

The Logic of Exogamous Sides in South Asia

White and Houseman 2001

We started our study from a close reading of Edmund Leach's **Pul Eliya** (Sri Lanka) and the genealogies in his monograph, which we converted to a kinship and marriage network in order to study the network structure.

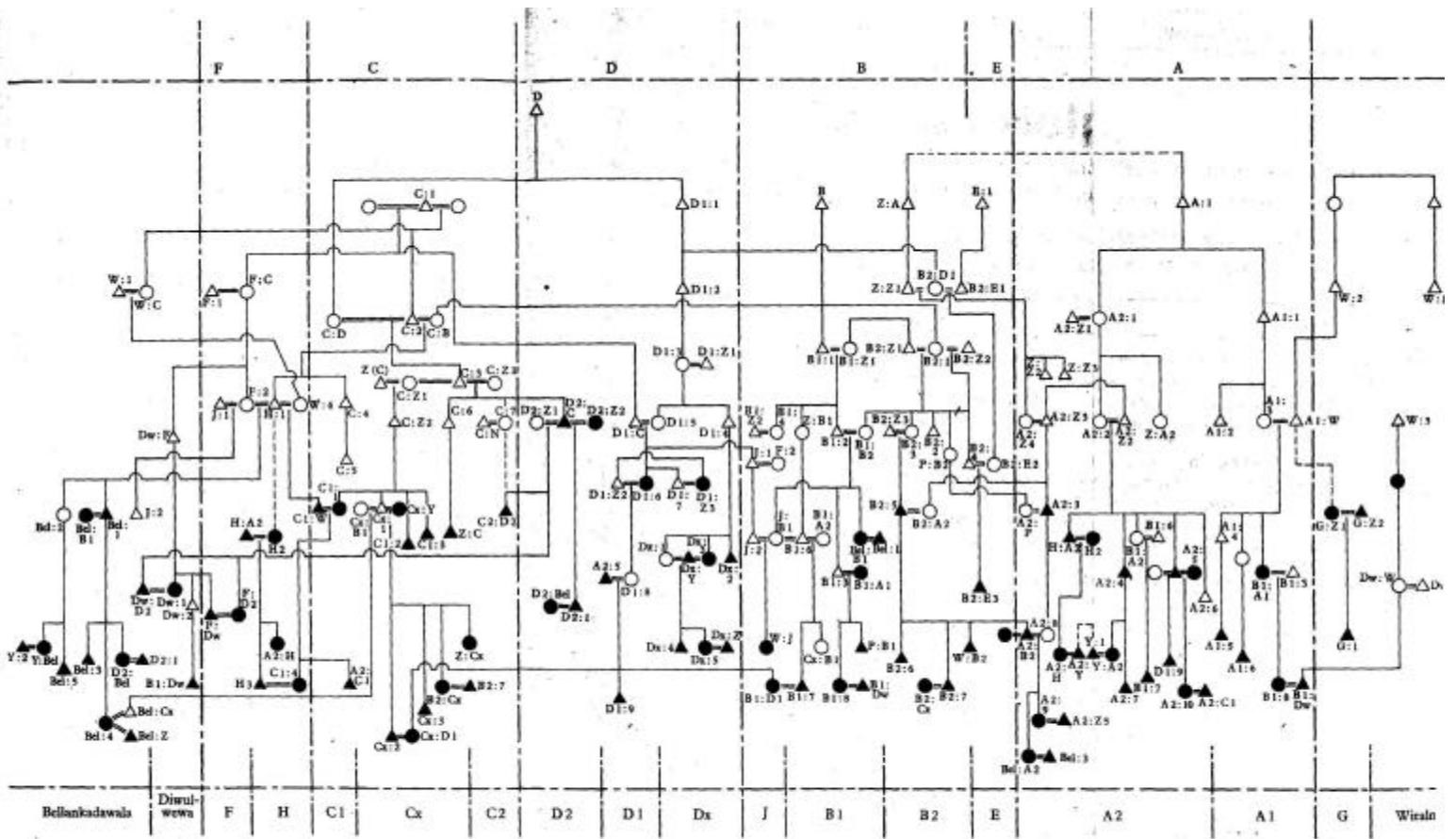
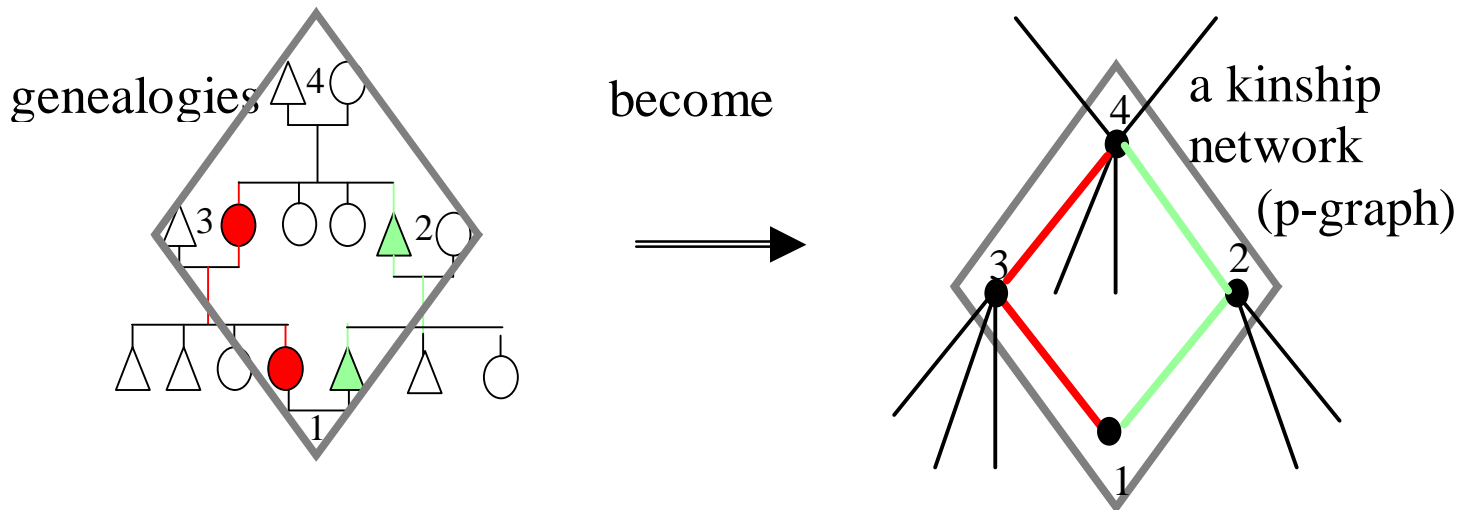


Chart 1. Main genealogy showing pattern of residence succession in Pul Eliya compound groups. Capitals A-F in top line indicate compounds in existence around 1890 (cf. Map D (a)). Similar lettering in bottom line indicates compounds in existence in 1954 (cf. Map D (b)). To identify individuals by name see Appendix 3.

Families were organized by Leach according to compound (or village if outside Pul Eliya)

We converted Leach's genealogy to a network:



Numbered couples become the nodes of the network representation, with numbers automatically assigned by genealogical software. Individuals become lines that connect the marriages.

References:

Douglas R. White and Paul Jorion.

1992 "Representing and Analyzing Kinship: A New Approach."

Current Anthropology 33:454-462.

1996 "Kinship Networks and Discrete Structure Theory:

Applications and Implications." **Social Networks** 18:267-314.

Douglas R. White, Vladimir Batagelj and Andrej Mrvar.

1999. "Analyzing Large Kinship and Marriage Networks with

Pgraph and Pajek," **Social Science Computer Review**

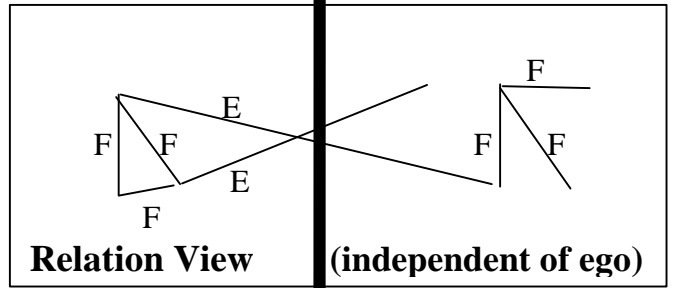
17(3):245-274.

LOCAL RULES AND... GLOBAL STRUCTURE (Sides)

I. FAMILIAR CROSSINGS

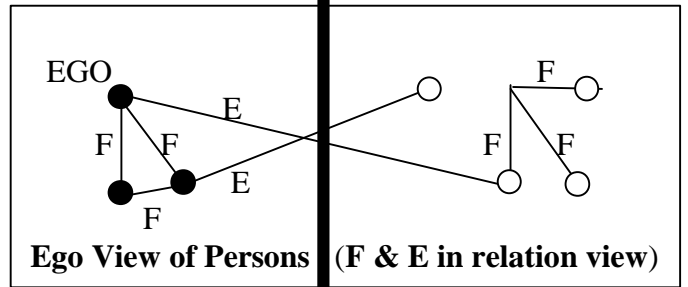
Faction Logic (relational)

__ of __	Friendship	Enmity
Friendship	Friendship	Enmity
Enmity	Enmity	Friendship



Faction Logic (personal)

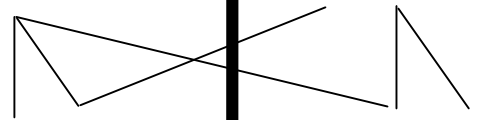
__ of __	Friend ●	Enemy ○
Friend ●	Friend ●	Enemy ○
Enemy ○	Enemy ○	Friend ●



(purely abstract)

Multiplication of Signs

__ of __	+ —	- —
+ —	+ —	- —
- —	- —	+ —

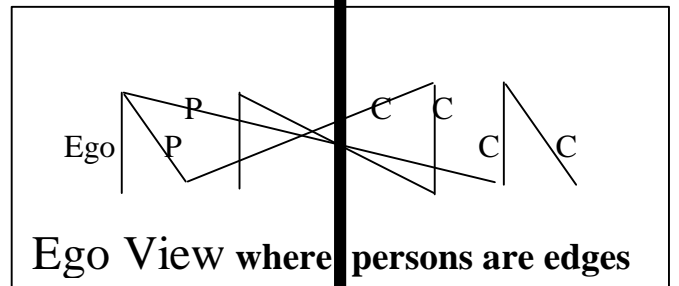


II. CODINGS UNFAMILIAR TO WESTERNERS

Cross/Parallel (viri type)

__ of __	Parallel	Cross
Parallel	Parallel	Cross
Cross	Cross	Parallel

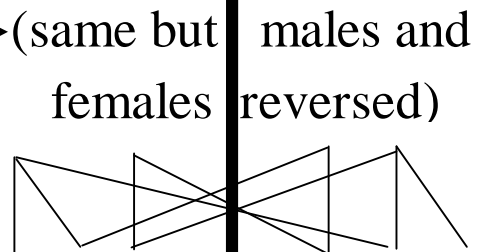
links thru female kin(P) and wives(C) change sides



Cross/Parallel (uxori type)

__ of __	Parallel	Cross
Parallel	Parallel	Cross
Cross	Cross	Parallel

links thru male kin(P) and husbands(C) change sides



There are no matrimonial cycles within a side, only between opposing sides (this is particularly evident with our p-graph genealogical diagrams).

A program that tests for the existence of sidedness was used to reorganize the graph. On the left and right are the couples in the two sides. Each side is a non-localized superset of compound groups, with each compound group linked vertically by (mostly) male heirs. Here we colored the nodes according to compound groups. The (mostly) vertical blue lines (for males) are the male heirs. Between the two sides there is symmetric exchange of women (yellow lines). The pattern is that of a patri-moiety, except that here there is no such descent rule here. The sidedness resides in the global pattern of marriages (marry on the opposite side) and not in any particular rule of blood marriage.

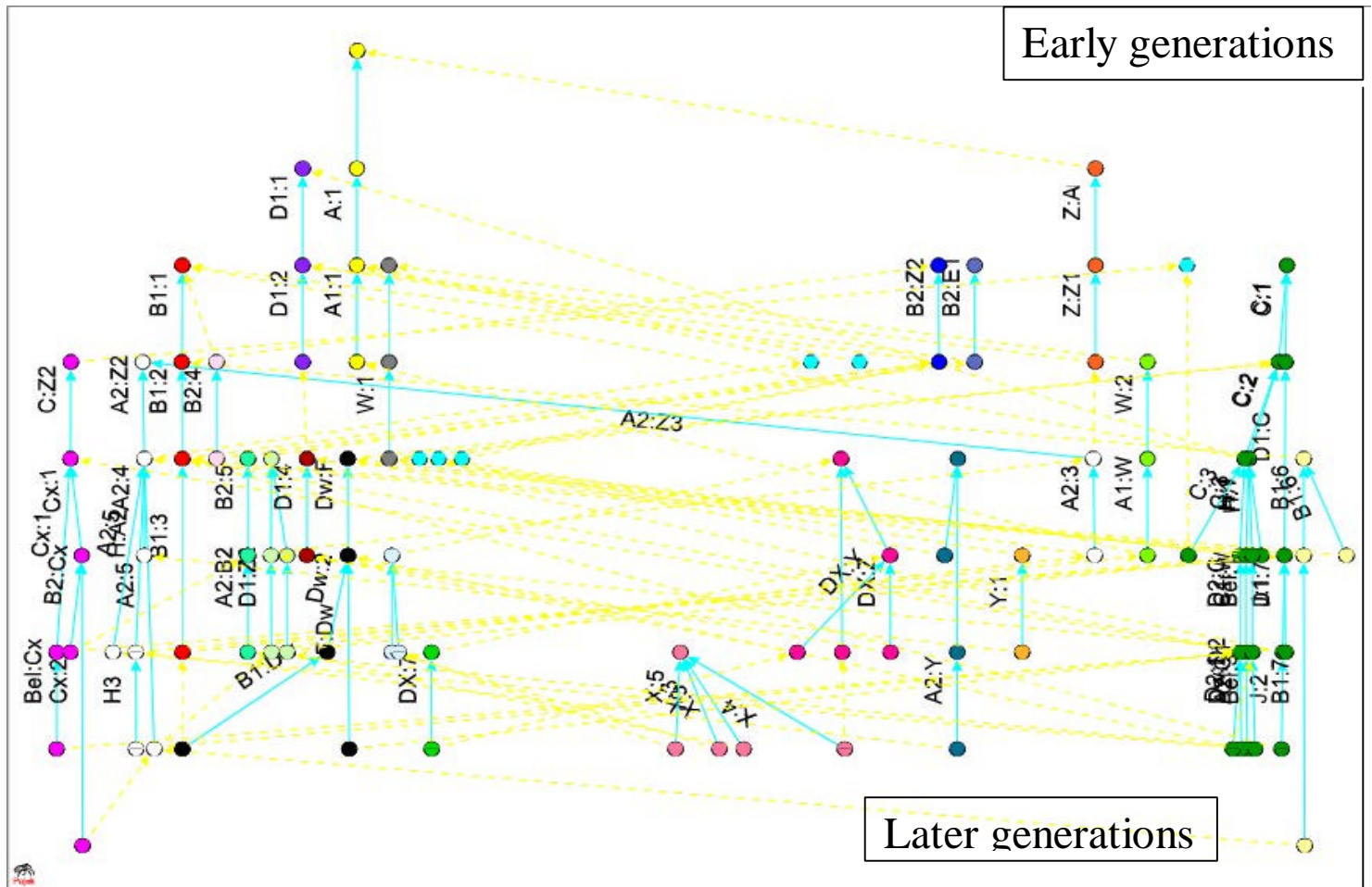


Figure 2. Sidedness and its exceptions, such as A2:Z3 in the center, Leach's identifier for a man of compound A2 who was the third such man to immigrate to Pul Eliya from a distant village (that is what the Z3 designates). Looking at the errors, it is clear that this not a patrilineal moiety system, which a sidedness structure closely resembles. The network structure itself serves is its own model.

Networks (or simulations), too complex to analyze in the mid 20th century, are no longer so in the early 21st. In a fin-de-siècle review of questions of kinship in **L'Homme**, Georg Augustins (2000) reviewed our network studies of sidedness (1998) in Pul Eliya, in Dravidian South Asia, on the basis of the materials that Leach published in 1968. We quote it because it conveys our present theme in a nutshell:

This ... work ... reconstruct[s] the quasi-totality of data of the ethnography for purposes of reexamination by means of [network analysis, using] the PGRAPH program. What is then revealed is that which Leach did not and could not see or comprehend without appropriate tools: that the marriages are in fact responsive to an immanent but barely visible logic that the authors call *dividedness* and more specifically, *sidedness*. The matrimonial network is bipartite, so that the marriages of parents and children partition in two distinct sets, but which have nothing to do with moieties. If the use of the computer tools demonstrates that "something" exists that confers a regularity to the marriages, however, this "something" – the sidedness of the diagram – is also difficult to translate into sociological or psychological terms [although it corresponds to the logic of the ego-centered kinship terms used by Pul Eliyans] (our translation, with the last phrase added)

Reference: Houseman, Michael and D. R. White. Network Mediation of Exchange Structures: Ambilateral Sidedness and Property Flows in Pul Eliya, pp. 59-89, in **Kinship, Networks, and Exchange**, 1998, eds. Thomas Schweizer and Douglas R. White. Cambridge University Press.

What Pul Eliya has, that might dispose to this kind of a 2-sided marriage network, is Dravidian kinship terminology, which is found in societies with a total population of over 60 million people.

But this is not supposed to happen in societies with Dravidian terminology like Pul Eliya, which lack moieties, descent groups and prescriptive rules of marriage.

Do other societies in South Asia with Dravidian terms have sidedness?

That's not known, because no anthropologist that we know of has looked at South Asian kinship and marriages to check.

What's the anomaly?

Anthropologists seem to have a biased way of looking at things. Our "models" tell us that societies with cognatic descent, lacking prescriptive marriage sections or moieties, do not have this kind of "sidedness."

Part of the Anomaly: Ever since Lounsbury's analysis of Dravidian terminology in 1964 we have known that a logic of "sidedness" is precisely what occurs in Dravidian cross/parallel classifications of relatives.

The egocentric rule for the particular kind of Dravidian terms that are common in South Asia (and elsewhere) is that for any two persons and their connecting relatives within a certain distance, each female in a kinship path counted through parent/child links changes the sides (**links thru female kin(//) and wives(X) change sides**).

Using a notation where m = male, f = female, + is a child to parent link, - is a parent to child link, and 0 is a parental couple, every odd sum of females corresponds to a parallel relative, and every even sum of females to a cross relative, as for example (starting with the leftmost female f):

f + 0 - m = brother (1f) //

f + 0 - m - m = brother's son (1f) //

f + m + 0 - m = father's brother (1f) //

f + m + 0 - m - m = father's brother's son (1f) //

f + m + 0 - f - m = father's sister's son (2f) X

f + f + 0 - m - m = mother's brother's son (2f) X

f + f + 0 - f - m = mother's sister's son (3f) //

This is the number of females rule for reckoning the cross / parallel distinction.

In societies with this Dravidian way of reckoning, parallel relatives are considered not marriageable unless there are exceptional circumstances: The exceptions, moreover, are folded into the rules and are key to understanding sidedness.

The anthropological bias in judging Dravidian reckoning of parallel and cross kin has been to assume that since the reckoning is egocentric, and only applies to close or kindred relatives, it cannot generate a globally sided network. Anthropologists have tied their thinking about sidedness to the concept of unilineal descent and to hereditary moieties or sections systems and have blocked out any other possibility.

To look at the problem in a fresh way, take one of the local descriptors of matrimonial sides, which apply equally well to kinship terms: “each female in a kinship path counted through parent/child links changes the sides” (**links thru female kin(//) and wives(X) change sides**).

Local properties of sidedness such as this were proven by Harary (1953), in his characterization of balance or duality in graphs, to have equivalent global properties, as follows:

1. **GLOBALLY**: A graph with two kinds of relations is sided if its nodes can be divided into two sides such that all relations of the first type (e.g., male; positive) are within the same side while all relations of the other type (e.g., female; negative – see below) are between sides.
2. **LOCALLY**: A graph with two kinds of relations is sided when for every path that connects a given pair of nodes the pair is on the same side when the number of edges of the second type within this path is even and on opposite sides when this number is odd (e.g., enemy’s friend’s enemy = same side, friend’s enemy’s friend = opposite).

(The theorem applies equally well to reversals of male and female in the example above as well as to the “an enemy of my enemy is not my enemy” paradigm).

In a marriage network, neither of these two statements will be true unless each person marries someone with whom they either have NO PRIOR relation or who is already OPPOSITE to them in terms of sidedness. Marriages with parallel relatives will violate both the local and the global criterion for sidedness. The two criteria are equivalent.

The equivalence of the LOCAL with the GLOBAL criteria for sidedness, however, violates the anthropologist's assumption that the GLOBAL structure of sidedness cannot be generated from the LOCAL rule. What is wrong here?

Anthropological assumptions about social structure are at fault.

The equivalence of the LOCAL with the GLOBAL criteria for sidedness has further and more interesting consequences, however. The local rule for recognizing and describing cross and parallel kin is a Social Model that is easily understood without reference to kinship terms at all.

Secondly, the implications for rules about marriage choices, such as avoiding marriage with a parallel relative, need not be implemented through kinship terminology, but by application of the Social Model.

Third, if the cross / parallel distinction is also present in the kinship terminology, the Language Model is simply REDUNDANT with the Social Model.

The Language Model (terminology) is not necessary to implement choices about not marrying parallel kin.

Now, back to the issue of instantiation and the anthropologist. Anthropologists are very fond of saying that the Dravidian “kinship system” consists of a cross / parallel distinction in kinship terminology plus symmetric cross-cousin marriage (symmetric alliance).

But this is only an instantiation of the full potential of a sided system: neither of these two very concrete features are necessary conditions of sidedness.

It seems absurd to say, but the anthropological model of “Dravidian systems” that has been in play for 30 or more years is simply a concrete metaphor for a system that anthropologists have only poorly understood, an imagined instantiation and imaginary “origin” of a Social Model with much broader implications. Much like what happens with names of newly encountered object: as in calling a photocopier after its exemplar, “the Xerox machine,” regardless of the brand name.

Six kinds of models are in play here:

1. The phenomenological network model of sidedness, i.e., sidedness as measurable property of a concrete network, as in Pul Eliya.
2. The Social Model of how sidedness is computed locally, e.g., by generative rules, and the strictly logical equivalence of local sidedness with global sidedness, as in the mathematical theorem.
3. The phenomenological language model of how relevant aspects of sidedness are implemented within a particular kinship terminology.
4. The Language Model of how relevant aspects of distinctions such as sidedness are implemented within kinship terminologies generally, e.g., by generative rules.
5. The phenomenological decision models as to how each of a series of people chose to marry and how each decided who to marry in terms of factors like sidedness and with respect to what terms of reference, address, etcetera, they decided to use with different people in the community and elsewhere.
6. The Cultural Model of shared aspects of decision-making with respect to factors such as sidedness as they are implemented within kinship terminologies and/or with respect to the Social Model as applied to persons in different positions in their network.

To us, it seemed that the simplest approach to the problem of sidedness laid back at levels 1 and 2 and their relation to models 3 and 4. Since no other anthropologists had looked at marriage behavior – what people do rather than what they say – we thought we might gain some simpler understandings and explanations of the sidedness phenomena that were missed in previous decades of research.

We decided on a rigorous set of questions about observed behavior in a network context.

First, we thought that the local rule for sidedness might be ambiguous in concrete cases if for no other reason than the fact that people intermarrying in small communities have more than one type of genealogical-cum-marriage tie. If one or more couples broke the sidedness rule, might not that reverberate so that subsequent pairs of relatives would find more inconsistencies? That is, when they tried to reconcile their different pathways of relationship, some of which might be parallel and others cross?

We had found that there were some exceptions to sidedness in Pul Eliya, but we could not know for certain how people actually resolved this problem in choosing a spouse. Hence we took an experimental approach, and divided the marriage network into two subnetworks that suited our question about reconciling errors.

The first network we examined is shown below, and consists of all those persons in Leach's complete Pul Eliyan genealogy who married consanguineal relatives, plus all of the linking relatives for each consanguineal marriage. Our idea was that people might be more clear about which of their consanguineals were parallel relatives and which were cross. If this were true and if parallel consanguineals were avoided in marriage, then this subnetwork should be relatively free of errors to perfect sidedness.

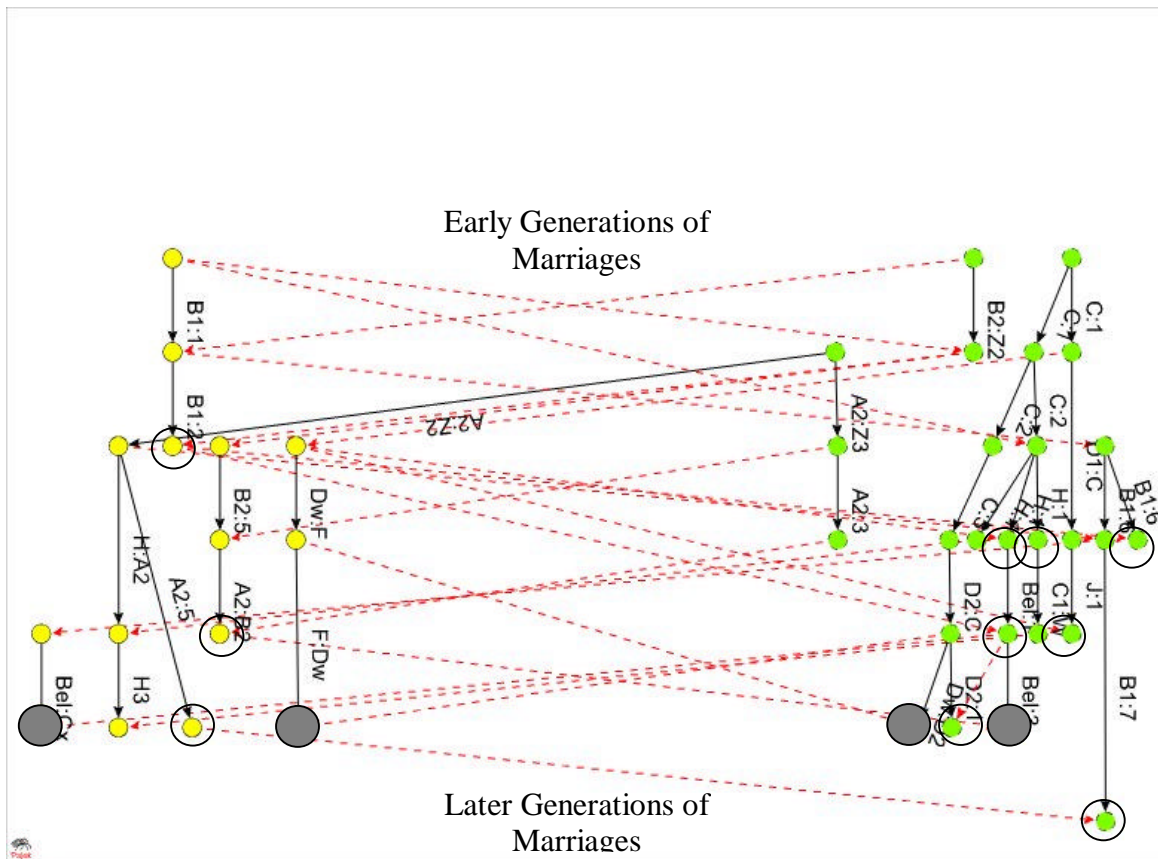


Figure 3: Consanguineal Marriages (14, circled), each with their connecting couples. Of the 34+22=56 edges in this graph 2 are incorrectly sided.

(The four oblique marriages (● ●) are viri-sided – this will become relevant later)

This first hypothesis was correct. Not only were there only two errors to sidedness in this network, but both were exceptions only to a descent-based conception of sidedness, and not to the conception of proper marriages as explained by Leach. The two errors confirmed Leach's ethnographic statements that this was not a system built on descent rules, but on considerations of village of origin and compound residence as well as issues of inheritance of compound property.

One exception was created by two brothers who came from a distant village and married women whose children married into opposite sides of the village. Intricate exceptions help us to formulate the rules of sidedness.

The other exception was the marriage of a Pul Eliyan man to a parallel fourth cousin who had been brought up in another village. Thus, the kin ties of members of distant villages, or of distant relations from nearby villages, seemed not to be taken into consideration in determining suitability for marriage or in affecting sidedness of offspring. Leach is adamant on this point: Pul Eliyan kinship is cognatic rather than unilineal, a major point of difference from a system of hereditary moieties.

In Pul Eliya, sidedness was a statistical tendency, not determined by a rule of descent.

But Leach himself never perceived the network sidedness that were implicit in his published genealogical data.

When we put the whole network back together using our consanguineal subnetwork to help clarify the two distinct sides in the village, we discovered another cognatic phenomena. Typically, compounds are inherited by sons and compound property mostly by males. Some women who were heirs to their compound for the simple reason that they had no surviving brothers, however, appeared to take a position in the structure of matrimonial sides that would be identical to that of the missing brothers, and opposite to that of a woman who has brothers.

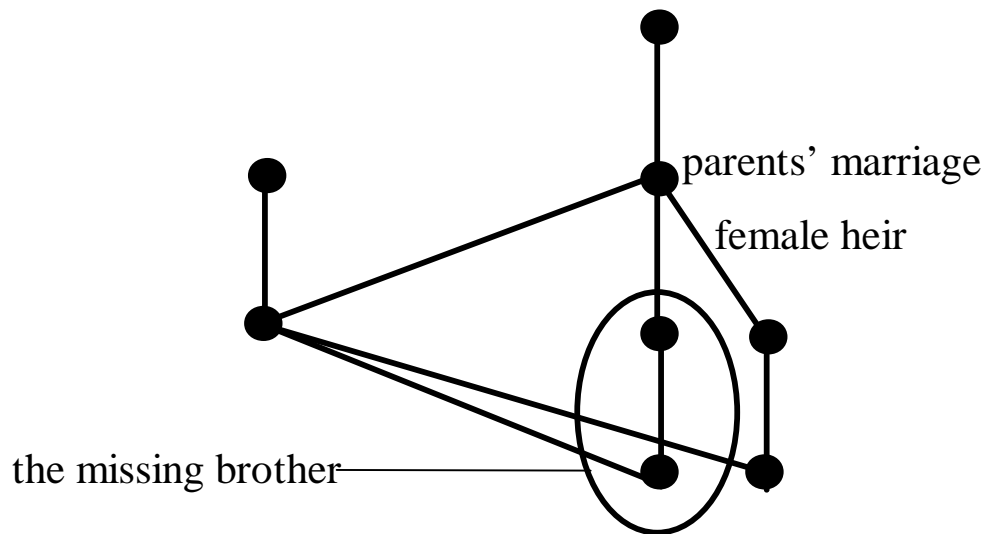


Figure 4: Reassigning Female Sidedness in the Case of Missing Male Heirs

Intricate exceptions such as these help us to formulate the rules of sidedness in cognatic societies.

Finally, even when we had arranged the sides to take the errors with consanguineals and the errors with female heirs into account, the total network, when put back together, had a much higher rate of errors than did the consanguineal network. We were correct that (a) there was still a strong statistical tendency towards sidedness ($p < .0000000001$), and (b) marriages between people who were not consanguineals had more errors to sidedness, consistent with our idea that when some errors are present, sidedness might be more ambiguous to determine if people have several distinct kinds of relationships.

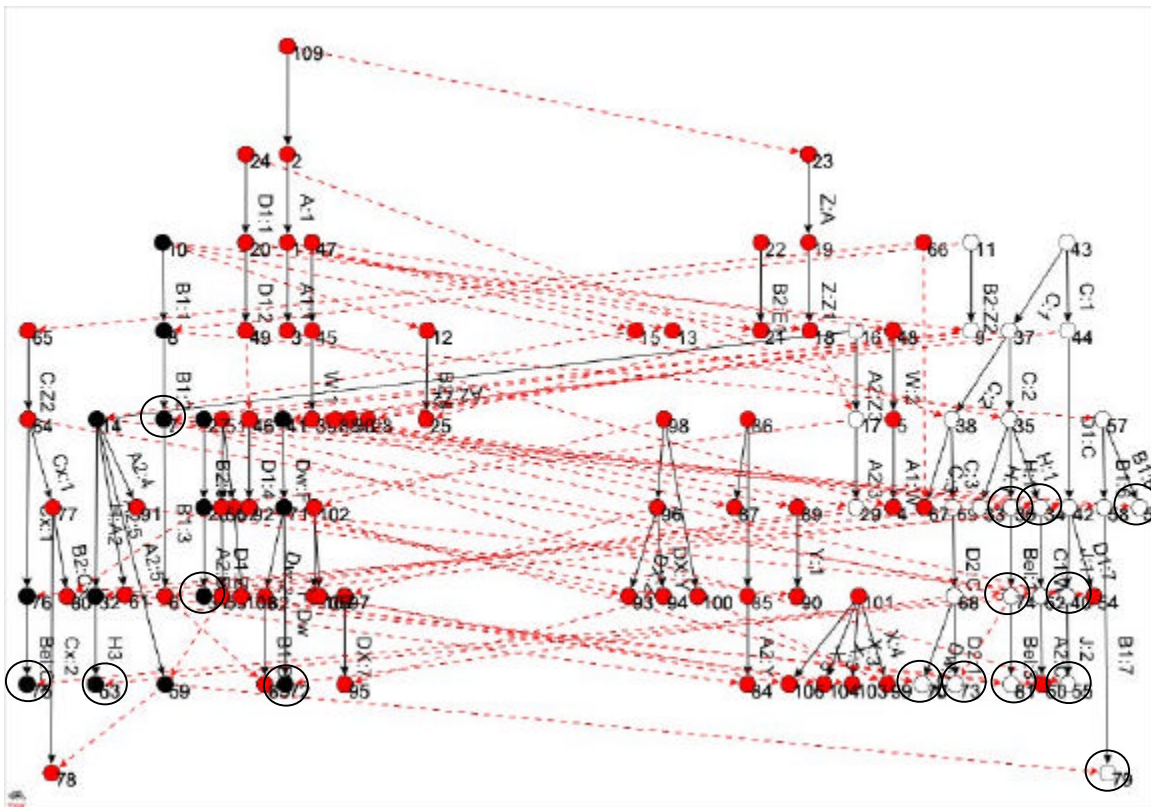


Figure 5: All Marriages (14 consanguineal couples, circled), 9% error added

We also approached the problem in a rigorous way by a statistical analysis of marriage choices made within the actual network, which confirmed the results we have already seen. See:

White, Douglas R. 1999. Controlled Simulation of Marriage Systems. **Journal of Artificial Societies and Social Simulation** 2(3). <http://jasss.soc.surrey.ac.uk/2/3/5.html>

What is remarkable at the end of all this is (1) that sidedness emerges behaviorally in a cognatic society even in the absence of a descent or hereditary moiety rule, (2) that there is an amazing consistency between the Social Model for sidedness and the Language Model, and (3) that there is also a general consistency with a South Asian or Dravidian regional “Cultural Model” preference for exchange marriages, even if not necessarily in the form of cousin marriages.

Further, in spite of the “messiness” of sidedness in this cognatic society, people are able to make marriage decisions that are statistically consistent with the fact that a local rule for sidedness, one that is relatively consistent across multiple relationships (as found in a small intermarrying community), is also able to generate a statistical tendency towards global sidedness structures.

Our general conjecture, which is the inspiration for the title of our paper, is that a statistical tendency towards global sidedness structures is a characteristic of societies with Dravidian terminologies generally, and especially in those societies with small intermarrying castes or communities. It is also our expectation, however, that as endogamy is diluted by marriages at greater distances, and as more people are present in the system from greater distances, exceptions to sidedness will proliferate, but the basic structure will replicate in the endogamous cores or subnetworks of such communities.

If these conjectures are true, it also implies that anthropologists have continued to misunderstand the social, cultural and linguistic construction of Dravidian societies and of the many other Dravidian-like social structures around the world, and thereby missed a significant opportunity to understand the complex yet mutually sustaining relationships between Social Models, Language Models and Cultural Models, their closely intertwined instantiations, and the extent to which these very different types of models instantiate one another.

Let's now use this case to illustrate some general principles, for which intricate patterns and exceptions may help us to formulate the rules.

What is the relationship between actual marriages and Dravidian terminology for the case of Pul Eliya? In thirteen of the twenty consanguineal marriages, it would make no difference if the couple counted sidedness (crossness suitable for marriage) using the even number female rule (**links thru female kin(//) and wives(X) change sides**) or an even number of males rule. The cross / parallel distinction can be counted this way for all same-generation relatives. We call these the reversibly-sided relatives, reversible as to the counting rules, both of which agree as to cross and parallel.

For two relatives of adjacent generations, it makes a huge difference whether sidedness is counted using the even number female rule or the even number of males rule. A couple that is cross (X) by one rule is parallel (//) by the other.

Of the six G^{-1} blood marriages with a woman in the next lower generation, all are viru cross (X), counted by the number of females rule. These are oblique marriages that definitively skew the tendency in Pul Eliyan sidedness towards a viru-sided rule approximating a patrimoiety. Exceptional marriages skew the rule of sidedness.

The one G^{+1} marriage with a woman in the next higher generation is uxori cross (viru parallel); this is the only non viru-sided blood marriage, and is a parent's distant cousin.

Here are the data from the perspective of male speakers in relation to potential spouses. Note all the G^{-1} marriages (in blue) inflect towards viri-sidedness and none towards uxori-sidedness. These “inflecting” marriages are with distant cross-kin and are almost as frequent as the cross-cousin marriages taken as markers of Dravidian systems.

	KIN TERM SIDEDNESS		
NETWORK SIDEDNESS	“Marry Cross” (X)	“Do Not Marry Parallel” (//)	
G^{-0} Reversibly X	MBD 5 FZD 3 2nd cousin 5		
G^{-1} Viri X	MMZSSD 1 MMZDDD 1 FFMZDSSD 1 MFFZDSSD 1 MFMBDDDD 1 MFMFZSSD 1	These are the marriages that inflect the system towards viri-sidedness	
G^{+1} Viri X	MFZ ()		11
G^{+1} Viri // = Uxori X	MFMBDD 1	FFZ FFBD	11 9
G^{-1} Viri // (Uxori X)	Such marriages would inflect to uxori-sidedness	FZ MBSD MMZSDD MMBDDD	57 25 11 11
G^{-0} Reversibly //		MZD FBD 2nd cousin	40 42 87

Table 1: Correlation Between Cross / Parallel Sided Relatives and who Pul Eliyans Marry

The exceptional “inflecting marriages,” as between a man and his classificatory ZD ([shown in blue in the table](#)) are very common in societies with Dravidian terminology, and are the types of marriage that inflect the Social and Linguistic Models of Dravidian away from reversible sidedness and towards viri-sidedness (or potentially, uxori-sidedness). Inflections make the rule of sidedness.

In general, paying attention to behavioral detail, we see that it is from the types of exceptions and inflections that we learn the rules of Dravidian systems and can see that in large part, it is these (behavioral) exceptions that are critical to how the “rules” of Language and Cultural Models are constructed. There is much more consistency here between Language Models and behavior (Social Models) than previously thought.

As a final summary, the last figure shows the varieties of Dravidian “systems” as inflected specializations of a more generic model in which sidedness is reversible. They are instantiations of the subtitle of our paper, “where exceptions make the rules,” and may provide a Transformational Model of how Dravidian systems evolve and connect with other kinds of kinship systems.

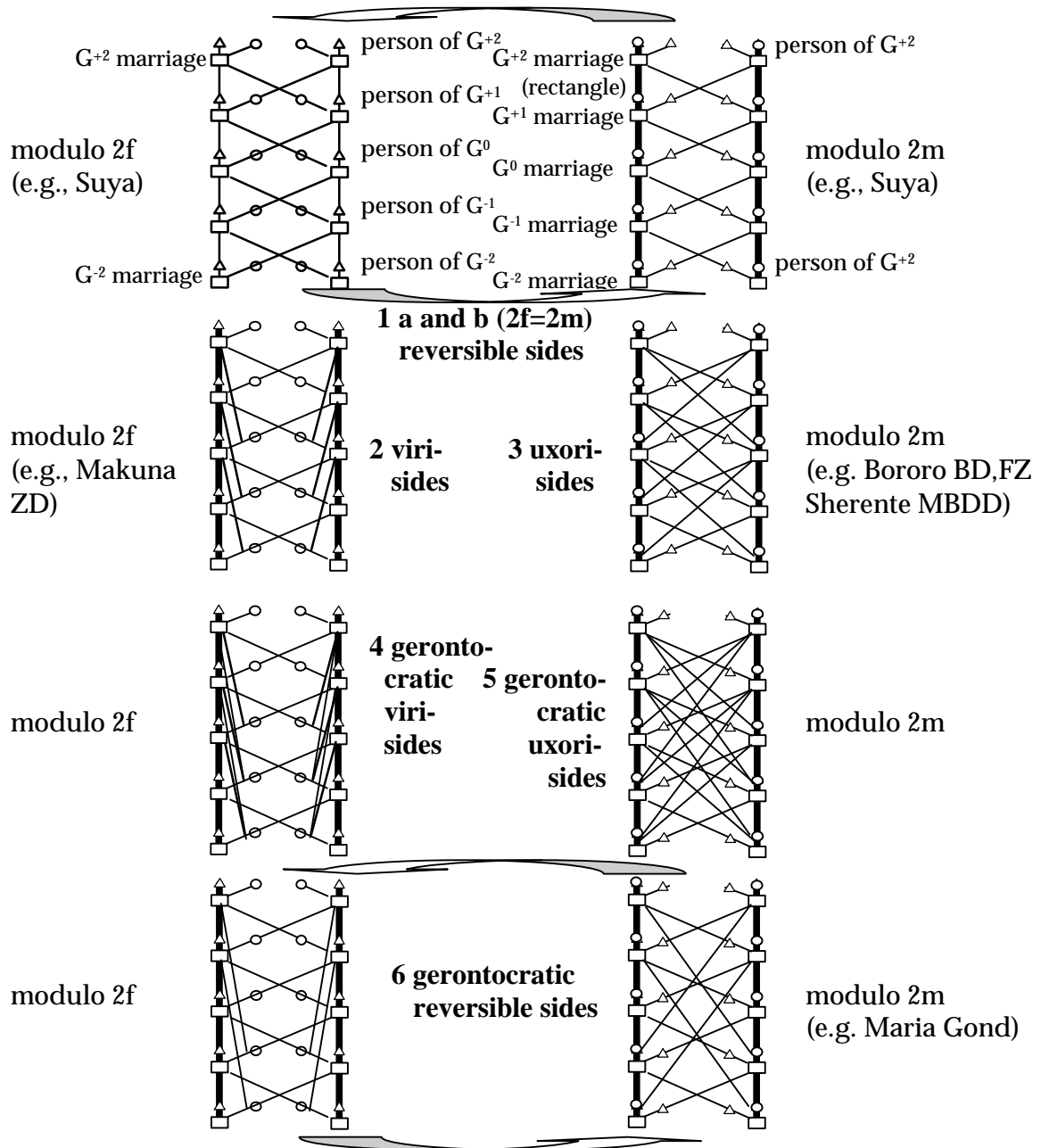


Figure 6: Varieties of Cognatic Sidedness

See also: Houseman, Michael. 1997. Marriage networks among Australian Aboriginal populations. **Australian Aboriginal Studies** 2:2-23.