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A NOTE ON THE MURNGIN SYSTEM*

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Whoever has once strayed into the land of kinship study must be surprised at the amazing feats of social engineering constructed by Australian aborigines. One soon finds that these edifices, generally known to anthropologists by the name of "section system", are not only full of variety in form but also widely distributed outside Australia in parts of Melanesia, Indonesia, Burma, India, Africa, and even as far as South America.

For aborigines and anthropologists alike, the regulation of marriage choice as, for instance, by certain regulations prescribing that close cross-cousins--patrilateral, matrilateral or both--should match together is the most dramatic aspect of these kinship system in action. But already since the end of 19th century, anthropologists have continued to argue on how these kinship systems might and do work. So the literature of contention is as large as the literature of field reports, and not a few brilliant analyses coupled with ingenious models in the form of diagrams or charts have been presented to us.

But in spite of all these efforts there still remain a number of Australian kinship systems regarded as controversial. It is therefore no wonder that severe criticism has arisen with the comment that modern anthropologists are too fanatically attached to the functional method, and that the resulting excessive indulgence in field work has given rise to the decline of arm-chair ~~study; today~~ the solution of problems such as the Murngin system, Cargo cult or social change, seems apparently out of the reach of the functional approach, no progress has been made since the beginning of this century; the study of Anthropology is stagnating... (see Jarvie 1964).

However this may be, it is true that many puzzling problems are accumulating and waiting for anthropologists to rack their brains upon. Like chess-problems to players,

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* This essay was originally published on the Bulletin of The Visiting Scholars Association, Harvard-Yenching Institute, Harvard University, China Branch Vol. 5&6, 1965-1967. But due to error the two diagrams--the most essential parts of this essay--were dropped, causing the description to be ambiguous. In consideration of the extremely limited circulation, a reprint appears desirable. I have taken this opportunity to revise the sentence in some parts, and to correct some mistakes. One new diagram and the bibliography which were lacking in the original are also added.

they always present an alluring challenge to anthropologists, and I also can not escape their temptation;·my present target is the Murngin system.

In spring of 1964 a hot discussion about the kinship system of the royal family of the Shang Dynasty took place at Academia Sinica. The fire was opened by K. C. Chang's article (1963) with patrilateral cross-cousin marriage as its major point. The Academy seethed with pros and cons. As a student of kinship, I was naturally brought into the whirl of the debate on Chang' theory. While in the process of checking up the basic datum--the royal family's genealogy characterized by the use of celestial stems as a part of the posthumous name--I found that there existed the possibility of offering a new interpretation. Thus in the fall of the same year I was able to finish my paper on the 'ten section system' theory (Liu 1965).

The most different problem in this paper was the pairing of marriage classes. I only proposed the ideal type and ascribed exceptional cases to polygamy. But the fact is that there is no society without exceptional cases in Australia, and that this situation is far from satisfactory explained. It is thus that the Murngin system came into my mind. This most extraodinary system is characterized by pairing two marriage classes (one regular and one alternate) for each section. It appears that this multi-class pairing marriage system fits better than the momo-class pairing system as far as my material concerned. But this complicated system has never been given a successfull interpretation and even some specialists consider its structure absurd. Indeed, as long as the principle is vague there seems to be no room for application, and I had to abandon my aim of applying it to my study. But my interest toward the Murngin system could not be hampered by this frustration, but was on the contrary incessantly increased.

In 1965, while working at Harvard, I concentrated my study upon the analyses of bilateral kinship systems. It was then that I had the opportunity of meeting Mr. John Harvey. Our incessant discussions about kinship were fruitful, and thus the draft of our paper, "Numerical Kinship Notation System", could be brought out at the end of that year. In this joint paper, we discussed the basic properties of kinship through a new concept of kinship category we proposed, exploring the fact that both kinship and group theory are intrinsically composed of the same axioms. Added to the establishment of a rule for kinship calculation, the application of mathematics to the study of kinship becomes tangible.

B2	NATI-E momo-e	B1	GAWEL arndi	B4	NATI-E momo-e	B3	GAWEL arndi	B2	NATI-E momo-e	B1	GAWEL arndi	B4	NATI-E momo-e	B3	GAWEL arndi	B2	NATI-E momo-e	B1	GAWEL arndi	B4	NATI-E momo-e
A2	MARI-E mokul-r	A1	MARI mari	A4	MARI-E mokul-r	A3	MARI mari	A2	MARI-E mokul-r	A1	MARI mari	A4	MARI-E mokul-r	A3	MARI mari	A2	MARI-E mokul-r	A1	MARI mari	A4	MARI-E mokul-r
D2	NATI-E momo-e	D1	GAWEL arndi	D4	NATI-E momo-e	D3	GAWEL arndi	D2	NATI-E momo-e	D1	GAWEL arndi	D4	NATI-E momo-e	D3	GAWEL arndi	D2	NATI-E momo-e	D1	GAWEL arndi	D4	NATI-E momo-e
C2	MARI-E mokul-r	C1	MARI mari	C4	MARI-E mokul-r	C3	MARI mari	C2	MARI-E mokul-r	C1	MARI mari	C4	MARI-E mokul-r	C3	MARI mari	C2	MARI-E mokul-r	C1	MARI mari	C4	MARI-E mokul-r
B2	GALLE galle	B1	GAWEL arndi	B4	GALLE galle	B3	GAWEL arndi	B2	GALLE galle	B1	GAWEL arndi	B4	NATI momo	B3	GAWEL arndi	B2	GALLE galle	B1	GAWEL arndi	B4	GALLE galle
A2	GATU gatu	A1	YUKIYUKO yukiyuko	A4	BAPA mokul-b	A3	MARAITCHA maraitcha	A2	GATU gatu	A1	WAWA YUKIYUKO yukiyuko yeppa	A4	BAPA mokul-b	A3	MARIKMO marikmo	A2	GATU gatu	A1	WAWA yeppa	A4	BAPA mokul-b
D2	DUE due	D1	WAKU waku	D4	DUE due	D3	WAKU waku	D2	KAMINYER kaminyer	D1	WAKU waku	D4	DUE due	D3	WAKU waku	D2	DUE due	D1	WAKU waku	D4	DUE due
C2	GURRONG gurrong	C1	KUTARA kutara	C4	GURRONG gurrong	C3	KUTARA kutara	C2	GURRONG gurrong	C1	KUTARA kutara	C4	GURRONG gurrong	C3	KUTARA kutara	C2	GURRONG gurrong	C1	KUTARA kutara	C4	GURRONG gurrong
B2	DUE-E due-e	B1	WAKU waku	B4	DUE-E due-e	B3	WAKU waku	B2	DUE-E due-e	B1	WAKU waku	B4	DUE-E due-e	B3	WAKU waku	B2	DUE-E due-e	B1	WAKU waku	B4	DUE-E due-e
A2	GURRONG gurrong	A1	KUTARA kutara	A4	GURRONG gurrong	A3	KUTARA kutara	A2	GURRONG gurrong	A1	KUTARA kutara	A4	GURRONG gurrong	A3	KUTARA kutara	A2	GURRONG gurrong	A1	KUTARA kutara	A4	GURRONG gurrong
D2	DUE-E due-e	D1	WAKU waku	D4	DUE-E due-e	D3	WAKU waku	D2	DUE-E due-e	D1	WAKU waku	D4	DUE-E due-e	D3	WAKU waku	D2	DUE-E due-e	D1	WAKU waku	D4	DUE-E due-e

NATI-E = NATI-ELKER, NATJIWALKER
momo-e = momo-elker, momelker

MARI-E = MARI-ELKER, MARELKER
mokul-r = mokul rumeru

DUE-E = DUE-ELKER, DUMUNGUR
due-e = due-elker, dumungur

mokul-b = mokul bapa

Fig. 1. The Murngin Kinship Terms.

It is a deep-rooted belief that mathematics is applicable to the study of section systems. So not a few papers have been dedicated, since the end of the last century to this subject, but most of them applied so-called semi- or quasi-mathematics and very few used a genuine mathematical approach (see White 1963). This was mainly caused by the fact that the anthropologists were unfamiliar with mathematics, and the mathematicians with kinship, but also by the fact that no exact clue was ever found which could permit directly combining the two together. However, an indirect outcome of modern developments in mathematics which have given increasing importance to the qualitative point of view in contradistinction to the quantitative point of view of traditional mathematics, has been to make specialists realize or believe that such subjects as mathematic logic, set theory, topology, cybernetics and others are useful or indispensable for the study of kinship algebra (e.g., Lévi-Strauss 1952).

It is Louis Dumont's recent paper (1966) which brings me directly back into this study. In this paper Dumont applies Levi-Strauss's brilliant hypothesis that "'regular' and 'alternate' marriage must alternate (in male line) with the generation" in order to construct his ingenious model of the Murngin system. Beyond question the excellency of Dumont's diagram surpasses all those that have been proposed before. But the Murngin's most typical characteristics of two pairing marriage sections and four generation circulation systems are completely ignored (that is, it seems, why he adopts Lévi-Strauss's hypothesis). Is it really theoretically impossible to construct such a model as the Murngin containing two pairing marriage sections and four generation circulation? My answer is yes. As long as it is adopted by some society and working smoothly, the structure must be reasonable and constructable. Although my Murngin study has only recently started, I propose in this paper some of my tentative views about the applicability of group theory to the study of the section system.

The first diagram (Fig. 1) is a chart of Murngin kinship terms compiled from Warner's (1930, 1937) and others' resources (e.g., Lawrence and Murdock 1949). Under this network-like frame, row (solid line) stands for patrilineal line and column (dotted line) for matrilineal one; ego (I) is situated on the center as origin (0), and takes its patrilineal line on row as x-axes and matrilineal line on column as y-axes with the positive for ascending generation and negative for descending generation. Thus a two-dimensional Cartesian plane is constructed and each kinship term (a capital letter indicates male, a small letter female) can be now demonstrated by set of real numbers.

From this coordinate diagram the following simple equations are obtained:

$n = 0, 1, 2, \ldots$

BAPA/mokul-bapa

$x = \pm (4n + 1)$

$y = 0$

DUF-ELKER/due-elker

$x = \pm (2n + 1)$

$y = -(2n + 3)$

GATU/gatu

$x = 3 \pm 4n$

$y = 0$

GURRONG/gurrong

$x = \pm (2n + 1)$

$y = -2(n + 1)$

KUTARA/kutara

$x = \pm 2n$

$y = -2(n + 1)$

MARI/mari

$x = \pm 2n$

$y = 2(n + 1)$

MARIKMO/marikmo

$x = 4n + 2$

$y = 0$

NATI-ELKER/momo-elker

$x = \pm (2n + 1)$

$y = 2n + 3$

WAWA/yeppa

$x = 4n$

$y = 0$

DUE/due

$x = \pm (2n + 1)$, except $x = -1$

$y = -1$

GALLE/galle

$x = \pm (2n + 1)$, except $x = 1$

$y = 1$

GAWEL/arndi

$x = \pm 2n$

$y = 2n + 1$

KAMINYER/kaminyer

$x = -1$

$y = -1$

MARAITCHA/maraitcha

$x = -(4n + 2)$

$y = 0$

MARI-ELKER/mokul-rumeru

$x = \pm (2n + 1)$

$y = 2(n + 1)$

NATI/momo

$x = 1$

$y = 1$

WAKU/waku

$x = \pm 2n$

$y = -(2n + 1)$

YUKIYUKO/yukiyuko

$x = -4n$

$y = 0$

The second figure shows the matrilateral eight-section system in the form of a kinship diagram. Here I introduce a new diagram differing from the traditional one, which is characterized by including the signs of marriage bond and sibling relatior ship. My new diagram is composed of two elements only, the patrilateral descent line and matrilateral descent line. Theoretically, the Murngin system should consist of four patri-lines (Aa, Bb, Cc, Dd) and four matri-lines (1, 2, 3, 4). This does not mean in Lawrence-Murdock's sense that the Murngin system is composed only from four lines. Two is the minimal number of lines for each moiety; one is wife-giver and the other wife-taker, thus four lines are inevitably necessary to compose the two moieties system. This also fits Murngin's other character, the four-generation cycle or circulation, which is clearly depicted in both patri- and matri-lines on the diagram.

The third diagram (Fig. 3) shows the formal model of the Murngin eight-section system constructed from Fig. 2. This model also is constructed of two elements or generators, m and f, the former representing the patrilineal path and the latter the matrilineal one, regulating all the generators in modulo four. Arrows on the matrilineal path indicate the direction of transit from ascending to descending generation (say, from mother to child). The patrilineal path is reversible. In the case of 'regular' marriage, it proceeds in the direction of 1 → 2 → 3 → 4 → 1 →, and for 'alternate' marriage in reverse.

'Alternate generation' system--father and son in different sections but grandfather and grandson in the same section--is a wellknown phenomenon among the societies practicing bilateral or patrilateral cross-cousin marriage. But the diagram above (Fig. 2) reveals the fact that no such 'alternate generation' occurs in matrilateral cross-cousin marriage system. The mechanics regulating this system is a 'n-generation cycle (or circulation)' principle, and in the Murngin case n is four. Though the 'circulating connubium' system has already been well-established by the Dutch scholars as early as last century in Indonesia districts where the matrilateral cross-cousin marriage is prominent (see Needham 1957), the 'n-generation cycle' principle seems to have been overlooked.

In the Murngin study Warner only found the four generation cycle working in the matri-line, and for the patri-line he attributed its regulating functions to the 'alternate generation' principle by reducing the four sub-sections of each moiety to two hypothetical sections. It is Elkin (1933) who first pointed out the fact that the Murngin's patri-line is also regulated by the four-generation cycle in regular marriage and that the cycle could be shortened by alternate marriage. But Elkin's finding was thought theoretically impossible, thus no Murngin theorist has ever been able to compose his model based on this principle.

In this short essay I show the applicability of mathematics to the study on kin-

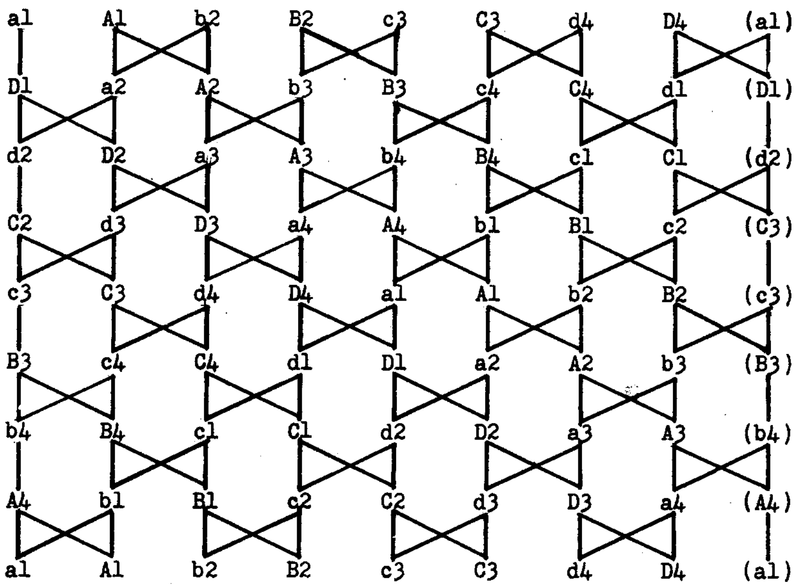

Fig. 2. A Matrilateral Section Model.

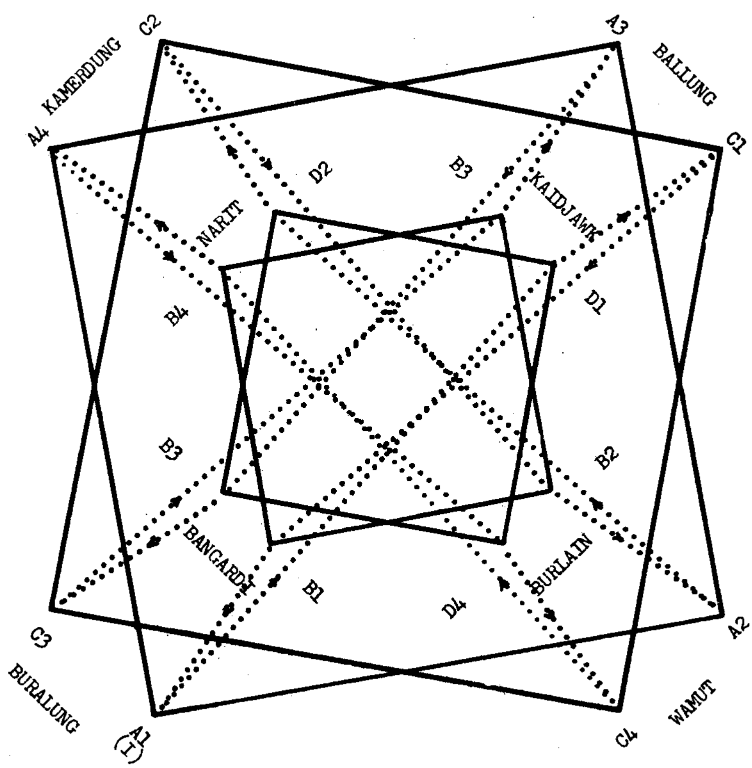

Fig. 3. The Murngin Eight-Section Model.

ship terminology as well as to the kinship structure of Murngin system. Here I have abbreviated all the necessary procedures for the formation of these diagrams, the interpretation and further application for the explanation of the Murngin kinship structure. They will be fully discussed in my forthcoming paper with the tentative title: "Formal Analysis of Prescriptive Marriage System: The Murngin Case". But I hope that those who might be interested and will check the diagrams with the basic data reported by Warner (1937) or Webb (1933), will easily find out how they work.

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