings, spouses, or grandkin; and a disharmonic set, for referents in odd-numbered generations, such as parents and children. For example, the first-person dual exclusive category has a harmonic form *nyarri*, which can combine with an apposed even-generation term like *ngithun thabu* "my elder brother" (example 2), and a disharmonic form *nyaanki*, used with apposed odd-generation expressions like *ngithun kantha* "father" (example 3). The syntactic rule regulating such appositions must therefore make reference to the kin-based feature of "generational harmony."[3]

(2) *nya-rri* *(*nya-anki)* *ngithun* *thabu* *waangkur* *riwur*.
1exc-du.HAR 1exc-du.DIS my elder.brother go:FUT east:FUT
"My older brother and I will go east."

(3) *nya-anki* *(*nya-rri)* *ngithun kantha* *waangkur riwur*.
1exc-du.DIS 1exc-du.HAR my father go:FUT east:FUT
"My father and I will go east."

More than 20 Australian languages, in a number of distinct regions, have kinship-sensitive constructions of some sort. Lardil exemplifies the most common grammatical site for such information, namely pronouns. But in languages like Martuthunira (Dench 1987), alternating-generation kinship relations (between any two clausal participants) are shown by a verbal suffix (example 4); the same form is used for the collective/reciprocal (example 5), although with singular subjects, as in example (4), the kinship reading is forced.

(4) *ngayu* *kangku-yarri-lha* *Panaka-ngurni* *Karimarra-wuyu-u*
1sgNOM take-COLL-PAST Panaka-BEHIND Karimarra-SIDE-ACC

marrari-mulyarra, *Martuthunira-a* *nhuura-npa-waa*
language-ALLAT language.name-ACC know-INCH-PURP

"I took the Karimarra section boy along behind the Panaka boy towards the language, to learn Martuthunira." (the two boys are in the same generation set)

[3]I have retranscribed Hale's examples into current Lardil orthography and re-cast his formulation into a more modern idiom. For complexities in the definition of harmonic and disharmonic generations in Lardil, see McKnight (1999).

(5) *ngaliwa thani-yarri-nguru*
1pl(inc) hit-COLL-PRES
"We're hitting each other."

In both Lardil and Martuthunira, the grammaticalized kin relations are generational moiety based, though the reader should note that, whereas in Lardil extra morphological marking codes the disharmonic relation, in Martuthunira it codes the harmonic relation. However, harmonicity is not the only contrast attested.

Mparntwe Arrernte (Wilkins 1989) has a three-way distinction: same versus opposite patrimoiety, then, within the same-patrimoiety category, a further division by generational moiety. Several languages of the Karnic group organize their contrasts on the basis of same versus different matrimoiety in addition to generational moiety. Some languages, such as Dyirbal and Murrinhpatha, have special forms for particular kin dyads (husband/wife, siblings), while Adnjamathanha, the richest of all by number of contrasts (Schebeck 1973, Hercus & White 1973), has around ten distinct categories, some defined at the abstract level of relations between sections and others more specific to particular types of kin relation (e.g., mother-child).

It has been widely asserted that the presence of "kintactic" categories in Australian languages reflects a cultural emphasis on kinship, and kin-derived sociocentric categories like moieties and sections, as the foundation for social relations. However, we have surprisingly few accounts of how structuration of kin categories into the grammar could have actually occurred.

One development that is easy to account for is the Martuthunira type, which merely involves an extension of a cross-linguistically common grammatical category—collective/reciprocals—to take on a new sense, namely same-generation relations between some pair of clausal participants. Dench (1987) argues that this extension would have been motivated by habitual cooperation in ceremonial matters on the part of harmonic relations: In stereotyped descriptions of ceremonies, the way labor is divided up on the basis of generational moiety groupings means that descriptions of activities collectively undertaken would, concurrently, be descriptions of activities undertaken by members of the harmonic generations, setting up the new use of this category.

In the Martuthunira case, we simply need to account for the semantic extension of an existing morpheme into the realm of kinship. However, in the other languages, encoding kinship categories is the sole function, so we are faced with the harder task of showing a pathway by which some free word gets phonologically reduced to a bound affix and in parallel undergoes semantic developments to the sorts of categories we have seen. Though we do not yet have any clear-cut, multi-step account of how any one system has evolved, I sketch a scenario that chains together plausible attested steps from a range of languages.

(*a*) Formation of dyadic expressions: Expressions yield meanings like "mother and child" from roots meaning "mother" by adding a dyad suffix. Dyad suffixes in Australian languages etymologically derive from words or affixes with meanings like "having," "pair," etc.

(*b*) Apposition: Dyadic nouns are apposed after free pronouns to give phrases of the type "we, father, and son." In Wakaya, for example (G. Breen, unpublished manuscript), the phrase *yibela thungkuthekerrayarl*, literally "you.two younger.sibling:DYAD," means "you and your sister."

(*c*) Reduction and generalization: The dyadic term becomes phonologically reduced and attached to the preceding pronoun, reducing to a suffix expressing dyad-type kinship information. A sub-step of this process is analogical generalization: The newly developed affix spreads to all words in the pronoun paradigm. In Adnyamathanha, whose wealth of kin-specific pronouns was mentioned above, a number of them have suffixes that formally resemble nominal dyad expressions. In the first three given in Table 1, the material that turns into the pronominal suffix is the suffix of the dyad expression, whereas in the fourth it is a lexical root meaning "spouse."

(*d*) Semantic broadening. Step (*c*) gives us pronouns with kin-dyad meanings; however, to get meanings like disharmonic or same patrimoiety we need to broaden the semantics to include all possible kin relations in the relevant sociocentric categories, e.g., from "mother and child" to same matrimoiety. This is plausible semantically—it is a typical case of broadening from a prototype and would fit within the general tendency for grammaticalized meanings to become more abstract. Hercus & White (1973, p. 58) mention an example of just such an extension: In Adnyamathanha the "mother and child" series gets used for "my mother's line" in addition to just "I (female) and my children."

The above account of how moiety-sensitive pronouns have arisen thus involves four chained processes: the formation of dyadic kin terms, their apposition with pronouns in an inclusory construction, their reduction to affixal status and attachment to the pronoun, and their semantic generalization from markers of kin dyads to generalized relationships between types of moiety. This specific series of

TABLE 1 Sample kin-sensitive pronouns in Adnyamathanha and formally related dyadic kin terms (forms from Schebeck 1973 and Hercus & White 1973)

Pronoun	Meaning	Dyadic noun	Meaning
*valana**nji***	"they two" (husband and child of speaker)	*vapiri**nji***	"father and child"
*ŋatl**aka***	"we two" (woman and child)	*ŋami**nāka***	"mother (or mother's brother) and child"
*[nhu)wad**nalpu***	"you plural" [mother (or mother's brother)] and children	*ŋamiŋami**ŋalpu***	"mother (or mother's brother) and children"
*nhuwaḍ**upa***	"you two, husband and wife"	***aḍupa**nha*	"married couple"

semantic developments is not known from elsewhere in the world, but the broad outlines are typical of grammaticalization pathways found with other categories, such as tense or mood, and illustrate how grammar can emerge from talk, via processes of lexicalization, phonological reduction, analogical generalization across paradigms, and semantic extension. The result, once again, is the unplanned emergence of a series of culture-specific macro-concepts, powerful new shared representations that come into being through a series of quite unspectacular and general processes.

Toward a Better Methodology: Simpson's Razor

A skeptic could see the above accounts as being post hoc, just-so stories. Could it not simply be a coincidence that kinship-sensitive pronouns develop in Australian languages rather than, say, English or Chinese? After all, no one would seriously claim that the presence in some language of a dative case, or a past tense, is in any way linked to the culture of its speakers. Simpson (2002, pp. 290–91) outlines a useful prophylactic against overenthusiastic postulators of culture ↔ grammar causal connections, proposing the following series of steps that should be followed before any causal claim for cultural selection of grammatical meaning is accepted:

1. Identify the construction
2. Identify an associated meaning (or pragmatic inference or function)
3. Propose a relationship between this meaning and some shared topic of conversation, assumption, or expectation of its speakers
4. Provide evidence that this shared topic of conversation, assumption, or expectation is, or has been, highly salient for the speakers (i.e., something they often mention or do, or which often seems to inform their actions)
5. Provide an explanation based in conversational practice as to how the construction came to exist and bear the proposed meaning (or pragmatic inference or function)
6. Look at similar constructions in other languages and check if the proposed connection between conversational practice and grammatical construction holds. In the strongest case the connection would be causal.

Note that this procedure applies to the emergence of new grammatical categories from free words of similar meaning rather than to the semantic extension of existing categories, such as the Martuthunira collective > harmonic-generations development discussed above. Further principles would need to be added to deal with this, as outlined in The Emergence of Kintax, in particular (*i*) evidence for what the original meaning was, and (*ii*) finding bridging contexts that scaffold the pragmatic extensions that eventually become new meanings for the construction.

Simpson tries out these tests on verbal affixes expressing "associated motion" in Central Australian languages. Such affixes have been claimed to reflect a preoccupation of these cultural groups with discussing travel routes. Particularly difficult,

in the study of an individual culturally situated language, is operationalizing steps 4 and 5. Studies addressing the frequency of particular topics in conversation over a properly balanced corpus are vanishingly small, and text collections are skewed, in their representation of frequency, away from multi-party conversation and in favor of genres like mythical narrative. Simpson cites Nash's (1998) observations on the importance to the Warlpiri of "topographical gossip" (about country, trips, navigation) and surveys the collection of texts in Napaljarri Rockman & Cataldi (1994), finding that travel to and from named places is a central part of the action in all stories but one. Clauses headed by motion verbs start the action in about half the stories and end it for most of the stories (Simpson 2002, p. 299). These considerations certainly support the hypothesis that motion is a high-frequency theme in Warlpiri conversation, but the argument cannot be considered proved until we have comparative data on frequency of motion verbs, in a similarly structured corpus, from other languages.

Step 5 includes a requirement to look closely at candidate constructions for grammaticalization. To turn from free word into suffix, it is necessary for the grammaticalizing word to occur regularly in the same order, directly after the host, but Warlpiri is basically a free word-order language, creating a potential explanatory problem. Simpson shows, though, that there is one relevant dependent-verb construction where the order is, unusually, fixed, thus setting the structural stage for reduction to affix status. This underlines the importance of selection by existing structure—the promotion or prevention of certain developments by current typological profile. Returning to kinship-sensitive pronouns, for example, a structural filter on their emergence may be the need for preexisting dyadic nominals and an appositive construction—both of which played a crucial role in our hypothetical grammaticalization path—in addition to the cultural salience of sociocentric kinship categories like moieties.

More complete accounts will also require linguistic practitioners to gather information on "not yet grammaticalized" collocations. The grammar-writing traditions of descriptive linguistics focus on structures that have already emerged; but to explain where they come from, we must look at the messier data of actual speech. This needs larger, more finely transcribed corpora. For example, information on syllable duration helps identify phonetic reduction but is rarely provided within reference grammars.

Finally, Simpson's step 6 underlines the need for a comparative approach, testing for the same correlations across a language sample structured along both cultural and linguistic dimensions. The practical difficulties in constructing such samples mean that few have attempted studies of this type, though see Perkins (1992) for an attempt to correlate types of demonstrative systems with size of speech community.

One more caveat within Simpson's schema concerns temporality. Grammaticalization is a diachronic process that may take centuries to unfold, so the cultural preoccupations that set the stage for grammaticalization may no longer be those identifiable by a modern observer. Again, this adds to the difficulty of fully testing the processes that yield culture-specific structuration.

LANGUAGE IDEOLOGIES AND LECTAL SYSTEMATIZATION

There is growing interest in the question of how linguistic diversity is engendered and maintained and in the social mechanisms that favor its development. Language ideologies were originally defined by Silverstein (1979) as sets of beliefs about language articulated by users as a rationalization or justification of perceived language structure and use. But they may, additionally, act as a selective force favoring particular reconfigurations of structure and of sociolinguistic diversity (Rumsey 1990, p. 357; Woolard & Schieffelin 1994, p. 70; Woolard 1998, p. 12).

Australian groups are remarkable for the ways they organize linguistic variation to systematically index differences in social group membership, often resulting in overarching systems of sociolinguistic differentiation that go beyond the boundaries of any single language. This poses three special problems for the study of language ideologies: firstly, to account for the emergence of systems whose logic transcends any single language community; secondly, to give an evolutionary account of how language ideologies select for distinctive patternings of sociolinguistic diversity; and, thirdly, to show how this evolutionary trajectory can account for the independent emergence of parallel sociolinguistic systems in discontiguous parts of the continent. We focus on two types of lectal variation (where *lect* refers to any distinctive language variety): in Country, Group, Lect, on varieties that reflect place- and moiety-mediated relationships of individuals to social groups; and, in Social Deixis and Kinship-Sensitive Registers, on varieties that index kinship relations between speech-act participants (and sometimes others) through lectal choice.

Country, Group, Lect

The reigning social model over much of Australia posits a direct relationship between land and language (e.g., Merlan 1981), with secondary relationships between language and particular social groupings, such as clans. Individuals then derive the right to be recognized as speakers of particular languages indirectly through their membership in clans or other groups, including higher-order groupings like moieties, which in many areas are aggregated from clans with fixed moiety affiliations (Figure 5).

This direct mapping of language onto country creates an interesting range of sociolinguistic practices (Brandl & Walsh 1982, Trigger 1987). Speakers regularly switch language when entering a new territory, or to address particular locales (e.g., wells or dangerous places) in the local language. Characters in myths switch

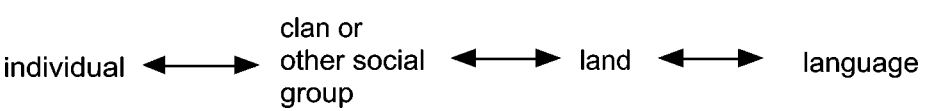

Figure 5 The indirect relationship between individuals and "their" languages.

languages as they move about the country, and sometimes this metonymic device may be the only indication that a character has moved from one place to another. Song and myth cycles often incorporate a number of "legs," each in a different language and typically told by different speakers in relay—as if the Odyssey, say, passed through half-a-dozen languages and storytellers as the action shifted.

Typically there is no etiquette that all participants in a conversation should speak the same language, and it is quite normal to witness multilingual conversations where each participant speaks their own language. In Western Cape York (Sutton 1978, p. 228), linguistically exogamous marriage ensures that households are linguistically diverse and multilingual; linguistic exogamy helps give ritualistic recognition to "the three main lines of descent (fathers, mother's father's, mother's mother's) through which economic and political rights and powers were traced." In such circumstances, lectal choice carries a high functional load, indexing the country and social identities of speakers and represented characters. In many areas, such as Western Cape York and Arnhem Land, there is an ideology that each patri-clan has its own way of speaking. The creation of new social groupings, such as splits in clans, results in the rapid development of new patrilects: "[B]ecause of an ideology of clan dialect distinctiveness . . . and the creative role of powerful individuals, there was also constant pressure for diversification" (Sutton 1978, p. 229).

The interaction of diversification and multilingualism may produce Sprachbund phenomena where languages or related dialects converge closely in grammar and phonology, while lexical choice signals lectal difference—see Sutton (1978) and Johnson (1991) on convergent dialects in Western Cape York, and see Rigsby (1997) for grammatical convergence between distinct languages in Eastern Cape York. An interesting variant is reported by Nash (1991) for central Australia, where patrilects of Warumungu and Warlmanpa speakers are distinguished by stereotyped voice qualities rather than lexical differences.

Such systems appear to result from the interaction of convergence (mediated by processing economy in multilingual individuals) and ideological pressure for diversification with senior speakers systematizing lexical variation by "ruling" on the patrilectal status of variants ("Word Y—that's what you say in X language"). Lectal maintenance involves consensual beliefs from the broader community of linked varieties, with adults making sure that children acquire the appropriate patrilect (Smith & Johnson 1986), e.g., by requiring widows to speak their deceased husbands' patrilects as models for their children.

More complex sociolinguistic systems arise when it is not only a matter of symbolizing interclan differences but also of organizing these differences into an overarching system where socially shared features of clans linked in a single moiety are symbolized by shared linguistic features. The clearest example is in North-Eastern Arnhem Land (Morphy 1977, Wilkinson 1991), where each language variety is associated with one of two patrimoieties. Example (6) illustrates how this moiety lect contrast is realized between two adjoining dialects, Gupapuyngu (spoken by some Yirritja moiety clans) and Djambarrpuyngu (spoken by some

TABLE 2 Geographic and social patterning of a pronoun form in some Yolngu dialects (after Wilkinson 1991, p. 187)

	***Social* (*patrimoiety*) [Final vowel drop]**	
Geographical [initial ŋa-drop]	Yirritja moiety ("Dhuwala varieties")	Dhuwa moiety ("Dhuwal varieties")
Western	Gupapuyngu: (ŋa)napurru	Djamparrpuyngu:(ŋa)napurr
Eastern	Gumatj: ŋanapurru	Djapu: ŋanapurr

Dhuwa moiety clans). A phonological rule truncates most final vowels in Dhuwa clan lects, giving them a staccato effect (Morphy 1977), whereas words in Yirritja moiety lects are predominantly vowel-final.

(6) Gup: ga balanya dhäwu-nydja limurruŋgu ŋarra-kuru
Djamb: ga balanya dhäwu-ny limurruŋ ŋarra-kuŋ
and such story+PROMINENCE our me-from
"And such is our story from me."

Now features like final apocope, which distinguish moiety lects, crosscut features distinguishing dialect groupings set up on geographical grounds, such as the loss of initial syllables of some pronouns. Thus, social groupings contrast on one dimension (Dhuwa versus Yirritja moiety), whereas geographical groupings contrast on the other (western versus eastern dialects)—see Table 2.

We can identify three relevant ideological factors in patterning linguistic diversity in this highly distinctive way:

(a) Each clan should have a different speech variety.

(b) Each clan belongs to just one of two moieties, Yirritja and Dhuwa (this is part of a broader ideology assigning virtually everything—e.g., natural species or territories—to one moiety or another).

(c) General principles are used to categorize moiety membership of entities (plants, animals, designs). In particular, there is a general principle that Dhuwa entities are shorter and yirritja entities are longer. Presumably, at some point in the past, this principle led to the conscious categorization of certain phonetic variants (e.g., truncated, i.e., "short" forms) as belonging to a particular moiety (e.g., Dhuwa), leading to the association of particular lectal variants with particular moieties.[4]

[4]However, the operation of these principles does not appear to be uniform over the whole Yolngu area. Waters (1989, p. 254ff) discusses the most northwesterly variety, Djinang, and shows that though there is a native theory of "choppy" versus "undulating" dialects; this doesn't correlate well with moieties among Djinang-speaking clans.

There is a contemporary expansion of Yolngu social categories westward into other parts of Arnhem Land, and it is interesting to observe the emergence of incipient, parallel effects on languages there that are only distantly related to the Yolngu languages. The author has heard senior speakers of Dalabon, well-versed in Yolngu cosmology, claim that there are two types of Dalabon—*Dalabondjurrkdjurrk* (fast Dalabon), associated with Dhuwa clans, and *Dalabon-muduk* (strong or slow Dalabon), associated with Yirritja clans. Distinct lexical items or phonological variants were not given in support of this claim, nor have they been recorded by investigators of the language. However, the speakers mentioned above gave a contrast between reduplicated and unreduplicated verb forms, though such differences have not been noted in natural speech. At present, then, there does not appear to be an observable moiety-based difference within Dalabon varieties, but beliefs such as those held by these senior arbiters of linguistic tradition could easily go on to select for diversification along these lines. As Silverstein (1985, p. 252) puts it, ideological rationalization can impact "language at and through an intersection of structural form and indexical usage, producing tension in the highly charged 'metaphorization' of indexical meanings and forms. The resolution of this tension seems to move the very structural system into new configurations, generally unforeseen by the users of the language."

Social Deixis and Kinship-Sensitive Registers

In many parts of Australia one finds special registers sensitive to kinship relations between speaker and hearer, overhearer or referent; these have been variously designated as "mother-in-law" or "brother-in-law" languages or "respect" or "avoidance" registers (McGregor 1989) (see examples 7a and 7b). In extreme cases, nearly all vocabulary items of the everyday variety must be replaced by separate items in the respect register. For example, in Uw-Oykangand (Cape York), a man talking to a potential mother-in-law must use a special register known as Olkel-Ilmbanhthi. To speak this, one leaves affixes and function words like "I" intact but replaces the remaining vocabulary items (Alpher 1993, p. 98).

(7a) *Alka-nhdh* *idu-rr* *ay*
spear-INSTRUMENTAL spear-PAST I
"I speared it with a spear." (ordinary register)

(7b) *Udnga-nhdh* *yanganyunyja-rr* *ay*
spear-INSTRUMENTAL spear-PAST I
"I speared it with a spear." (respect register)

At the other extreme, only a few special replacements need to be made (e.g., McConvell 1982), or the restrictions affect manner of speaking rather than specific vocabulary items, such as in the Tjalpawangkanytja (oblique) speech style used between co-parent-in-laws in Yankunytjatjara (Goddard 1992).

Respect registers form part of a larger complex of prescribed behaviors for showing respect to certain kin. These include general indirection, giving food,

avoiding close physical presence or eye contact, clasping the wrist when passing objects, and general avoidance of conflictual or sexual behavior. However, as Rumsey (1982, p. 178) puts it in his discussion of the *gun-gunma* [GG] avoidance register, "[w]hile the use of 'politeness' strategies thus makes the *majaliway* [avoidance] relationship understandable as a special case within a more general class, the use of distinctive GG formal features singles out the *majaliway* dyad from all others." The development of discrete respect registers is therefore a case of sociolinguistic structuration, in which the outcome of certain sociolinguistic strategies is formalized into a particular pattern of lexical (and sometimes phonological) choices.

Although there are dozens of distinct societies using respect registers in Australian languages, most appear to be independent developments. They occur in genetic subgroups that are only distantly related, in discontiguous blocks, and in general make use of noncognate vocabulary (except in the Gunwinyguan family, where certain respect-language formatives are of significant time-depth, and in the Dyirbal-Yidiny situation described below where there has been mutual borrowing between respect registers in adjacent languages). As with the case of clan lects discussed in Country, Group, Lect, these independent developments appear to result from the impact of language ideologies on practice—this time using the ideology that one should speak differently to certain classes of affine. In some speech communities, this practice leads to the gradual sociolinguistic codification of a range of ad hoc methods of showing respect, whereas in other speech communities the impact of the ideology remains limited to choices of pragmatic strategy or to nonverbal behavior.

Dixon (1990) carried out an etymological study of two adjoining, but not closely related, languages, Dyirbal and Yidiny, each with a respect register known as Jalnguy and called "mother-in-law language" by bilingual consultants. He found three major determinable sources of vocabulary in these registers: borrowings from the everyday register of neighboring dialects or languages, the creation of new Jalnguy forms by phonological deformation of lexemes from the language's own everyday style, and the borrowing of terms that were already in the Jalnguy style of a neighboring language or dialect. Unfortunately, Dixon's article is confined to the results of processes operating some time in the past, and we lack a thorough study of actual practice that would illuminate the operation of structuration processes under our nose. However, at least in the case of loans, several investigators have reported cases of speakers who, unable to recall the "correct" respect register lexeme, have improvisedly borrowed lexemes from neighboring lects.

Another way that many Australian languages index kinship relations between speaker and hearer is through systems of triangular, trirelational, or shared kin terms, which offer a number of alternatives for referring to kin based on simultaneously figuring out the relationship of the referent to speaker and hearer—see Merlan (1989) for an example. Consider the following terms from the *Gun-dembui* register of Gun-djeihmi; all are ways of referring to the mother of speaker and/or hearer in a range of circumstances:

(8) *al-garrng* "the one who is *your mother* and *my daughter*, given that I am your mother's mother"
al-doingu "the one who is *your daughter* and *my mother*, given that I am your daughter's daughter"
al-gakkak "the one who is *your maternal grandmother* and *my mother*, given that I am your mother"
arduk gakkak "the one who is *my maternal grandmother* and *your mother*, given that I am your daughter"
al-bolo "the one who is *mother of one of us* and *mother-in-law of the other*, given that we are husband and wife"

These systems are cognitively demanding because they require the speaker to take two perspectives at once—their own and that of their interlocutor—and are typically not acquired before speakers reach their twenties. Triangular kinship systems often coexist with respect registers in the same language. The latter hold relations between speaker and hearer constant and vary denotation over the whole universe of discourse, while the former permute speaker-hearer relations but restrict denotation to the domain of kin.

Over 20 Australian languages have such systems, which are found in many distinct geographical foci and again appear to be independent developments. As with respect registers, the independent innovation of numerous triangular systems again calls for a unified evolutionary explanation in terms of the codifying impact of language ideology on linguistic practice. In this case, the most likely ingredients are (*i*) the belief that kin-constituted dyads define behavioral norms between dyad members, and (*ii*) pragmatic practices governing who should be chosen as propositus or anchor for the kinship expression, in a way that is sensitive to speaker-hearer kin relationships.

In a given speech community, there may be a number of principles for choosing between egocentric and altercentric modes of reference and for seeking oblique modes of reference in certain types of speaker-hearer dyads (Merlan 1982)—compare the pragmatically determined interpretation of who the anchor is in the English utterances "Is Mum home?" (adult asking child, anchor is hearer) and "No, Mum's not home" (child to adult, anchor is speaker). The structuration of these principles so that they become conventionally attached to particular lexemes, rather than working as general rules governing choice of anchor, is likely to be a major means by which some triangular terms arise. Of those given in example (8) above, for example, the formative *arduk*, which means "my" in other contexts, is a lexicalization of egocentric reference, whereas the use of the feminine prefix *al-* is a lexicalization of nonegocentric reference. Some of the kin roots in Gun-dembui are taken over without modification from the regular kin term set (e.g., *gakkak* "MM"), whereas others (e.g., *garrng* in *al-garrng*) are irregular phonetic modifications of regular kin terms (here *garrang* "mother"). Others again, such as *nangadjkewarre* for "the one who is your *nakurrng* (WMB) and

my *ngadjadj* (MB), given that we call each other *makkah*" resist synchronic analysis altogether. It seems likely, then, that the system originated as a formalization of a number of principles of centricity, governing who it was polite to take as propositus but blurring into circumspection and obscure usage where certain of these principles came into conflict or where rules of etiquette prescribed indirect reference.

CONCLUSION: STRUCTURATION, CULTURE, AND NATIVISM

We have seen many ways in which culture can select for the emergence of linguistic structure: in the semantics of the lexicon, in grammatical categories, and in the organization of sociolinguistic diversity. A complex of invisible hand processes, including phonological reduction and grammaticalization of frequent sequences, the input of shared cultural knowledge into pragmatic interpretation leading to semanticization, and the input of linguistic ideologies into the systematization of lectal variants, lead to the emergence of structured systems that reflect culturally salient categories, connections, and oppositions.

The result of these processes is a series of linguistic structures that, although common in the Australian culture area, are unknown anywhere else in the world. The author is unaware of any analogues of pronouns reflecting moiety-type categories, of subsections, of moiety lects, or of systems of triangular kin terms.

Such linguistic features are historical products reflecting the impact of various processes of cultural selection on emerging structure. The processes invoked here are broadly familiar within the suite of adaptive, invisible hand processes that functionalist linguists have studied over the last two decades, and, though the semantic content of the outcomes is unfamiliar, the general types of processes are not. Though the existence of culturally shaped linguistic structures is unsurprising to the anthropologically informed descriptivist traditions, it runs directly against the nativist assumptions that have dominated mainstream theoretical linguistics in recent decades. Chomsky (1980), Pinker (1994), Bickerton (1995), and others assume that a knowledge of Universal Grammar is already present in the prelinguistic child, so that individual linguistic structures are simply instantiations of biologically given design principles, with the role of specific input being merely to set a few parameter values. The development of grammatical categories, on this view, is simply a matter of children seeking out, from the flow of speech around them, the exponents of prewired universal concepts that are already part of their "mentalese."

Taking this nativist view makes the goal of characterizing possible language structures a question about human biology: What universal grammar is hard-wired into the mind of the child, so that a biologically driven capacity for language in general can enable the rapid acquisition of particular languages in difficult

circumstances?[5] Though this model may seem plausible when confined to grammatical categories that recur in language after language all over the world, like tense on verbs or person in pronouns, it is forced to a *reductio ad absurdum* when faced with the sorts of culture-specific grammatical categories examined here by adopting a hyper-Platonic fallacy that overstates the degree to which we need to have preexisting knowledge of an idea in order to learn it. Did human evolution really equip the child to test for the presence of disharmonic pronouns as part of the parameter-setting process during language acquisition?

An alternative position is to refrain from overdetermining the set of possible linguistic structures through biological constraints. By admitting that languages are at the same time socio-historical products, we can hand over more of the explanation, for both regularity and variation in language structure, to processes of diachronic structuration, which include cultural selection within the constraints imposed by existing structure. And cultural selection, as an invisible hand process, can create complex categories that no member of the culture, and no prewired set of "mentalese" concepts, had foreseen or overtly articulated. The emergence of subsections from a bilingual flux, discussed in The Boundaries of the System, is an emblematic example.

Certainly this point of view does not simplify our goal of explaining how children acquire language. A Fodorian child faces what Levinson (2001) calls a first-degree mapping problem: They must match language-specific phonological units with language-independent semantic units, in the form of preexisting conceptual bundles. But children on the more Boasian view of language espoused here face a third-degree mapping problem: of matching language-specific word-forms to language-specific word-meanings using nonuniversal working concepts. Research into the acquisition of language-specific semantics has just begun (Bowerman & Levinson 2001), and we are far from understanding how it works; however, the phenomena considered in this article suggest that the child faces these third-degree mapping problems precisely because processes of linguistic evolution can lead to the incorporation of culture-specific elements into language structure.

Langacker (1994) suggests one way out of this apparent impasse: by proposing a multi-step cyclic acquisition model in which culture-independent categories play a greater role in initial phases, with successively more elaborate culture-specific elements cutting in later. A further attraction of this cyclic model is the attention it draws to language acquisition later in childhood (or conceivably even later). Because the elaboration of cultural notions is a prerequisite to learning the

[5]Cf. Pinker & Bloom (1990, p. 707): "the ability to use a natural language belongs more to the study of human biology than human culture: it is a topic like echolocation in bats or stereopsis in monkeys, not like writing or the wheel." Note that it is not possible to avoid considering data such as that presented in this article by saying that Pinker & Bloom are concerned with "the ability to use a human language" rather than the form a particular language (e.g., Lardil) takes, since that general ability must include the ability to use ANY natural language, including Lardil.

grammatical categories that encode them, some culture-specific categories may in fact be acquired quite late, and Slobin has recently suggested "[o]n closer inspection, crosslinguistic diversity in patterns of grammaticalization points to adult communicative practices as the most plausible source of form-function mappings in human languages, rather than prototypical events in infant cognition" (Slobin 2001, p. 412). This is certainly the case, anecdotally, with kinship-specific pronouns (Wilkins 1989), respect registers, and triangular kin terms, none of which are reportedly mastered in childhood. Unfortunately, though, we lack any studies of how these categories are acquired.

This article has called for a neo-Boasian approach emphasizing that languages, though undoubtedly constrained in many ways by the biological givens of our language faculty, are nonetheless cultural artefacts—though, now, "objects of a third kind" emerging without intentional design. This view is compatible with, but neglected by, more functionalist approaches. And it is interesting that the most recent statement of Chomsky's own views on language evolution opens a space for the culturally selected structuration process described here to operate. In Hauser et al. (2002), a model of human language is set out in which the complexity of individual languages results from three interacting factors: (*a*) a faculty of language in the broad sense, which includes general communicative abilities shared with nonhuman species, "especially those underlying the sensory-motor (speech or sign) and conceptual-intentional interfaces," (*b*) a human-specific faculty of language in the narrow sense (FLN), of which syntactic recursion is the central element, and (*c*) "sociocultural and communicative contingencies," from which "much of the complexity manifested in language derives." This article outlined some of the mechanisms by which these sociocultural and communicative contingencies can shape the evolution and elaboration of particular language structures.

A full and proper working out of how culture affects structuration in language will require some new directions of research focus by linguists. On the one hand, they need to redeploy the tools of the functionalists to study culture-specific processes of structuration from talk. On the other hand they must study, in small and often fragile communities, how culture-specific linguistic categories are acquired, taking care not to neglect older learners so as to pick up on language features that may in fact take longer to acquire. Pinker maintains "when children solve problems for which they have mental modules, they should look like geniuses knowing things they have not been taught; when they solve problems that their minds are not equipped for, it should be a long hard slog" (Pinker 1994, p. 419–20). An important consequence of the model outlined here is that acts of communication can, through invisible hand processes and through the complex, mutually enriching ratcheting-up of culture, language and thought, make categories and structures available to maturing speakers, which, indeed, their minds were not initially equipped for.

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