# Yet another view of Trobriand kinship categories, from optimality to conceptual structure

Doug Jones
Department of Anthropology
University of Utah
Salt Lake City, Utah 84112
Email: douglas.jones@anthro.utah.edu

**Abstract**: In "Another view of Trobriand kin categories," Lounsbury analyzes Trobriand kin terms by providing a core genealogical definition for each term, and then showing how a set of reduction rules make it possible to supply terms for more distant relatives. In this article I revisit Lounsbury's analysis in the light of recent advances in linguistics and cognitive science. I show that Trobriand kin terms express a conventionalized tradeoff between expressing relevant information and avoiding complex expressions. Formally, I follow Optimality Theory in developing a constraint-based approach as an alternative to Lounsbury's derivational approach in which reduction rules are not just stipulated but derived. Kin terms are polysemous, with core and extended senses: a collection of markedness scales and a ranked set of distinctive features both (a) marshal core referents of kin terms and (b) select optimal, best-fit terms for kin types outside the core. Apart from its formal merits, this approach clarifies the connection between the Trobrianders's "Crow" kin terminology and their matrilineal institutions. It may also have implications for the "the Crow-Omaha problem" — the relationship between skewed and unskewed cross-parallel distinctions. Finally, the organization of kin terms may provide a window onto an evolved domain of conceptual structure. My discussion concludes with some thoughts on the relationship between kinship, genealogy, and biological relatedness.

## Introduction

This article is a sequel to Floyd Lounsbury's "Another view of Trobriand kin categories" (1966). In that article, Lounsbury stepped into an anthropological debate. Malinowski (1987), the primary ethnographer of the Trobrianders, had developed and defended the view that Trobriand kin terms

**Table 1: When a Cousin (Father's Sister's Daughter) Is a 'Grandparent'**

| | |
|---|---|
| father's sister's daughter | |
| ↓ | Crow rule<br>father's sister → father's mother |
| father's mother's daughter | |
| ↓ | Half-sibling rule<br>mother's daughter → sister |
| father's sister | |
| ↓ | Crow rule<br>father's sister → father's mother |
| father's mother<br>< 'grandparent'<br>*tabu* | |

are primarily about genealogical relationships, especially close ones, and are also secondarily extended to more distant genealogical relations, and to non-genealogical relations. Leach (1958) argued instead that Trobriand "kin" terms designate social categories with no special connection to genealogy or family.

Lounsbury's article is a painstaking structural analysis of kin terms and their relations to one another. Following Malinowski, he argues the kin terms are *polysemous*, having multiple meanings, and that some of those meanings are central and others derivative. Accordingly, for each of thirteen kin terms he first provides genealogically defined *primary referents* that are meant to capture the core meaning of each term. He then provides further rules, including six *reduction rules* that make it possible to supply terms for relatives outside the scope of the primary referents. For example, in Trobriand (according to Lounsbury and in contrast with English) there is no kin term whose primary referent includes any variety of cousin. To figure out what to call a particular type of cousin, a father's sister's daughter, say, we turn to the reduction rules, as shown in Table 1. One reduction rule, a Crow skewing rule, dictates that the expression father's sister, whether on its own or part of a larger expression, is to be replaced by father's mother. This turns the expression father's sister's daughter into father's mother's daughter. Subjecting this expression to another reduction rule, the half-sibling rule, and then reapplying the Crow skewing rule, the final result is father's mother. Trobriand *does* have a term, *tabu*, whose primary referent in Lounsbury's scheme is grandparent/grandchild. Since grandparent includes father's mother, the rules predict — correctly — that one variety of cousin is called by the same term as a grandparent. This method successfully accounts for a large mass of data with a modest number of rules. "The results" Lounsbury wrote "agree with Malinowski's data in every case without exception. We believe, therefore, that these rules express the fundamental principles underlying the classificatory use of the Trobriand kinship terms" (1966: 174).

Lounsbury (1964, 1966) demonstrates that this method — first define primary referents of kin terms, and then devise reduction rules to reduce non-core kin types to core types — can be used to account very precisely for the application of kin terms in a variety of terminologies. Lounsbury's methods have been successfully applied by other anthropologists working with other kinship terminologies (Wordick 1973; Scheffler 1978; Kronenfeld 2009). Later formal approaches to kin terminology differ in some ways from Lounsbury, but also include core and derivative referents (Read and Behrens 1990).

This article revisits Lounsbury's analysis of Trobriand kin terminology, employing new methods and drawing on developments in the field of linguistic semantics. We expose a level of organization in Trobriand kin terminology that goes beyond what Lounsbury laid out, and discuss some implications for understanding the place of kinship in human social cognition. Our discussion is organized around key concepts from linguistics, as follows: Kin terms are *closed class constructions*. Core meanings of kin terms are highly structured by relationships of *markedness* and *optimality*. Kin terms gain additional meanings through *regular polysemy*. Finally, the analysis of kin terminology is relevant to social cognition beyond language, offering a window onto a major domain of human *conceptual structure*.

**Closed class constructions**

All languages include both open class and closed class constructions. Open class constructions in English include words like *marmoset*, *pinch*, and *crisp* and idioms like *make ends meet*. New open class constructions are easily added to the lexicon, and there are few restrictions on their possible meanings. English speakers vary widely in how many and which open class forms they know. In contrast, English closed class constructions include function words (pronouns, demonstratives like *this* and *that*, and auxiliary verbs like *will*, *must*, and *should*) as well as inflectional morphemes (like plural endings and verb tenses), noun classes (like mass noun and count noun), and verb argument classes (defined by the thematic roles of the verb's subject and object slots). New closed class forms are not easily added to a language. Most closed class forms are known to the great majority of native speakers (Akmajiam et. al. 2017: 23-24, 538, 550).

Closed class forms, in contrast to open class, are relatively restricted in the range of meanings that they carry. The closed class forms within a given semantic field commonly differ from one another with respect to discrete (often binary) distinctive features. A modest assortment of distinctive features recurs over and over in different languages, albeit in different configurations, hinting at universals of cognition.

When linguists list varieties of closed class constructions, they don't generally include kin terms. Partly this is because the anthropology of kinship is a specialized topic, beyond the ken of most linguists. And partly this is because kin terms are content words, referring to stuff out in the world, rather than function words, relating parts of phrases to one another. We might expect kin terms, like most content words, to be open class, but they act like closed class forms. They are limited in number. New kin terms are not readily added to the language. And (as we discuss in more detail below) they encode a limited range of information. Kin terms carve out a self-contained domain of social categorization and are systematically related to one another. They mostly stand apart from the open class constructions that label other social statuses and relationships.

English has terms for *mother's brother* (*uncle*) and *father's sister's husband* (also *uncle*), but not for *boss's son* or *best friend's girlfriend* or *rich uncle*. Trobriand too has a limited set of kin terms — thirteen according to Malinowski and Lounsbury – systematically related to one another and distinct from terms for other social statuses.

These characteristics of kin terminology — a semantic field, a modest set of distinctive features which recur across cultures — invite formal analysis. We present such an analysis below, building on Lounsbury's work, and showing how Trobriand kin terms exemplify a very general characteristic of language: managing a conventionalized tradeoff between maximizing relevant information and keeping things simple.

**Table 2. Core definitions of kin terms**

| Trobriand term | Gloss | Proposed core |
|---|---|---|
| kada | 'maternal uncle'* | /MxG/ |
| tabu | 'grandparent'* | /PP/ |
| lubou | 'man's brother-in-law'* | /WxG/ |
| ivata | 'woman's sister-in- | /HxG/ |
| yawa | 'parent-in-law'* | /EP/ |
| luta | 'cross-sibling'* | xG |
| bwada | 'younger parallel sib- | yllG |
| tuwa | 'older parallel sibling' | ellG |
| latu | 'child' | C |
| mwala | 'husband' | H |
| kwava | 'wife' | W |
| tama | 'father' | F |
| ina | 'mother' | M |

* includes reciprocal or is self-reciprocal
Notation for kin types:

M Mother F Father P Parent
W Wife H Husband E Spouse
D Daughter S Son C Child
Z Sister B Brother G Sibling

ll Parallel x Cross
e Older y Younger
/…/ a type and its reciprocal

The expression /.../ is used to indicate a type plus its reciprocal. For example, PP is Parent's Parent, i.e. grandparent, and /PP/ is Parent's Parent plus the reciprocal of Parent's Parent, i.e., both grandparent and grandchild.

**Markedness and optimality**

We begin where Lounsbury does, with primary referents of kin terms, which he defines as "the *genealogically closest* kin type from the class of those covered by the term in question" (italics in the original). This is shown in Table 2. The first column lists the thirteen Trobriand kin terms given by Malinowski (1987: 434-435). (The language of the Trobriand Islands is Kilivila, but we refer to the kinship terms throughout as "Trobriand.") The second column gives a gloss of the primary referent of each term, following Lounsbury. We have indicated those cases in which the primary referent includes its reciprocal. The third column gives our own proposals for the primary referent of each term.

Table 2 departs from Lounsbury in several respects. First, our "alphabet" of kin types uses different letters in some cases (bringing the notation closer to current standard practice), and is somewhat larger. In particular, we add the sex-neutral kin types P, E, C, and G, and the /…/ notation for type-and-reciprocal. This makes it possible, for example, to provide a compact definition of *tabu* as /PP/, rather than Lounsbury's equivalent but more cumbersome {FF, FM, MF, MM, SS, SD, DS, DD}.

A variety of schemes have been developed for representing kin types (Romney and D'Andrade 1964, Read and Behrens 1990, Gould 2000). For example, an alternative to listing kin types is to define the primary referent of each kin term as a conjunction of distinctive features. As Lounsbury notes, the primary referent of *tabu* can be given as

$G^2 \bullet L \bullet K \bullet R$,

where $G^2$ stands for "two generations removed" (ascending or descending not specified), L for "lineal," K for "consanguineal," and R for "relative." Similar conjunctive definitions could be given for the remaining primary referents.

To a large extent, the choice of how to denote kin types is a matter of convenience. But the departures from Lounsbury in Table 2 go beyond the purely notational. In Lounsbury's list, the order of kin terms, borrowed from Malinowski, is nothing special. In Table 2, by contrast, kin terms are (provisionally) ordered from most to least *marked*. And another set of departures from Lounsbury helps to make a consistent ordering possible: we define *kada* as mother's cross-sibling and reciprocal, /MxG/, rather than mother's brother and reciprocal, and we use cross-sibling rather than brother and sister in the formulas for siblings-in-law, *lubou* and *ivata* (more below on why this is reasonable and why it matters).

*Markedness* in linguistics refers to a widespread phenomenon, not limited just to kin terms, whereby a linguistic form is set off or marked in some fashion relative to an unmarked or default form (Moravscsik and Wirth 1986). Linguistic markedness is the inverse of cognitive prototypicality: expressions for cognitively peripheral concepts are commonly marked, while those for cognitively central concepts are commonly unmarked.

Markedness in kin terms takes various forms (Greenberg 1990; Hage 2001. I follow these authors in distinguishing broad and narrow senses of markedness; see below). In English, for example, a man's spouse wears a term of her own, *wife*, while a brother's wife borrows a sibling term, altered to fit her, *sister-in-law*. *Sister-in-law* is marked relative to *sister*, because the term carries an added mark, *-in-law*; this is markedness *sensu stricto*. The term for parent's brother's wife is even more marked, borrowing the term for parent's sister, *aunt*, with no alteration; this is syncretization or neutralization. And cousin's wife is more marked yet, having no standard term at all; this is defectivation.

Markedness in kin terminologies implies that not only are kin terminologies around the world organized around a limited inventory of distinctive features, but that these features commonly have a marked and an unmarked pole. For example, it is universally, or almost universally, the case that genealogically distant kin are marked relative to genealogically close kin, not vice versa, when they differ in markedness. This is one instance of a *markedness scale*; we can write this scale as *Distant » Close*. This principle is at work in English, with the wives of increasingly distant kin receiving increasingly marked expression (see above). The same principle leads us to expect that commonly, across languages, grandparents are marked relative to parents, and cousins relative to siblings, and hardly ever vice versa. At the same time, the *Distant » Close* scale allows variation across cultures in *how* markedness is expressed.

**Table 3 Distant » Close, a universal markedness scale**

| English terms | Distinctive features | Trobriand terms | Distinctive features |
|---|---|---|---|
| <u>Case 1, Grandparents and parents</u> | | | |
| | FAR GENERATION | | FAR GENERATION |
| *grandmother, grandfather* | | *tabu* | |
| | (NO MARK) | | SEX |
| *mother, father* | | *ina, tama* | |
| <u>Case 2, Cousins and siblings</u> | | | |
| | COLLATERAL | | |
| *cousin* | | (no core cousin term) | |
| | SEX | | CROSS |
| *brother, sister* | | *luta* | RELATIVE AGE |
| | | *bwada, tuwa* | |

Both universals and variation are manifest in Table 3, which compares the expression of the *Distant » Close* scale in English and Trobriand for grandparents and parents, and cousins and siblings. Consider Case 1. Both English and Trobriand make a generational distinction between grandparents and parents. This is shown in the table as a distinctive feature, written FAR GENERATION, which sits at the top of the table for both languages, and governs all the terms below it. FAR GENERATION plays a double role: it imposes (1) a distinction between far and near kin, and (2) a markedness ranking, with far kin more marked than near kin. Consistent with the ranking, we find that affixation and contrast neutralization operate on terms higher up in the scale, while terms lower on the scale omit affixes and are more differentiated. In English, grandparent terms carry a mark (*grand*); the parenthetical expression (NO MARK) shows that this mark is absent for parent terms, which fall below it. In Trobriand, grandparents are not distinguished by sex; the distinctive feature SEX governs the parent terms below it, but the sex contrast is neutralized for grandparent terms above it.

An aside on markedness and meaning: *tabu*, the Trobriand term for 'grandparent' (among other kin types), is cognate with English *taboo*, a Tongan or Fijian loanword. But Trobriand *tabu* is not taboo in the sense of "forbidden." In fact, another kin type also designated by *tabu*, father's sister's daughter, is a preferred marriage partner. Instead, the Trobriand (Kilivila) word carries the more general meaning of *set aside* or *apart from*, further marking the associated kin types as peripheral within the field of kinship.

Case 2 shows another expression of the far/near distinction, in this case distinguishing collateral from lineal kin. Another distinctive feature, COLLATERAL, separates cousins from siblings, with cousins marked relative to siblings. In English the SEX distinction operates for sibling terms below it, but not for cousin terms above it. In Trobriand, there are no terms that refer specifically to cousins. Terms for different types of cousins are either borrowed from terms for closer relations (grandparent, father, or sibling) or are just absent. Terms for siblings are distinguished as cross versus parallel (i.e., opposite versus own sex, distinctive feature CROSS) and, for parallel siblings only, as younger or older (RELATIVE AGE).

These are just two instances of how the markedness of distant kin is evident in kin terminology in English and in Trobriand. The *Distant » Close* scale operates on other sets of kin terms, and is just one of several scales evident across languages. Table 4 lists the scales and associated distinctive features that work to yield the ranking of Trobriand kin terms given in Table 2 above. Below we consider each scale in turn, giving the implications for the Trobriand ranking, and noting how the scale finds expression in the neutralization of distinctive features for marked terms. Our discussion demonstrates both culturally specific and universal aspects of markedness among Trobriand kin terms. The expression of markedness is specifically Trobriand, but the markedness scales hold generally across languages, and we follow Lounsbury in admitting evidence from other languages regarding markedness.

**Markedness scales, implications, and expressions**

*Distant » Close (Consanguine)*. Genealogically distant kin, counting the number of consanguine links, are marked relative to close kin.

Implication: A parent's sibling or parent's parent is marked relative to a sibling, parent, child, or spouse, (MxG, PP) > (xG, yG, eG, C, H, W, F)

**Table 4: Markedness scales**

*Distant » Close (Consanguine)*
*Distant » Close (Affine)*
*Distant » Close (Collateral)*
*Cross-Parent » Cross-Sibling*
*Cross » Parallel*
*Descending » Ascending*

Distinctive features

CROSS
FAR GENERATION
INLAW
RELATIVE AGE
DESCENDING GENERATION
SEX

Expression: This scale shows up in several guises. Terms for distant kin merge reciprocals, neutralizing the DESCENDING GENERATION distinction which is at work in the differing terms for parents and children. Terms for distant kin may also neutralize the SEX distinction found among closer kin. Thus 'grandparent' loses the sex distinction of 'father' and 'mother' (as in Table 3).

I suggest that sex neutralization also applies to *kada* ('maternal uncle'), consistent with the high markedness rank of *kada* in Table 2. This is at odds with the conventional formula for this kin type, MB ('mother's brother'), which is what Lounsbury gives, and which clearly involves a sex distinction. But I suggest that the more appropriate formula in this case is /MxG/, 'mother's cross sibling' and reciprocal. This fits better with other evidence, reviewed below, that 'maternal uncle' is relatively marked. And there is an independent motivation for this formula: it is in keeping with the fact that Trobriand has words for 'mother,' *ina*, and 'cross-sibling,' *luta*, but not for brother. The same considerations lead to *lubou* being represented as /WxG/ ('wife's cross-sibling' — instead of 'wife's brother' — and reciprocal) and *ivata* as /HxG/ ('husband's cross-sibling' — instead of 'husband's sister' — and reciprocal). The operative distinction here, in other words, is arguably not sex of kin type, but crossness (specifically Crow crossness; more on this below).

Note that on this interpretation, there is not only no independent sex distinction when *kada* designates 'mother's cross-sibling' but also no independent sex-of-speaker distinction when *kada* designates the reciprocal. In other words, the corresponding niece/nephew is better thought of as 'reciprocal of mother's cross-sibling' than as 'man's sister's child' or 'man's cross-sibling's child.' The same applies to the reciprocals of 'wife's cross-sibling' and 'husband's cross-sibling.'

*Distant » Close (Affine)*. The spouse of a relative or that relative's spouse are marked compared to that relative.

Implication: A spouse's sibling or spouse's parent is marked relative to sibling or parent, (WxG, HxG, EP) > (xG, P).

Expression: The term for 'spouse's parent' neutralizes the SEX distinction for 'father' and 'mother.'

I suggest above that sibling-in-law terms also should be considered sex-neutral, 'spouse's cross sibling,' not 'spouse's sister/brother.'

Note that by positing two *Distant » Close* scales, one consanguineal and one affinal, rather than just counting consanguineal and affinal links equally in the calculation of distance, we leave open the question of whether, for example, Mother's Cross Sibling (two consanguineal links) is marked relative to Spouse's Parent or Spouse's Sibling (one consanguineal and one affinal link). We give reasons below for thinking that this ordering holds for Trobriand (as shown in Table 1), but it is not assumed to hold across cultures.

*Distant » Close (Collateral)*. Collateral kin are marked relative to kin in a direct line of ascent or descent.

Implication: A parent's sibling is marked relative to a grandparent, MxG > PP.

Expression: At equal genealogical distance, collateral is generally marked relative to lineal across cultures.

The *Distant » Close (Consanguine)* scale doesn't say what to do about kin that are equal number of links away, but in different directions, like 'maternal uncle' and 'grandparent,' both two links away. Lounsbury argues, based on cross-linguistic evidence, that in this case another markedness scale intervenes, *Distant » Close (Collateral)*, so 'maternal uncle' is more marked, as shown in Table 2.

*Cross-Parent » Cross-Sibling*. Opposite sex parent is marked relative to opposite sex sibling.

Implication: Parent's opposite sex parent is marked relative to parent's opposite sex sibling, PxP > PxG.

Expression: There are cross/parallel distinctions for parents' siblings but not for parents' parents in spite of the preceding scale.

There is a problem with the preceding *Distant » Close (Collateral)* scale. Trobriand 'maternal uncle,' a collateral relative, is separated from 'father' — a cross/parallel distinction. Yet Trobriand 'grandparent,' a lineal relative, neutralizes the cross-parallel distinction — the distinction between father's mother and mother's mother, or between mother's father and father's father. This seems to contradict the claim, following from *Distant » Close (Collateral)*, that uncle is more marked than grandparent. This is not just a Trobriand anomaly but a widespread occurrence.

I suggest that this apparent contradiction can be resolved by recognizing an interaction between crossness and kin type, with crossness having a natural affinity for sibling terms, especially terms for parents' siblings. In the present framework, this means that, while parent's sibling is marked relative to parent's parent, consistent with *Distant » Close (Collateral)*, this markedness scale is reversed for the two cross kin types, so that parent's cross parent is marked relative to parent's cross sibling, consistent with *Cross-Parent » Cross-Sibling*. This means that even though 'maternal uncle' mostly outranks 'grandparent/grandchild' in markedness, the cross distinction among the former is neutralized with the latter.

*Cross » Parallel*. Cross kin are marked relative to parallel kin.

Implication: Cross sibling is marked relative to parallel sibling, xG > (y||G, e||G)

Expression: Among the Trobrianders, *luta* ('cross-sibling') neutralizes the RELATIVE AGE distinction that distinguishes *bwada* ('younger parallel sibling') from *tuwa* ('older parallel sibling'), consistent with the evidence across languages that cross kin are marked relative to parallel (Nerlove and Romney 1967; Hage 2001).

Terms for affines merit discussion. Trobriand has primary terms for cross siblings' spouses, but not for parallel siblings' spouses (defectivation). This is inconsistent with the *Cross » Parallel* scale if we count cross siblings' spouses as cross and parallel siblings' spouses as parallel. However, it is consistent with a *Cross » Parallel* scale if we count woman's sister-in-law and man's brother-in-law as parallel-siblings-in-law, and man's sister-in-law and woman's brother-in-

**Table 5 Kin terms: Framing core meanings**

| Term | Gloss | Formula | Distinctive feature |
|---|---|---|---|
| | | | CROSS,<br>FAR GENERATION |
| *kada* | 'mother's cross-sibling' | /MxG/ | |
| *tabu* | 'grandparent' | /PP/ | |
| | | | IN-LAW |
| *ivata*, *lubou*, *yawa* | '__-in-law' | /HxG/, /WxG/, /EP/ | |
| *luta* | 'cross-sibling' | xG | |
| | | | RELATIVE AGE, DESCEND GENERATION |
| *bwada*, *tuwa*, *latu* | '__ parallel sibling', 'child' | yllG, ellG, C | |
| | | | SEX |
| *mwala*, *kwava*, *tama*, *ina* | 'husband', 'wife', 'mother', 'father' | H, W, M, F | |

law as cross-siblings-in-law. In other words, the terminology suggests that, at least for the Trobrianders, the *Cross » Parallel* scale is tuned into the opposite-sex versus same-sex distinction as it pertains to ego and sibling-in-law rather than to ego and linking sibling.

*Descending » Ascending*. Descending generation kin are marked relative to ascending.

Implication: A child is marked relative to a parent, C > (F, M).

Expression: This scale is necessarily fairly inconspicuous in the Trobriand case, because so many kin terms include their reciprocals; where descending and ascending generation terms are equated, it is impossible by definition for descending terms to be treated differently. But the scale is observable among the closest kin, where the descending generation *latu* ('child') neutralizes the SEX distinction found with the ascending generation *tama* ('father') and *ina* ('mother').

Finally, we note that several markedness scales found in many other languages do not find expression in Trobriand. Female is not marked relative to male, nor younger sibling relative to older.

Our discussion of markedness scales and their expression is summarized in Table 5. Trobriand kin terms are presented in the same order as in Table 2, but we add a column of distinctive features. Features act on less marked terms below them (where applicable, and except for the neutralization of the cross/parallel distinctions among grandkin, as discussed above; see *Cross-Parent » Cross-Sibling*), but are inactive on marked terms above them.

The table and the discussion above imply that there is a level of organization to Trobriand kin terms that goes beyond what Lounsbury found. Specifically, both terms and distinctive features can be placed in a single rank order. Terms are ranked by markedness, consistent with cross-cultural markedness scales. Terms are intermingled with distinctive features, with higher ranked features active across a wider span of markedness.

To make this work, I made several assumptions. First, that *kada* is better thought of as 'mother's cross sibling' than as 'mother's brother,' and similarly for spouse's sibling terms. This allows for a consistent ranking of parallel/cross and sex distinctions. Second, that there is an interaction between crossness and kin type. Crossness is more salient in relation to siblings than to parents, so that the cross distinction is active with the collateral 'maternal uncle,' but inactive with the lineal 'grandparent,' (i.e., there is no cross/parallel distinction between father's mother and mother's mother, or between mother's father and father's father) even though parents' siblings are otherwise marked relative to grandparents. These assumptions are supported by evidence internal to Trobriand kin terminology, and across languages. Neither is *post hoc*.

The analysis presented here implies that the core meanings of Trobriand kin terms are structured by tradeoffs between two conflicting imperatives: providing as much relevant information as possible about kin, and avoiding marked expressions (Kemp and Regier 2012). The first imperative encourages raising distinctive features to as high a rank as possible, which would entail the multiplication of specialized kin terms. The second imperative encourages sinking distinctive features to as low a rank as possible, even eliminating them, which would entail the omission or merging of kin terms, especially marked ones. These two imperatives correspond to the distinction between *descriptive* and *classificatory* aspects of kin terminology, at least if we use these terms to label two opposing tendencies that can play out in a multitude of ways (Kroeber 1909), rather than two classes of terminology (Morgan 1870).

The interplay between distinctive features and markedness that we consider here, building on the work of other anthropologists, has long been noted by structural linguists in other domains of language. In recent decades, linguists have developed a formal generative account of this interplay in the form of *optimality theory* or *OT* (McCarthy 2001; Prince and Smolensky 2004). According to OT, rules of language result from the interaction of *constraints*. Some constraints require that varieties of information be preserved. Other constraints proscribe various kinds of marked expressions. These constraints may conflict with one another; tradeoffs between conflicting constraints are handled by *constraint rankings*, with high ranking constraints taking priority over low ranking ones. Constraint rankings vary among languages; the constraints themselves, or the machinery for generating them, are universal, the product of perceptual and cognitive universals.

The interdigitated ranking of kin types and distinctive features in Table 3 is very much in the spirit of Optimality Theory. More particularly, it follows recent work applying OT to structured lexical items, such as pronouns and spatial prepositions, rather than rules of grammar (Bresnan 1997; Bouma et. al. 2010; Zwarts 2019; Hogeweg n.d.). In the next section we follow this up even more closely by considering the productive extension of kin terms.

**Polysemy**

> [Malinowski] was keenly aware of the impossibility of a one-to-one correlation between the *words* of a language and the concepts expressed through the use of the language. He was aware of the process of semantic extension, of metaphor, of contextual determination, and of the multiplicity of senses of a word. What Leach has spoken of as "Malinowski's desperate expedient of the doctrine of homonyms" … I would prefer to see as a part of the perceptive and even sophisticated theory of linguistic polysemy in which Malinowski was pioneering.
>
> Lounsbury (1966:183)

Many Trobriand kin terms cover a wider range of kin types than just the primary referents given above. In Trobriand, *tabu*, which we gloss as 'grandparent/grandchild,' also includes father's sister, father's sister's daughter, and woman's mother's brother's child. *Latu*, which we gloss as 'child,' also includes man's mother's brother's child. *Tuwa*, 'older parallel sibling,' also includes husband's older sister and older son of man's mother's sister. *Ina*, 'mother,' also includes mother's sister and mother's brother's wife

These terms are *polysemous*, with each having multiple, related meanings. Polysemy is ubiquitous in language, and there is nothing desperate or even unusual in positing polysemy for kin terms. Below we consider several propositions about kin term polysemy, situating them within current debates about the nature of polysemy. These propositions are consistent with Lounsbury's derivational approach and with the alternative constraint-based approach developed here.

*Kin terms are polysemous, not homonymous*. Polysemy – one word with multiple related meanings, e.g., <u>*around*</u> *her wrist*, <u>*around*</u> *the corner*, <u>*around*</u> *the neighborhood*, <u>*around*</u> *sunset* (Zwarts 2019) — is usually distinguished from homonymy — one word with multiple unrelated meanings, e.g., *river* <u>*bank*</u> and <u>*bank*</u> *vault*. (Malinowski uses different terminology, referring to polysemy as "cognate homonymy," homonymy as "accidental homonymy.") However, one approach to polysemy, *sense enumeration*, elides the polysemy/homonymy distinction (Falkum and Vicenge 2015). Sense enumeration means just listing all the senses of a term. While this approach may be descriptively adequate, it offers no account of how the different senses are related; most current theories consider it inadequate as an account of polysemy.

Sense enumeration applied to kin terminology would mean listing all the kin types covered by each term, and any additional extensions of the term, without further analysis. We will see below that we can go further.

*Kin term polysemy is regular (at least in part).* Polysemy may be regular or irregular. The polysemy of word *a* with senses $A_1$ and $A_2$ is regular if there is at least one word *b* in the language with polysemous senses $B_1$ and $B_2$ which are semantically distinguished in the same way as $A_1$ and $A_2$. Otherwise *a* is irregular (Apresjan 1974). *Chicken* in *the chicken crossed the road* and *eat your chicken* is regular, being one instance of a general schema, whereby a count noun referring to an animal (*chicken*, *salmon*, *lamb*, *rabbit*, …) is also used as a mass noun referring to the flesh of that animal (unless the second, culinary sense is preempted by an irregular term like *beef*, *pork*, *veal*, or *venison*). By contrast, *head* in *off with her head* and *head of the studio* is irregular, since *head* of an organization is a one-off expression. The senses of regular polysemous forms are commonly related by metonymy, while the senses of irregular forms commonly derive from conventionalized metaphors.

The distinction between regular and irregular polysemy has been challenged on occasion. Some radical pragmatic theories consider that regular polysemy is an epiphenomenon, that the polysemous senses of a word are related by similarity, but not by a general rule that also operates on other words. In this view, roughly, *a* can be taken to have senses $A_1$ and $A_2$ when $A_2$ is sufficiently similar to $A_1$, and *b* can be taken to have senses $B_1$ and $B_2$, when $B_2$ is sufficiently similar to $B_1$, but the two cases are not linked by any psychologically real rule respecting the same distinctive feature.

This dismissal of regular polysemy has its critics; for a review of radical pragmatics, and experimental evidence in favor of regular polysemy as a real psychological phenomenon, see Rabagliati, Marcus, and Pylkkänen (2011). See also Pinker (2007: 107-124.) Kin terminology would seem to make a particularly strong case for regular polysemy. In the case of regular polysemy above, a series of words is polysemous along one dimension, animal/food. Kin terminologies are considerably more regular than this, displaying a rich combinatorial structure, with terms differing systematically along multiple dimensions and/or with derivational rules applying in multiple instances.

A single word may have both regular and irregular polysemous senses. A particular kin term, in addition to its systematic relations with other kin terms, can sometimes also be used irregularly to denote kin-like social relationships, without any concomitant structural implications. The parents and children of a courtesy "Dutch" uncle are generally not one's grandparents and cousins. The mothers of Church Fathers are not Church Grandmothers (Kronenfeld 1996).

And kin terms are not just used for social relationships (Fox 1971). In *Death is the Mother of Beauty*, Turner (1987) reviews the rich field of kinship metaphors. Many of these are one-off and irregular. Irregular and metaphorical uses of kin terms reveal something of the conceptual structure of kinship: kinship as similarity, physical source, temporal precedence, cause-effect relation, etc. This is in addition to what we learn from kinship as a closed-class regular semantic field.

Our main concern here is with regular polysemy in Trobriand kin terms, which (Lounsbury argues and I argue) constitute an ordered domain whose constituents are found in different configurations in other societies. But we should note that Trobriand kin terms also cover a wider range of senses, less regular and more culturally particular. An anonymous reviewer of this article familiar with Trobriand society states regarding *ina*, 'mother,' that "any person … whose body comes from a history of dietary constraints which match ego's" and who belongs to the first ascending generation is his or her *ina*. Also, any man who supplies raw food for ego may count as *tama*, 'father.' The reviewer states that this normally includes ego's father's father while he is alive and performing alimentarily like a father, although after death father's father is *tabu*, given as the standard term by Malinowski and Lounsbury. The semantic net may be cast even more widely: a man's magical spells and other productions may be called his children (Shapiro 2018). Shapiro gives reasons for thinking that in all these cases, a term whose primary sense is procreative has been extended to cover secondary non-procreative or pseudo-procreative senses. Here we develop a complementary argument: Trobriand kin terms, considered as a system of interrelated items rather than one-by-one, are a map of genealogical relations.

*Kin terms are polysemous, not monosemous*. At the other theoretical extreme from the sense enumeration approach is the underspecification approach. According to this approach, underlying polysemy is monosemy. If we look hard enough we can find a single, spare, abstract schema embracing all the senses of a polysemous word. Contextual or other variables fill in the schema with more specific meanings. The underspecification approach seems to work better in some areas of language than others. It seems to work better for verbs (e.g., there may be an abstract underspecified meaning for *cut* in *cut string* and *cut prices*) than for nouns (Falkum and Vicente 2015).

In kin terminology, a version of the underspecification approach developed under the name of *componential analysis* (Lounsbury 1956; Goodenough 1965). Early componential analysis involved trying to find, for each kin term in a set, a conjunction of distinctive features that applied to all the kin types covered by that term. This approach repeatedly ran into difficulties in accounting for terms applied to more distant kin types. It was in response to these difficulties that alternative approaches were developed, including the approach developed by Lounsbury: define a set of primary referents for kin terms, then come up with a set of reduction/extension rules for secondary meanings.

In this article, we follow Lounsbury in distinguishing between primary and derivative senses of kin terms. But we follow Optimality Theory in developing a constraint-based rather than a derivational approach. With this approach, the ranked distinctive features that order the primary referents of kin terms also select appropriate terms for secondary kin types. Lounsbury's reduction rules are not just stipulated, but derived. And new light may be shed on the relation of terminology to social structure.

Here's the general idea: the conjunctive definitions of kin terms that we gave in the preceding section (Tables 2 and 5) fit some kin types exactly. But many other kin types fall outside these definitions. For these we have to select from among existing terms whichever gives the optimal, least-bad (albeit imperfect) fit. To evaluate the goodness of fit of different candidate terms, we turn to Optimality Theory. Our analysis departs in some respects from classic OT (and from earlier work on kin terminology and OT: Jones 2010), which is concerned with choosing among

**Table 6 Kin terms: Generating extensions**

| Term | Gloss | Formula | Distinctive feature |
|---|---|---|---|
| | | | CONSANGUINE (incl. STEP) |
| | | | MATRI-CROSS |
| | | | FAR GENERATION |
| *kada* | 'mother's cross sibling' | /MxG/ | |
| *tabu* | 'grandparent' | /PP/ | |
| | | | PARALLEL |
| | | | IN-LAW |
| *ivata, lubou*, *yawa* | '__-in-law' | /HxG/, /WxG/, /EP/ | |
| *luta* | 'cross sibling' | xG | |
| | | | RELATIVE AGE, DESCEND GENERATION |
| *bwada*, *tuwa*, *latu* | '__ parallel sibling', 'child' | yllG, ellG, C | |
| | | | SEX |
| *mwala*, *kwava*, *tama*, *ina* | 'husband', 'wife', 'mother', 'father' | H, W, M, F | |

novel combinations of forms. Here we are concerned instead with selecting the best from an existing inventory of lexical items.

More specifically: following the usual procedure in OT, we work with a ranked list of constraints. The list is taken from the ranked list of kin terms and distinctive features set out in Table 6, which is an augmented version of the list in Table 5. The ranking of kin terms is the same as before. The ranking of distinctive features is largely the same, but with some added material. The augmented table introduces two new constraints, CONSANGUINE (which includes STEP) and PARALLEL. It replaces CROSS with a more exactly specified constraint, MATRICROSS. And it breaks a tie in the ranking of cross and generational constraints, giving a higher rank to MATRICROSS than to FAR GENERATION.

The list of constraints in Table 6 still does the same job of ordering the primary referents of kin terms as the list in Table 5. But the new, augmented list can also account for the extensions of kin terms. We group these extensions under two headings. First, Trobriand has a variant of Crow terminology, in which consanguineal kin types belonging to the same matriline, or bearing the same relation to that matriline, can be equated, even if they belong to different generations. Second, Trobriand accords a special treatment to terms for affines — step-kin and in-laws. Below we consider these in turn.

**Crow consanguines**

What will a Trobriander call his or her father's cross-sibling (his/her father's sister)? According to Lounsbury, and according to the present account, there is no term that has father's sister as its primary referent. There is no monosemous definition of any kin term that covers father's sister along with all the other kin types the term embraces. Finding the appropriate term is thus a matter of finding the term that comes "closest" to father's sister by some measure — the term that gives the optimal, least bad fit rather than a perfect fit. To assess the fit of different terms, we begin by turning to Table 6. The ranking there implies that some dimensions of fit are more important than others. For example, MATRICROSS outranks FAR GENERATION, so it is more important to find a term that matches father's sister in crossness — more specifically, a matrilineally skewed version of crossness — than to find a term that matches in generational distance.

To put the table to use, we continue to follow the lead of Optimality Theory (OT). Given an input, a kin type, in this case father's sister, we want to arrive at an output, an appropriate kin term. We will select from among a set of candidate outputs the best, most-fitting candidate. In the standard version of OT, the candidate set includes every possible variant that meets some standard of well-formedness. In the present case, we are selecting items from an established lexicon, rather than generating novel grammatical forms; our candidate set is just our list of kin terms defined by their primary referents.

Another departure from standard OT follows from this. Standard OT works with two kinds of constraints: *faithfulness constraints* that call for features present in the input to be preserved in the output, and *markedness constraints* that call for marked forms to be avoided in the output. Here we work with just faithfulness constraints, drawn from the ranked list of distinctive features in Table 6. We don't need markedness constraints to bar marked forms, because we are confining ourselves to an established list of terms with unmarked core senses. (We would proceed differently if we were working with a language like English, with morphologically complex kin terms. In this case, interspersed among faithfulness constraints derived from distinctive features, there would also be violable markedness constraints derived from simple kin terms like *father* and *sister*. These would bar compounds like *step-father* and *sister-in-law*. But this is a topic for another occasion.)

The distinctive features on our list, then, amount to a ranked set of faithfulness constraints that we want our candidate to satisfy. We treat these constraints as a sequence of filters. On the first round of evaluation, we turn to the top ranked constraint. Any of our candidates that violates this constraint is removed from consideration, unless all violate the constraint, in which case none is removed. On the next round, the surviving candidates (if there are more than one) are passed to the second-ranked constraint. Once again, candidates that violate the constraint are removed, unless all violate the constraint. The procedure continues until only one candidate survives. This candidate is the appropriate term for the corresponding kin type. Once a winning candidate has been selected, the process is complete; it doesn't matter if the winner violates any number of lower-ranking constraints.

The OT approach is different from a derivational approach. Instead of saying "Replace the input X with output Y, if condition C holds," OT says "Find the output Y, among all well-formed Y, that provides the best fit for input X, according to some measure, F, of fit." This is more like optimization in economics or behavioral ecology, where the correct answer is whatever maximizes utility or fitness. But OT is not about maximizing a numerical quantity, but about satisfying ranked constraints, where each constraint absolutely dominates lower constraints. This is the same logic that we find in ordering words alphabetically: *azygous* beats *babe*, even though all but one of its letters come later in the alphabet.

Let's consider how this works for father's sister. Following the usual procedure in OT, we illustrate the process with a *tableau*, including some conventional OT symbols (asterisks, exclamation marks, and a pointing finger). In Tableau 1, the kin type to be assigned a label, father's sister or FxG, is entered in the top left cell. The candidate outputs, kin terms with their associated primary referents, are listed below, in the leftmost column; the order is unimportant. In principle we could list all thirteen kin terms, but to keep things simple, we limit ourselves to the most plausible candidates. The constraints that the candidates are supposed to satisfy are given along the top row, in rank order from left to right. The constraints are drawn from the ranked list of distinctive features in Table 6. These correspond to *faithfulness constraints* in standard OT. We list only constraints that are relevant to selecting the correct output.

father's sister is 'grandparent/grandchild'

FxG → FM (</PP/

The first constraint is CONSANGUINE (including STEP). This constraint requires that if the input is a consanguine or step kin then the output should be consanguine or step as well. In other words, the constraint is violated if a consanguineal kin type is called by an in-law kin term. (The constraint is also violated if a step kin type gets an in-law label; more on this below.) One of the candidates being evaluated to supply a term for father's cross sibling is spouse's mother, which is a legitimate candidate because it is a subtype of *yawa*, 'spouse's parent' or 'parent-in-law.' Turning a father's sister — a consanguine — into a terminological mother-in-law is allowed in some societies, especially societies with positive marriage rules, in which consanguines may turn into

**Tableau 1**

**father's sister is 'grandparent/child'**
**FxG → FM (</PP/)**

| FxG | CONSANGUINE | MATRICROSS | FAR GENERATION | PARALLEL | SEX |
|---|---|---|---|---|---|
| /MxG/ | | *! | | | * |
| FM (</PP/) ☜ | | | * | | |
| EM (</EP/) | *! | | | | |
| *G* (xG, yllG, ollG) | | *! | * | | |
| F | | *! | | | * |
| M | | *! | | | |

in-laws not just in terminology, but in social practice. But this is not what Trobriand does, and here the CONSANGUINE constraint keeps it from happening. 'Spouse's mother' violates the constraint; the violation is shown in the tableau by an asterisk (*) in the corresponding cell. The violation is fatal, as shown by an exclamation mark (!) after the asterisk, and this candidate is removed from further consideration, shown by gray shading in the cells to the right.

The next constraint is MATRICROSS, which enforces a matrilineally skewed version of a cross/parallel distinction. This constraint, with its high rank, plays *the* crucial role in Trobriand Crowness, and is worth discussing at some length. Its operation can be elucidated with the help of a diagram, Figure 1. The diagram includes the usual kin types from a standard kinship diagram, but is organized to highlight descent in the female line. Each circle represents a group of sisters; each triangle represents a group of brothers. Black vertical lines show descent through females; gray diagonal lines show descent through males. Where black and gray lines intersect, a man and a woman produce sons and daughters. Ego and siblings, either female ego and her sisters and brothers, or male ego and his brothers and sisters, occupy the center of the figure. The vertical line on the left shows ego's cross matriline, i.e., the matriline of ego's father. The central vertical line shows ego's own matriline. The kin types in the figure fall into vertical bands related to cross matriline and own matriline as follows, from left to right:

Fathers and husbands of cross matriline
Mothers, sisters, and daughters of cross matriline (vertical black line)
Brothers and sons of cross matriline
Mothers, sisters, and daughters of own matriline (vertical black line)
Brothers and sons of own matriline
Children of brothers and sons of own matriline

In addition, several kin types on the diagram fall outside these categories, including maternal uncle's wife, connected to brothers and sons of own matriline by marriage rather than de-

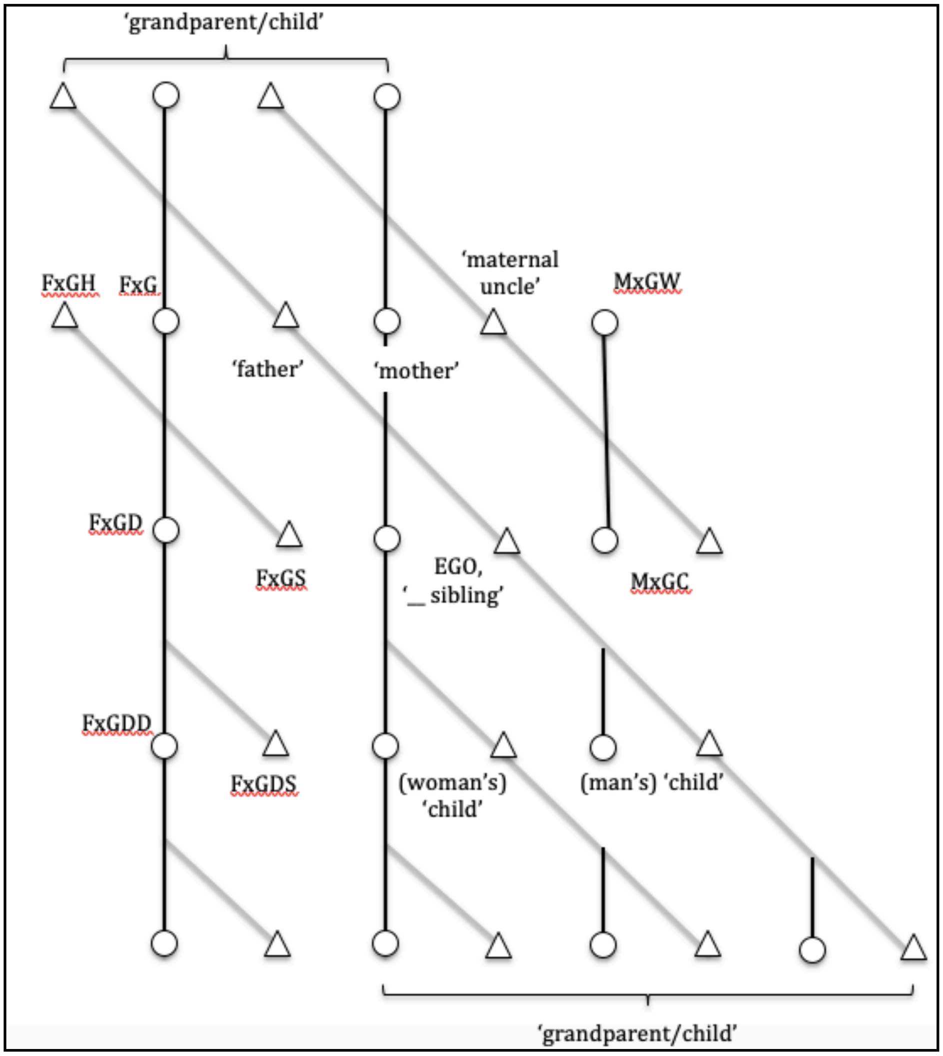


**Figure 1**: The world according to MATRICROSS.

scent, and man's (or brother's) son's children, more remotely connected to own matriline. Ego's in-laws are not shown on the diagram; they are discussed separately below.

MATRICROSS enforces distinctions between these bands. Labelling a kin type with a term whose primary referent falls outside its band is a violation of the constraint. (For some terminologies we might want to unbundle MATRICROSS into two constraints, one concerned with matriline distance — far versus near matrilines — and the other with matriline direction — wife-givers versus wife takers. This is not an issue for Trobriand.) Returning to our tableau: with father's sister as the input, this constraint eliminates all of the survivors from the last round (violations again shown by * and fatal violations by !), except for one: father's mother, which stands directly above father's sister in the women-of-cross-matriline band; father's mother is a subtype of 'grandparent/grandchild'. This candidate violates the next constraint, FAR GENERATION, which would bar labelling a generation ±1 kin type with a generation ±2 kin term. This violation doesn't matter, however, because father's mother is the only candidate that doesn't violate the first two constraints. The result, in other words is Lounsbury's Crow reduction rule, father's sister → father's mother, as shown by the pointing finger (☜).

A number of additional reductions also result from the constraint ranking, as follows:

father's sister's daughter is 'grandparent/grandchild'

FxGD → FM (</PP/)

Father's sister's daughter, like father's sister, reduces to father's mother ('grandparent/ grandchild') even though labelling a generation 0 kin type with a generation ±2 kin term is a double violation (**) of FAR GENERATION (Tableau 2). We saw in our introduction how Lounsbury derives this reduction in three steps, applying two reduction rules, a Crow reduction rule and a half sibling merger rule.

father's sister's son is 'father'

FxGS → F

Father's sister's son and father are both brothers-and-sons-of-cross-matriline (Tableau 3). Lounsbury derives this reduction in three steps applying three reduction rules: FZS → FMS (Crow reduction rule), FMS → FB (half-sibling merger rule), FB → F (collateral merging rule).

The mergers above imply a corresponding set of mergers involving reciprocals. For example, just as father's sister's son reduces to 'father,' so does the reciprocal of father's sister's son (man's mother's brother's child) reduce to the reciprocal of 'father' (man's child).

man's mother's brother's child is his 'child'

man's MxGC → man's C

**Tableau 2**

**father's sister's daughter is 'grandparent/child'**
**FxGD -> FM (</PP/)**

| FxGD | CONSANGUINE | MATRICROSS | *FAR GENERATION* | PARALLEL | SEX |
|---|---|---|---|---|---|
| /MxG/ | | *! | * | | * |
| FM (</PP/) ☜ | | | ** | | |
| /WxG/ | *! | | | | * |
| /HxG/ | *! | | | | |
| G (xG, yIIG, oIIG) | | *! | | | |
| W | *! | | | | |
| F | | *! | * | | * |
| M | | *! | * | | |

**Tableau 3**

**father's sister's son is 'father'**
**FxGS → F**

| FxGS | CONSANGUINE | MATRICROSS | FAR GENERATION | PARALLEL | SEX |
|---|---|---|---|---|---|
| /MxG/ | | *! | * | | * |
| MF (</PP/) | | *! | ** | | |
| /WxG/ | *! | | | | |
| /HxG/ | *! | | | | * |
| G (xG, yllG, ollG) | | *! | | | |
| H | *! | | | | |
| F ☜ | | | * | | |
| M | | *! | * | | * |

One way to deal with this in the present framework would be to allow reciprocals of kin types as input, and reciprocals of kin terms from the inventory as output. This is analogous to how Lounsbury handles reciprocals, where his reduction rules come in matched pairs, with one member of each pair handling the reciprocals of the other.

This is unnecessarily complicated however, because our framework handles the situation more directly. Consider the case of man's mother's brother's child (man's MxGC). This kin type shows up in Figure 1 in the children-of-brothers-and-sons-of-own-matriline band. Also in that band, bearing the same relationship to own matriline, is man's child, so the reduction of man's mother's brother's child to man's child does not violate MATRICROSS. This is the favored reduction. (Tableau omitted.)

woman's mother's brother's child is her 'grandparent/grandchild'

woman's MxGC → woman's SC (</PP/)

The analysis of woman's mother's brother's child (woman's MxGC) proceeds similarly. Again we have a case that could be handled by allowing reciprocals as input and output: as father's sister's daughter reduces to father's mother (< 'grandparent/grandchild'), so does the reciprocal of father's sister's daughter (woman's mother's brother's child) reduce to the reciprocal of father's mother (woman's son's child, < 'grandparent/grandchild'). This is how Lounsbury handles the case.

But once again our framework handles the situation more directly, without introducing special procedures for handling reciprocals. As shown in Figure 1, a woman's mother's brother's child has a different relationship to her matriline than her own child, so this reduction is barred by MATRICROSS. Not barred by MATRICROSS is the reduction to woman's son's child, a subtype of 'grandparent/grandchild.' This is the favored reduction. (Tableau omitted.)

Two further reductions involving parents' parallel siblings also follow.

mother's sister is 'mother'

MZ → M

father's brother is 'father'

FB → F

These proceed without violating MATRICROSS or FAR GENERATION, although they do violate the low-ranking COLLATERAL constraint, which bars labelling a collateral kin type with a lineal kin term. Tableau 4 shows this result for mother's sister. The tableau for father's brother, very similar, is omitted.

In summary, the major reductions of the Trobriand Crow terminology follow from ranked constraints that distinguish consanguines from in-laws, cross from own matrilines, and far from near generations. We could have used this ranking to generate Lounsbury's reduction rules, including rules for reciprocals, and then applied those rules repeatedly as needed to derive various reductions, by. But with the present approach, we instead derive the reductions directly from the constraint rankings. As a matter of psychological plausibility, it is likely that longer kin formulas are processed in multiple steps (and some versions of OT phonology allow for multi-step analyses), but for the reductions we consider, multi-step derivations and special rules for reciprocals are not required.

One further note: although it is not explicit in Lounsbury's treatment, the present analysis implies that some reductions are less harmonious than others; sometimes the least-bad fit is a pretty poor fit. Crow reductions, for example, unlike parents' parallel sibling reductions, violate the FAR GENERATION constraint, and are likely to be more labile over time and across and within cultures (Kronenfeld 2009, 2012).

**Tableau 4**

**mother's sister is 'mother'**
**MZ → M**

| MZ | CONSANGUINE | MATRICROSS | FAR GENERATION | PARALLEL | SEX |
|---|---|---|---|---|---|
| MxG | | *! | | | * |
| MM (<PP) | | | *! | | |
| EM (<EP) | *! | | | | |
| G (xG, yllG, or ollG) | | | *! | | |
| F | | *! | | * | * |
| M ☜ | | | | * | |

**Step kin and in-laws**

Several kin types are related by marriage to ego and ego's consanguines. Figure 1 shows two of these, father's sister's husband (FxGH), and mother's brother's wife (MxGW). For the first of these, the reduction is

father's sister's husband is 'grandparent/grandchild'

FxGH → FF (</PP/)

This reduction is dictated by MATRICROSS; both father's sister's husband and father's father fall into the father-and-husband-of-cross-matriline category. No surprises here: this follows the Crow pattern of faithfulness to matriline over faithfulness to generation distance (Tableau omitted).

For mother's brother's wife, however, the rule is more surprising:

mother's brother's wife is 'mother'

MxGW → M

For the first time (Tableau 5), we see a reduction that violates MATRICROSS. Lounsbury deals with this by stipulating a special purpose reduction rule. Since the rule applies only to this one case, this is not so much a rule as the acknowledgment of an irregularity. Here I suggest a more systematic explanation. While the proposed explanation is tentative, and necessarily technical, it also showcases some the strengths of OT.

In Figure 1, mother's brother's wife lines up with several named kin types, including man's child, and woman's son's child. However her connection to ego's matriline is different, a relationship by marriage rather than descent. We can assume that reducing mother's brother's

**Tableau 5**

**maternal uncle's wife is 'mother'**
**MxGW → M**

| MxGW | CONSANGUINE incl. STEP | MATRICROSS | FAR GENERATION | PARALLEL | SEX |
|---|---|---|---|---|---|
| /MxG/ | | * | | | *! |
| FM (</PP/) | | * | *! | | |
| /HxG/ | *! | | * | | |
| /EP/ | *! | | | | * |
| C | | * | *! | | |
| W | *! | | * | | |
| F | | * | | | *! |
| M ☜ | | * | | | |

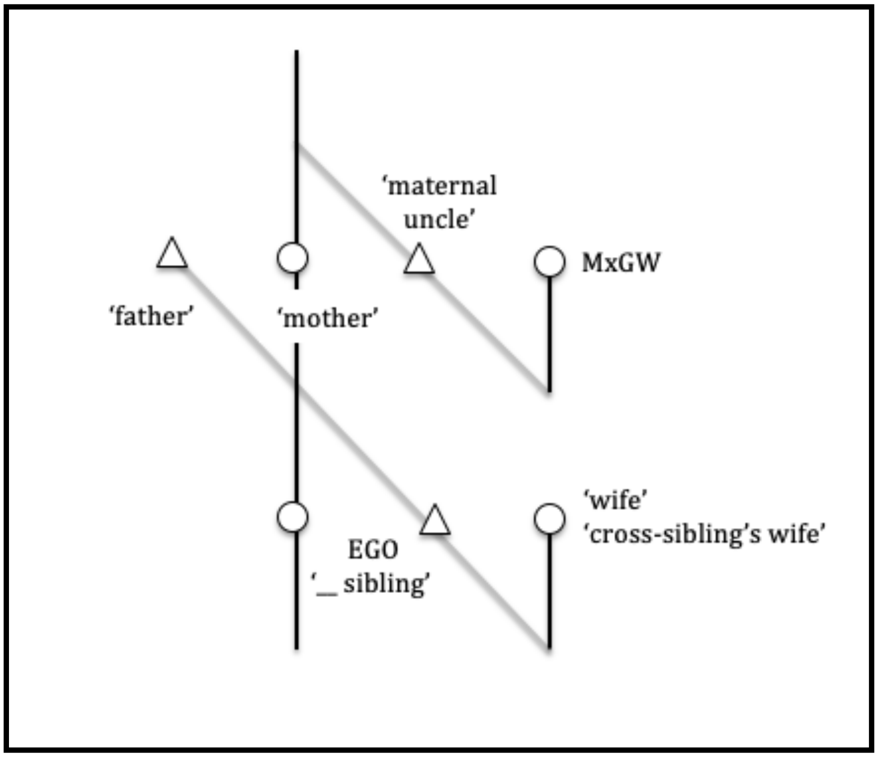


**Figure 2:** The world according to MatriCross, Step kin  and in-laws.

wife to either of these terms (depending on ego's sex) would violate MATRICROSS. There is another set of options, however, absent from Figure 1, but shown in Figure 2. A mother's brother's wife bears the same relationship to ego's matriline as a man's wife or a woman's brother's wife: all of these are wife-of-brother-or-son-of-own-matriline. Both man's wife and woman's brother's wife have associated kin terms, so reducing maternal uncle's wife to either of these terms is consistent with MATRICROSS.

In OT, however, a candidate that satisfies one constraint can be eliminated if it violates a higher ranking constraint. I propose that this is what is going on in the present case. Specifically, I propose that the highest ranking constraint, CONSANGUINE (including STEP), bars not only the reduction of consanguines to in-laws, but also the reduction of step kin to in-laws, while allowing the reduction of step kin to consanguines. (In other languages, this constraint might be split to enforce a further distinction between consanguines and step kin.) This is not just special pleading, but has considerable cross-cultural support. As Lounsbury notes,

> Anthropologists … tend to … misrepresent native conceptual groupings by merging step categories with in-law categories in their talk about kinship systems, using the term "affinal" to denote all relationships through marriages, whosever marriages — in relation to Ego – these might have been. This merger is invalid for any kinship terminology that I know anything about, except for certain of those … associated with asymmetric alliance [p. 162] … I know of no system that merges the step and the in-law categories and opposes such an 'affinal' category to the consanguineal one [p. 164].

Lounsbury spells out that in-laws include spouses, and spouses' consanguines in own and ascending generations and their reciprocals, i.e., consanguines' spouses in own and descending generations. Step-kin include consanguines' spouses in ascending generations and their reciprocals, i.e., spouses' consanguines in descending generations (Lounsbury 163; in-laws and step kin are sometimes labelled *external* and *internal* affines).

English of course makes a clean distinction between in-laws and step kin, while distinguishing step kin from consanguines in some cases (father's wife, when not also mother, is *step mother*) but not others (mother's brother's wife is *aunt*, not **step aunt*). Trobriand has no separate step kin terms (no separate term for father's wife when not also mother), but does have terms for some in-laws, as well as for husband and wife. What's relevant in the present case is that our input kin type, maternal uncle's wife, falls, by definition, in the step category, while the candidate kin terms consistent with Crow rules (man's wife, woman's brother's wife; see above) fall, by definition, in the in-law category. Given that Trobriand, like other languages, seems to be sensitive to the step kin versus in-law distinction, it is reasonable to suppose that these candidates are eliminated by the highest ranking constraint, CONSANGUINE (including STEP). That leaves *ina*, 'mother,' as the winning candidate, the least-bad fit even though it violates the second-ranking constraint, MATRICROSS. This reduction thus demonstrates a key feature of OT: constraints are *violable*.

This analysis showcases one of the strengths of OT: the reduction of maternal uncle's wife to 'mother' looks like an instance of the e*mergence of the unmarked* (McCarthy and Prince 1994). In OT, a marked input often yields an unmarked output, not because input and output have something special in common, but because (a) unmarked forms are preferred, and (b) there are no constraints ranking high enough to hinder the reduction. Here rather than postulating that maternal uncle's wife shares a special conjunction of distinctive features with 'mother,' or simply stipulating a derivational rule, we suggest that *ina*, 'mother,' is just the closest available term that doesn't result in equating step kin and in-laws.

Finally, with terms for siblings-in-law, Trobriand reduces spouse's parallel sibling to parallel sibling

spouse's parallel sibling is 'parallel sibling (older or younger)'

E||G → ||G (older or younger)

When it comes to classifying spouse's parallel sibling, Trobriand treats an individual as equivalent to his or her spouse. This contrasts with the classification of parent's parallel siblings, where an individual is treated instead as equivalent to his or her parallel sibling: if Trobriand followed this pattern in classifying in-laws, then spouse's parallel sibling would be reduced to spouse. But when it comes to classifying siblings in law, Trobriand is more concerned with distinguishing individuals from their parallel siblings than from their spouses. Tableau 6 shows how the ranking of two constraints, PARALLEL and IN-LAW, generates this result. If PARALLEL ranked below IN-LAW, then spouse's parallel sibling would be labelled 'husband' or 'wife.' Meanwhile, the high ranking MATRICROSS bars the merger of spouse's parallel and cross siblings.

Note that English in-law terms, like Trobriand, show a tendency to equate individuals with their spouses rather than their siblings. (English differs, though, in using a COLLATERAL feature which Trobriand unbundles into MATRICROSS and PARALLEL A wife's sister in modern

**Tableau 6**

**spouse's parallel sibling is 'parallel sibling'**
**E||G → ||G (younger or older)**

| E‖G | MATRICROSS | PARALLEL | IN-LAW |
|---|---|---|---|
| /WxG/ | *! | | |
| /HxG/ | *! | | |
| xG | *! | | |
| y‖G or e‖G ☜ | | | * |
| H or W | | *! | |

American English (*sister-in-law*) is not exactly a sister, but more like a sister than a wife, terminologically. In English as in Trobriand, the collateral vs. lineal distinction outranks the in-law distinction.

This completes our analysis. We have shown that an optimality theoretic treatment provides an economical and elegant account of Trobriand kin terms. The lexicon expresses a set of markedness scales and ranked distinctive features, which further generate a suite of reductions for non-focal kin, and provides a systematic account of some apparent irregularities (like the reduction of maternal uncle's wife to the unmarked 'mother' category).

The analysis showcases one of the strengths of OT relative to derivational approaches: its ability to handle *conspiracies*. Conspiracies are evident when two superficially different rules, either within or across languages, are seen to "conspire" to the same end. Consider a cross-linguistic example involving phonology: Japanese shows a strong reluctance to allow more than one consonant at the beginning of a syllable, or any consonants (except nasals) at the end. Thus *girlfriend*, adopted into Japanese, adds some vowels to become *girifirendu*. English shows weaker reluctance in the same direction, tolerating *star* and *spiky*, but dropping initial consonants with *tsar* and *psyche*. We could come up with a set of derivational rules that would tell us when Japanese adds vowels, and another set of rules telling us when English drops consonants. These rules would be descriptively adequate, but would not explain why both languages (and languages in general) "conspire" to avoid multi-consonant syllable onsets, one way or another. In Optimality Theory, by contrast, a principle like "A syllable onset has at most one consonant" is part of the generative machinery in the form of a violable constraint which interacts with other constraints to generate a variety of surface patterns within and across languages.

The OT approach to kin terminology offers a similar advantage. In Lounsbury's analysis, a number of distinctive features and reduction rules conspire to emphasize the internal unity and external separation of matrilines. And some of these rules appear in other languages that lack Trobriand's matrilineal skew. Yet there is nothing internal to the analysis to explain this conspiracy. In the present analysis, by contrast, there is no conspiracy: just one constraint, MATRICROSS, interacts with others to generate a range of effects.

The present approach also clarifies the connection between Trobriand kin terminologies and social institutions, a connection arguably given short shrift by Lounsbury (Powell 1969; McKinley 1971; Weiner 1979). The high rank of MATRICROSS is clearly related to the importance of matrilineal institutions in Trobriand life. Not all societies show such a neat match between language and social structure, but in this instance, the connection between Trobrianders' Crow terminology and their matrilineal institutions gets its full due without sacrificing formal rigor.

It remains to be seen whether the machinery that accounts for Trobriand terms and extensions applies more widely. In the remainder of this section, we undertake a preliminary survey of the topic by considering how we could modify the Trobriand scheme to generate additional terminologies attested in other languages.

One set of alterations would result from adding and/or deleting kin terms. For example, we could add a term whose primary referent is father's sister, while leaving the ranking of distinctive features the same. With this addition, father's sister, father's sister's daughter, and father's sister's daughter's daughter would all be subsumed under 'father's sister,' instead of reducing to father's mother. This is a recognized variant of Crow terminology, which Lounsbury (1964, 1966) labels Crow I, in contrast to Trobriand, labeled Crow III. In other words, the absence of a father's sister term in Trobriand amounts to a lexical gap that could be filled in without changing the basic Crow pattern of the terminology. An alternative modification would be to create another lexical gap by deleting the term for mother's brother. In this case, mother's brother would reduce to cross or parallel sibling (depending on sex of ego), resulting in another Crow variant, Crow IV. Or we could combine the two changes, both adding a term for father's sister and deleting the term for mother's brother, to get a fourth Crow variant, Crow II.

More dramatic changes, from one typology to another, are possible when the distinctive feature ranking changes. A defining characteristic of Crow terminologies in our analysis is that MATRICROSS outranks FAR GENERATION. Suppose we were to reverse this ranking, without changing the lexicon and its primary referents. The result would be that father's sister reduces to 'mother,' because FAR GENERATION allows this within-generation reduction even though MATRICROSS prohibits it. Also, cousins would reduce to siblings of various kinds, another same-generation reduction. The result would be a terminology with bifurcate merging uncles, generational aunts, and "Hawaiian" cousins, a variant of Cheyenne terminology (Gould 2000: 265-294). Given this new ranking, further terminologies could once again be generated by adding terms: adding a father's sister term would result in a bifurcate merging aunt terminology, adding a cousin term would result in Iroquois cousin terms. (Getting to Dravidian crossness would require a further change in ranking, demoting the CONSANGUINE feature and thereby allowing the reduction of cross consanguine types to in-law terms.)

All this implies a different relationship between skewed and unskewed terminologies than that proposed by Lounsbury. In Lounsbury's account, Crow terminology results when one or more pairs of skewed reduction rules is *added* to a set of unskewed rules. This is consistent with recent treatments of "the Crow-Omaha problem" proposing that symmetrical crossness is part of the "deep structure" of Crow terminologies, while skewing is a superficial overlay (Dousset, Godelier, quoted in Trautmann and Whitely 2012b: 285; see also Kronenfeld 2012). But the analysis here implies more or less the opposite. Here, both the Crow skewing and the cross-parallel distinctions in Trobriand are generated by a single matrilineally skewed constraint, MATRICROSS. That same constraint, when ranked below the generational constraint FAR GENERATION, can generate a symmetrical, unskewed terminology. The underlying matrilineal skew is still present conceptually, part of the "deep structure" if you will, but hidden by a higher ranking constraint that bars generational mergers.

This is ethnographically plausible. Consider the Iroquois, whose ethnonym has been pressed into service by anthropologists to label a family of kin terminologies. As documented by Morgan (1997), the various Iroquois languages mostly have cross/parallel but not collateral/lineal distinctions in terms for parents' siblings and cousins. On the surface, the terminologies show no matrilineal skewing. However, on the present analysis, the terminologies could be generated by a MATRICROSS constraint whose skew is masked by a higher ranking generational constraint. This would align with their social institutions: the Iroquois are organized in matrilineal clans, like the Trobrianders.

There are other ways to get an Iroquois terminology. MATRICROSS has a patrilineally skewed counterpart, PATRICROSS, which separates patrilineal lines of descent. When PATRICROSS ranks above FAR GENERATION, it generates various Omaha kin terminologies, the sex-reversed versions of Crow. When PATRICROSS ranks below FAR GENERATION it generates the same unskewed terminologies as MATRICROSS. This would provide a basis for Iroquois terminology in societies with a patrilineal emphasis. Rather than Crow and Omaha terminologies having an underlying unskewed "deep structure," it may be that many overtly unskewed Iroquois terminologies have an underlying conceptual matrilineal or patrilineal skew, consistent with their overt institutional skew.

In other words, the present analysis is consistent with the view, contra Lounsbury (1964) but strongly supported by comparative evidence, that associates both skewed and unskewed crossness with unilineal emphases, and skewed terminologies with particularly strong unilineal emphases (White 1939; Murdock 1949: 244-248; McKinley 1971; Rácz, Passmore, and Jordan 2019).

(Crow and Omaha skewing is further associated with semi-complex marriage systems in many cases – McKinley 1971; Trautmann and Whitely 2012a — but not among the Trobrianders.)

**Conceptual structure**

> It may not be intrinsically very important to know, say, how one's father's mother's brother's son's son is classified in some particular society. Yet, data of this sort have another, indirect, kind of importance. Whatever classificatory status is given to such a kin type is simply one of the numerous and far-flung results of the adherence to a few principles that do have a fundamental importance.
>
> Lounsbury (1966:184)

Kin terminology embraces both cultural particulars and cultural universals. In the preceding section we consider how regular variation in kin terminology — governed by differences in the ranking of constraints — might reflect variation in social organization. In this section we consider how universals of kin terminology — the modest set of markedness scales and distinctive features that provide the framework for kin terminology — might reflect universals of kin cognition.

Using kin terminology as a window on kin cognition is just one application of a general principle: the closed class forms studied by linguists seem to have a natural affinity for domains of *conceptual structure*. For example, the language of space, including spatial prepositions in English, seems to be a window onto a self-contained domain of conceptual structure concerned with figure-ground relations and paths involving objects in space. The prototypical figure is smaller than the ground, and movable. Prepositions convey only a limited amount of information about the figure, typically whether it is conceived of as one, two or three dimensional. Other important information — whether the figure is valuable, or menacing, or brightly colored — is not the job of the prepositions. And the representation of space conveyed by spatial prepositions is qualitative or quasi-topological, omitting quantitative information about scale (Landau and Jackendoff 1993; Talmy 2005; Pinker 2007:174-188).

The conceptual structure of space has been investigated from another angle by developmental and cognitive psychologists. According to some developmental psychologists, infants enter the world with a stock of *core knowledge*. They expect to find a world composed of physical objects that maintain their connectedness and boundaries as they move, that move as one if and only if their parts touch, and that trace one connected path in space as they move. Objects continue to exist when hidden. Objects move other objects as a result of contact, and don't pass through one another. Visual stimuli that violate these expectations are anomalous, and attract extra attention. This core knowledge may be refined in predictable ways over the course of development, e.g., as children learn about gravity (Spelke 1990; Carey 2011: 67-116).

The consilient evidence from language and psychology suggests a hypothesis about language learning (Pinker 2007, 2013; Strickland 2017): children learning a language are able to draw on a preverbal psychology concerned with things and stuffs, with the identification, tracking, and manipulation of physical objects, and with figure-ground relations and paths and mechanical interactions among them. This psychology facilitates the child's learning of closed class forms, and favors the convergent evolution of spatial language across cultures. This is consistent with the Optimality Theory approach to language rules: learning the rules of a particular language means learning the constraint ranking for that language. But the constraints themselves are not copied, but are innate — either in the strict sense of being hardwired, or in the looser sense of usually reliably developing in a canalized fashion.

The relationship between closed class forms and conceptual structure is not absolutely deterministic — not all languages link the language of space to spatial cognition in the way English does (Levinson and Wilkins 2006) — but it is strong enough that, in the course of linguistic evolution, particular systems of core cognition very often "capture" particular closed classes. There is an important corollary to this proposition: closed class forms are potentially an important source of information about their associated domains of conceptual structure. This implies that principles of kin terminology may provide a window onto universals in the conceptualization of kinship. Here we follow up on this line of thinking, bringing the evidence of kin terminology to bear on two perennial topics: the relationship of kin concepts to genealogy, and to biological relatedness.

We begin with genealogy. Trobriand kin terms are systematically related to one another. If we set aside questions of what each kin term means in itself (but see Shapiro 2018), and consider the terms as a system, we find that the relationships among Trobriand kin terms constitute a map (or representation, or *morphism* in the language of mathematics) of genealogical relationships. This implies that for a given genealogical formula, using standard anthropological notation, there is a corresponding relationship among Trobriand kin terms: as the mother of one's father is FM, so the *ina* of one's *tama* is *tabu*; as FM is to F, so *tabu* is to *tama*. To put it another way, suppose we compare (a) a standard genealogical diagram and (b) a diagram showing how Trobriand kin terms are related to one another (Read and Behrens 1990; Gould 2000:331). Even if the latter is constructed with no genealogical presuppositions, it will nonetheless be a representation of the former: for a given path between different kin types on the genealogical chart there is a corresponding path among different Trobriand kin terms. This means that we can label different positions on a genealogical chart with the corresponding Trobriand kin terms (illustrated in Malinowski 1987: 435 and Weiner 1979). The genealogy/kin term mapping goes in one direction only (it is not an *isomorphism*): given a genealogical formula, we can find the corresponding kin term, but given a kin term we can't count on finding a corresponding conjunctively defined genealogical position that embraces the referents of that term.

It isn't just on a few islands in Melanesia that kin terminology is genealogically structured. Thousands of books and articles, covering hundreds of cultures around the world include lists and diagrams showing how genealogy maps onto kin terms. Every language known to anthropologists has a system of kin terms, systematically related to one another in such a way that they constitute a representation of genealogical relationships. This is one of the most solidly established findings in cultural anthropology. It is an empirical discovery, not something that is true by definition.

Lounsbury (1966: 182) makes the point forcefully:

> We have been told so often in recent years … that kinship words (in … non-Western societies) are terms for 'social categories' and not for genealogical relationships; that to utilize genealogical concepts in eliciting and recording 'kinship' data is to impose *our* ethnocentric bias and *our* culture-bound notions on the people we are studying … Now if all this is so, then how does it happen that when we take a set of such spurious genealogically based data … and apply to it a method whose pretense to validity rests entirely on [wrong] assumptions — how is it that the end product of all this wrong-headedness turns out to be an internally consistent, simple, and accurate account of the ethnographer's collection of data …?

As we saw above, these claims about the structure of kin terminologies seem to have their place within a broader set of findings about conceptual structure. Just as human beings seem to have a built-in, reliably developing expectation that the world will be full of mechanically interacting physical objects moving through space, we also seem have a reliably developing expectation that we will find ourselves in a world full of people genealogically linked to ourselves and to one another.

This perspective in turn raises some questions about the relationship between genealogy and biological relatedness, and about the evolution of conceptual structure. Since Lounsbury's time, evolutionary biologists have developed their own theories of kinship. According to the twin theories of kin selection and inbreeding avoidance, organisms are expected to have adaptations for dealing with their genetic kin. These adaptations should function to assess an organism's genetic relatedness to others and to modulate altruism and sexual attraction accordingly. This suggests the possibility that the conceptual structure of kinship revealed through the analysis of kin terms is an adaptation for tracking biological relatedness.

There are some problems, however, with trying to connect the cultural anthropologist's idea of kinship with the evolutionary biologist's. In the rest of this section, we consider some concepts that may help to bridge the two varieties of kinship without simply equating them.

*Proper and actual domains of adaptations*. In our analysis of kin terms we were concerned above all with regular polysemy. As noted in the discussion of polysemy above, kin terms are also commonly used in an irregular way, without any genealogical entailments. But even when kin terms are used with a full set of genealogical implications, they may carry no necessary implication of a biological relationship, as in societies with *universal systems of kin categorization* (Barnard 1978: 69).

> A universal system of kin categorization is … a system in which each member of society stands in a 'kin' … relationship to every other member. … [E]ach individual can apply kin terms …, with the same or nearly the same social implications as in known genealogical usage, to all those with whom he comes in contact.

In short, kinship studied by anthropologists is sometimes non-genealogical, and genealogical kinship is sometimes non-biological. "It is not biological ties that are classified by [kinship] systems, so much as relationships treated *in the idiom of biological ties*" (Levinson 2000, L's italics).

Perhaps the difference between biological and cultural kinship follows the distinction between the *proper* and *actual* domains of an adaptation (Sperber and Hirschfeld 2004). This is just the distinction, familiar to evolutionary theorists, between what a structure is adapted to do, and its current use. Sperber and Hirschfeld turn to face recognition to illustrate this. There is good evidence that infants are inclined from a very early age to attend to face-like visual stimuli, and this is plausibly interpreted as the outcome of an adaptation for face recognition. The evolutionary proper domain of our face-recognition machinery is presumably human faces. However the actual domain — what actually activates the machinery — includes a much wider range of stimuli. Some of these are natural accidents — faces in the clouds. Others are cultural products — masks, portraits, caricatures. Some cultural products — e.g. makeup — may even serve to make faces supernormally face-like. This suggests one way of bridging the divide between biologist's and anthropologist's notions of kinship: the proper domain of genealogical thinking may be keeping track of biological relationships, but cultures may extend its actual domain far beyond this.

*Sentiment and structure*. The proper/actual distinction still leaves important aspects of kin categorization unexplained. Even when kin terms designate actual biological relatives, linked by people going "in and out of each other's bodies" (Bloch 2013), the representation of kinship implicit in kin terminology differs in important respects from that familiar to evolutionary biologists. Genetic relatedness can be expressed as a number, the *coefficient of relatedness*, or *r*, a regression coefficient giving the predicted number of copies of a gene in a target organism as a function of the number in the source. The coefficient of relatedness is connected mathematically and conceptually to the *coefficient of inbreeding*, *F*, the correlation between homologous genetic loci within or between organisms. Genealogical formulas, and positions on a genealogical diagram, can be assigned coefficients of relatedness and inbreeding relative to ego: father maps onto $r = 1/2$, $F = 1/4$, father's mother maps onto $r = 1/4$, $F = 1/8$, and so on. In other words, these coefficients are a map (or representation, or morphism) of genealogical relations. But the two sorts of mappings, the genetic mapping from genealogy to *r* and *F*, and the various linguistic mappings from genealogy to kin terminology, follow different principles. Genetic relatedness does not map onto kin terms, nor do kin terms map onto genetic relatedness.

There are reasons why an evolved system of kinship cognition might do more than just crank out a quantitative estimate of genetic relatedness. The usual derivation of the theory of kin selection depends on a simplifying assumption, that organisms make independent, additive contributions to helping their kin. But this assumption is likely to be violated in human kinship systems, where people often have to keep an eye on the larger social ramifications of how they treat their kin. This is an anthropological commonplace. A Trobriand woman deciding whether to embark on a love affair with a classificatory sibling, a Trobriand man deciding whether to treat his father or maternal uncle respectfully or jokingly, a Trobriand chief deciding whether to favor his wife's son over his sister's son — all have to consider how this will affect their position in the community at large (Malinowski 1987; Weiner 1988). Observations like these pose a challenge for evolutionary theories of kinship. If these theories are to apply to kinship as studied by anthropologists, they will have to face not just the task of explaining individual sentiments and decisions, but the more difficult challenge of explaining the evolution of social conventions regarding kin (Bloch and Sperber 2002; Jones 2016; Cronk et. al. 2019). But this is a matter for another occasion.

To conclude: we have used new methods from linguistics to reveal a further level of organization in Trobriand kin terms, manifesting conventionalized tradeoffs between expressing relevant information and keeping things simple. The formal analysis of kin terms also suggests some insights that go beyond linguistics. In particular, our new-fangled methods vindicate some old-fashioned social anthropology: kinship neither dissolves into cultural quiddities nor boils down to genetic relatedness; kinship has a conceptual common core that distinguishes it from other social relationships, and helps to unify the study of kinship across cultures.

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