Tracking the Dynamics of Kinship and Social Category Terms with AustKin II

Patrick Mcconvell, Laurent Dousset

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Patrick McConvell
Australian National University
Canberra
Australia
Patrick.mcconvell@anu.edu.au

Laurent Dousset
CREDO – EHESS – AMU
3 place Victor Hugo
F-13003 Marseille
dousset@ehess.fr

Abstract

The first AustKin project (AustKin I) collected a large database of kinship terms from Aboriginal languages all over Australia, endeavouring to maintain standards of spelling, kin formulae and group identities, without losing the details of original sources used. An online geospatial interface has been used to map distributions of forms of terms and their polysemies or equations. The patterns of the latter provide identification of kinship systems as defined in ethnology. The project proposed and tested hypotheses about the evolution of such systems in Australia based on knowledge of the common polysemies and related changes. The next stage, AustKin II, builds on hypotheses from the current authors and others, testing these further by adding two more components to the database: the marriage rules and the social categories used by each group. Of the latter, section and subsection systems are unique to Australia. The aim is to gauge how these different systems fit together and propose how they evolved over time and how they influenced each other.

1.The AustKin project

1.1The design of the AustKin database.

The AustKin database documents words in the domain of kinship terminologies for 316 Australian languages or dialects (which could be grouped into about 200 languages, depending on criteria used). The 3i6 languages/dialects have an average of approximately two different wordlists each. from different ethnographic or historical sources for each language or dialect, with a total of over 22 000 words that belong to the domain of kinship.

Designing a database and an interface to such a database has revealed itself to be a complex matter since the number and diversity of variables that need to be taken into account are considerable. In summary, the following had to be taken into account:

A – Systemic variables
1) Kinship terminologies are not just words, but also relationships; and in particular they are related among each other.
2) A kinship terminology constitutes a system; but not all kinship terminologies belong to the same type of system.
3) Kinship terminologies change and they need to be placed against their chronological and historical background.

B – Sporadic variables
1) Kinship terminologies are recorded by humans, and often by non-linguists; they include errors.
2) Kinship terminologies are seldom complete, and need to be completed when possible through other sources.
3) Original Informants may not always have been local speakers.

Arriving at, or at least proposing, potential solutions to the B-type variables was not as difficult as it may appear. The solution chosen was to keep each kin term in its original form as it appears in the original source, while working with rewritten words (for instance those in an orthography standard for the whole database) linked to the original source, so as to be able to retrace every step of transformation and analysis

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undertaken for each kinship term and system. The standard orthography used for comparison is based on common ground between practical orthographies in use, and can be entered on a normal keyboard, rather than for instance the Interenational Phonetic Alphabet.

We have also chosen to record as many as possible sets for each language and to investigate these in parallel. And further, the individual researchers had the opportunity to create a "canonical" set out of these various and often partial word lists for analytical purposes.

Here again, it was important to be able to trace steps and modifications. Therefore, each such canonical set is attributed to a participant of the team, and each participant of the team can create his or her own canonical set, or create other types of sets of words based on typologies or groupings the researcher is interested in.

1.2 Standardisation of kinterm meanings

Kinship terms can generally be described using the following elementary idiom, which is in one form or another applied in anthropology and linguistics, but which we have to some degree adapted to our needs.

Females:
M = Mother (one generation above, direct line)
Z = Sister (same generation, identical link to M or F)
D = Daughter (one generation below, direct line)
W = Wife (same generation, alliance, reciprocal of H)

Males:
F = Father (one generation above, direct line)
B = Brother (same gen., identical link to M or F)
S = Son (one generation below, direct line)
H =Husband (same generation, alliance, reciprocal of W)

Additionally, since this element is in some cases structurally significant, the following two codes are used to indicate relative age difference:
e = elder
y = younger

Also, for some terms, the gender of the propositus needs to be detailed: f=female; m = male. The 'propositus' refers to e.g. 'John' in 'John's father'. Thus, for example, a man's patrilateral female cross-cousin is a father's sister's daughter and is coded as mFZD. Terms for grandchildren require this distinction of gender of propositus to be made. For instance the reciprocal of MM is fDS or fDD, whereas the reciprocal of MF is mDS or mDD.

'Cross' in the term 'cross-cousin' means that there is difference in gender between the first two kin links in the kintype e.g. beween 'mother' and 'brother' in MBD and 'father' and 'sister' in FZD. The obverse is 'parallel', where the gender of the two links is the same, as in the parallel cousins MZD and FBD. In many kinship systems around the world, including in Australia, this is a fundamental distinction: for instance 'cross-cousins' can frequently marry, whereas parallel cousins are classed as siblings, and cannot marry. 'Cross' and 'parallel' are also used for other relations e.g. MF is a cross-grandparent and MM is a parallel grandparent.

The way of coding by letters concatenated into strings representing kintypes allows for the search and establishment of equivalences (also known as 'equations' or 'polysemies'). For example, if after searching for equivalences, the words for MBD and FZD are found to be identical in some languages, then we can assume that cross-cousins are not distinguished according to father's or mother's line. Such conclusions have important consequences for the identification, for example, of so-called skewed systems). In such systems, the equivalences are between vertically adjacent generations, for instance an MBD can be called M in an Omaha system, which identifies relatives linked vertically in the male line.

1.3 Kinterm polysemies and kinship systems

A well-used search function in the AustKin database is the polysemy search. This finds languages in which specific kin types are united in one kin term. So to take the examples already mentioned, we can use this function to find languages in which MBD=FZD, or MBD=M. These instances of polysemy can then be mapped on-line using the geo-spatial interface of AustKin. The actual forms of these terms can also be mapped using another search function and overlays of language families and subgroups used to get a preliminary idea of whether the forms and the polysemies are correlated with linguistic groupings.

These polysemies are the prime features which identify what we know as 'kinship systems'. MBD=FZD, for instance, is a symmetrical system of cross-cousin terminology and, as discussed in the section on AustKin II, tends to be associated with symmetrical cross-cousin marriage. On the other hand, if MBD ≠ FZD (the terms for the kin types are different) then this an asymmetrical system, associated with asymmetrical marriage in many cases.

MBD =M is a feature of an Omaha skewing system. Even in the case of skewing, it is often the case that there is variability between the use of separate or the same term depending on social and discourse contexts, remarked also for other types of systems in Australia (Dousset, 2002, 2003) as well as elsewhere in the world by Kronenfeld (2009). The database allows coding of such contexts of variation.

From Morgan (1997 [1871]) on, it has been remarked that there is a limited set of ways in which kinship terminologies vary, and there have been several attempts to codify these as named systems. The normal usage of the term 'kinship system' in anthropology emphasises patterns of equivalence as discussed in the above paragraphs Systems which have more than one diagnostic equation can be plotted using the AustKin database. The 'Kariera' system, named after a language group reputedly with this pattern in its full form, exhibits several equations and non-equations in the grandparental generation

MM=FFZ≠FM=MFZ; FF=MMB≠MF=FMB;

This type of system also usually has the symmetrical cross-cousin pattern FZD=MBD, FZS=MBS . However, adding additional criteria for these named types may not be best practice. Rather, one of the strategies we have followed in AustKin I research is to propose hypotheses about which are the most robust diagnostic patterns and then verify empirically in our database the extent to which other patterns can be predicted by the most diagnostic pattern of polysemy, e.g. the grandparental equations or non-equations cited above for 'Kariera' (McConvell and Hendery, to appear).

'Kariera' itself can be considered as a sub-type of the Dravidian system, found in many societies on all continents, where 'cross' and 'parallel' relatives are rigorously distinguished. However, in the Australian Kariera systems this characteristic of distinguishing cross and parallel is found strongly expressed in the grandparental generation, whereas elsewhere in the world this may not be the case.

Kariera is only one of the systems in Australia. Others include the 'Aranda' system in which

MM≠FFZ≠FM≠MFZ; FF≠MMB≠MF≠FMB

in other words, twice the number of distinctive terms. Other kinds of systems are those with asymmetrical cross-cousin terms (eg FZD≠MBD) and asymmetrical grandparent terms, which form a kind of half-way house between Kariera and Aranda, for instance

MM≠FFZ≠FM=MFZ; FF≠MMB≠MF=FMB

One system which neutralises the cross-parallel division found in Kariera is the so-called 'Aluridja' system. In some such systems the main feature is the neutralisation of distinctions between cross-cousins and parallel cousins/siblings. In some systems, such as in the Western Desert, the distinction between cross and parallel grandparents is also neutralised yielding a system like the modern European grandmother-grandfather terminology.

1.4 Reconstruction of proto-forms, proto meanings and proto-systems

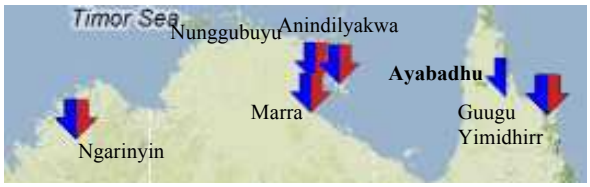
While anthropological (ethnological) research on kinship has sometimes been comparative, producing synchronic typologies of systems, it has rarely focused on diachronic change and reconstruction. Even the work on transformations from Levi-Strauss to more recent significant work such as Godelier et al. (1998) has not tied transformations to times, places and lexical forms.

In linguistics, however, there has been a current of research on reconstructing kinship terms and systems (e.g. Blust, 1980; Whistler, 1980), but not in Australia. Our aim in the AustKin project has been to apply the comparative method to Australian kinship data using systematic querying of databases, and marry the results to anthropological work.

One of the key issues in kinship reconstruction is understanding and prediction of types of semantic change. A guiding principle has been that most semantic change happens via a stage of polysemy. In our database we can find instances of polysemy A=B which lie between meaning A

and meaning B. So for instance we can map M=MBD and MB=MBS, two of the key Omaha equations. These show distributions of this polysemy (with different forms of kinship terms) in various areas (Figure 1, see McConvell, in press).

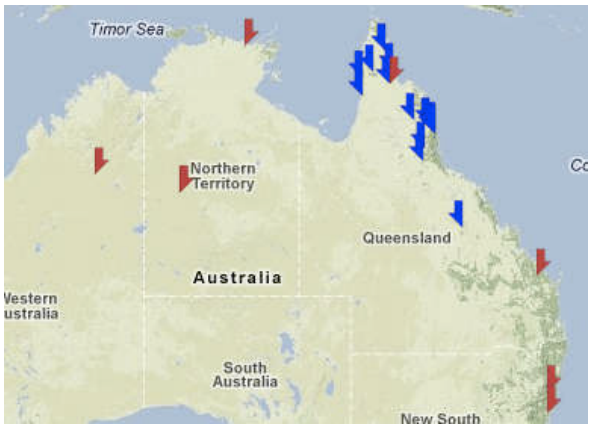
Figure 1: Omaha skewing polysemies in Northern Australia



These polysemy patterns have implications for the change in meaning of terms and their reconstruction. Note that one of the languages with an Omaha skewing pattern in Figure 1 is Ayabadhu in eastern Cape York Peninsula. Now look at the distribution of cognates of the root for MB in Ayabadhu (*kaala*) in Figure 2. The MB meanings are all clustered around Cape York Peninsula in the Paman subgroup of Pama-Nyungan and to some extent south of there (the left-side blue half-arrows). However there are also cognates scattered north-west into Yolngu, in North-east Arnhem Land, west into Ngumpin-Yapa, south-east into Southern Queensland and Northern New South Wales. All these latter forms of the root (the right-side red half-arrows) have the meaning of (matrilateral) cross-cousin and/or spouse or sibling-in-law (the latter polysemy change is due to cross-cousin marriage).

The hypothesis to explain this striking pattern is that the original meaning is MB, as reconstructed in proto-Paman, but also, we suggest, in proto-Pama-Nyungan. The meaning change to MB's child (MBD/MBS) and subsequently extended to spouse through another common polysemy, is due to the existence of Omaha skewing in Paman languages, which is the bridge between the uncle and cousin/spouse meaning. This bridge remains intact in the form of a polysemy in some languages such as Ayabadhu.

Figure 2: distribution *kaal MB > MBS > spouse



This method of reconstruction has now been applied to many of the kinship terms in our database, providing reconstructions of proto-forms and proto-meanings with accounts of semantic change which accord with the highly constrained types of polysemy we know of, and geographical distribution of the languages.

While kinship terms are usually inherited, there are a number of loan forms, and the source of these is recorded in the database. Two types of these have been examined in the project.

1. forms which are imported to fill a gap in a system when there is a change in kinship system, for instance the fact that all terms for FF in Ngumpin-Yapa are borrowed from different sources points to a change to an Aranda system from one with less grandparent terms

2. forms which are widely borrowed (*Wanderwörter*) tend to be affinal (in-law) terms or have a polysemy which includes an affinal sense. The examples of these examined seem to indicate a change in marriage arrangements and associated avoidance and joking relationships over time (McConvell, 2011).

2. The AustKin II project

We are now designing an AustKin II database, linked to the AustKin I but being able to store, handle and map two additional features of kinship and social organization: 1) marriage rules, including aspects of prescription, proscription (unmarriageability) , preferential and alternative marriages; and 2) category systems such as moieties, semi-moieties, sections and subsections. We aim to track and visualise how these systems interact with each other over time.

2.1 Marriage rules

In Aboriginal Australia, marriages take place between kinship categories or classes, not just between individuals, lineages, clans or moieties. A preferential or prescribed wife for a male propositus may be a MBD (mother's brother's daughter); or she may be a MMBDD (mother's mother's brother's daughter's daughter), or she may be a classificatory – not actual - DD (daughter's daughter) etc. In most cases, the hypothesis can be advanced that the kinship terminologies which are part of the AustKin I database are coherent with this new database that will record and map the marriage relationships.

Earlier attempts at typologies of kinship systems often included marriage rules in the definition of kinship systems. This would not be a wise precedent for us to follow. We know for instance that sometimes the marriage systems do not 'fit' exactly with the kinship terminologies. Because of our concern with change we also need to record such cases very carefully as they may represent 'phasing in' of a kinship terminology or marriage system not totally in harmony with each other due to time-lag between them, or competition between different systems exerting influence on a group. It is important to record marriage rules separately from kinship systems to compare them as independent factors.

In many cases there is a main 'straight' marriage partner recognized, and this person can be designated by a kin type e.g. MBD for a man. These are often classificatory rather than actual cross-cousins, and in some groups actual first cross-cousins are unmarriageable. For many systems though there is a hierarchy of preference for marriageable kin types. Among the Gurindji for instance, for a man the MMBDD is the 'first choice', but a cross-cousin MBD/FZD is second choice, and so on. There is a need then for a ranked coding of marriage options, using kin types, with other systems and cultural categories being brought in where necessary.

Some marriage systems may be a good deal more complex than this, even at the level of ideal rules, involving, for instance, preference for certain other clans or language groups, geographic exogamy, or contingent dispreference for marriage with families with whom marriage had been contracted in previous generations, generating a pattern Keen (2002) calls 'shifting webs'. Where these factors are systematic they should be allowed for in our coding protocols.

Beyond the 'ideal rules' of marriage, we do intend to make a foray into the actual marriages that have taken place over time, at least in some manageable sample data sets, and link the systemic analysis of terminologies and expressed rules to actual genealogies. There are now several such large genealogical databases available which some members of our team are working with, and which could provide the basis for such work. So far analysis has been done with these data sets using the Social Network Analysis tool *Pajek* (de Nooy et al., 2011), by Woodrow Denham and James Rose, research associates on this project.

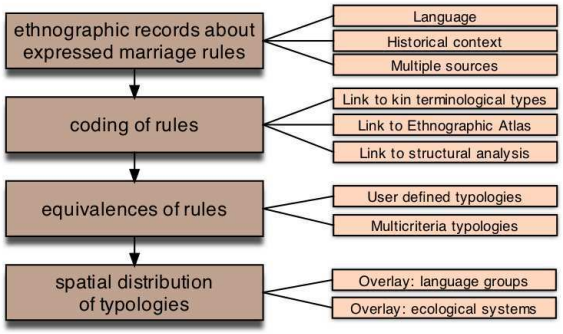
One exercise could be comparison of predictions of ideal marriage rules with what had actually occurred, and if there is divergence, seeking reasons for that. Among the Gurindji it seems that preferred 'straight' marriage has been much less adhered to than among the neighbouring Warlpiri. Several possibilities exist for explaining such discrepancies. The Warlpiri are a larger population, and can presumably make marriages which address practical issues in choosing spouses at the same time as abiding by the strict rules. Also possibly there has been change in the marriage patterns among the Gurndji in the last two hundred years which increases optionality without abandoning the system. In the Western Desert, another example, there seem to be two at first sight contradictory strategies involved. One that aims to consolidate group membership through rules of repeated marriages between families; and another that aims at the diversification of the social network through the prohibition of these repetitions. This is a further topic to be investigated by examining marriage patterns in selected regions and possible conditioning factors.

There is often a strong connection between kinship terms and marriage rules. Because affinal terms are associated with kintypes which also have a 'consanguineal' meaning, there is often a polysemy between them – not only between spouse and cross-cousin in a Kariera system, but between WM (mother-in-law) and FZ also in a Kariera system, and other pairings. The change in meanings of terms provide evidence of change in marriage systems over time, for instance the old root *kaal- MB>MBS reflected in Warlpiri *kali-* as 'spouse, MMBDC'. There has been change from preference for cross-cousin spouse to a second-cousin spouse – the latter known to be associated with the 'Aranda' system.

Other connections between kin term polysemies and marriage rules can include the type mentioned earlier, that is, the equation FZD=MBD=W, that might imply bilateral cross-cousin marriage. However this and similar predictions should be tested empirically rather than taken for granted, and this is a task that the AustKin II database will be able to do. If the predictions are not borne out, then the proto-form or loan sources of the terms concerned can be investigated to determine if there has been historical change.

Other aspects which can be of importance in the relations between marriage and kinship terms, their origins and loan spread are avoidance and ritual behaviours. We will try to use coding systems from the Ethnographic Atlas (Murdock, 1967; Gray, 1998) for this where possible, but we may again need to modify these to our needs.

Figure 3: The general work plan for designing the marriage database and its interface



2.2 Sections and subsections

Sections and subsections and their development have been topics investigated over years by the present authors Dousset (2005 on spread of sections in the Western Desert) and McConvell (1985, 1997 on the origin and spread of subsections in north central Australia).

Sections and subsections are named sociocentric divisions, four and eight respectively. Each occurs in separate regions with a little overlap between them The sections are made up of a set pf classificatory or fictive parallel kin of the same or harmonic (+2 or -2) generations In subsections each section is divided into two, with those who are classificatory mother's mother('s siblings) and woman's daughter's children to each other separated into a different subsection from siblings and father's father('s siblings). They are categories which each individual derives from his or her parents, but the section or subsection term of the child are different from those of its parents. Sections and subsections are unique to Australia.

To illustrate a four-section system, take the Gamilaraay in northern NSW: each section has a different term for men and women: the sections are ordered into two named matrilineal moieties and two (unnamed) generation levels (see table, based on Wafer and Lissarrague (2008):454). The marriage rule is articulated in terms of section membership: a person's spouse should be from the opposite matrimoiety and the same generation level; e.g. a Gambuu man marries a Maadhaa woman and their children are Gabii and Gabudhaa, while a Buudhaa woman's husband is Marrii and their children are Yibaay and Yibadha.

Generation level/Matrimoiety	**Gubadhin -Yanguu**	**Dhilbi-Wudhurru**
1 Masculine 1 Feminine	Gambuu *Buudhaa*	Marrii *Maadhaa*
2 Masculine 2 Feminine	Yibaay *Yibadha*	Gabii *Gabudhaa*

In this case, and many others where there is a section system, the prescribed marriage is with a classificatory cross-cousin (a mother's brother's child or father's sister's child).

Regarding subsections, the 8 skin system, McConvell's work has shown clearly how important linguistic evidence is to plotting evolution and spread of such systems. He was able to explain the apparent gender prefixes in subsection terms of gender-less languages like Warlpiri (masculine *Japanangka* **v**s. feminine Napanangka) by tracing the origin of the terms to languages far to the north which earlier had gender prefixes of the right form (see also Harvey (2008)).

Unlike kinship terms, which tend to be mostly inherited, subsection terms, and probably most section terms, are diffused (loanwords). It seems unlikely that kinship terminologies, and social categories database, have parallel histories. More complex relationships are likely to be uncovered in this project.

Relative chronology of the spread of subsections from the origin area in the north was discovered by use of the 'linguistic stratigraphy' of sound changes in the subsection terms, compared to sound changes in other words. In some cases it may be possible to convert these relative chronologies into absolute chronologies by use of archaeological dating of material culture items, terms for which show related

patterns of sound change, or perhaps datable contacts with overseas visitors who brought loanwords (like the Macassans) over the past few hundred years.

Both sections and subsections undergo permutations or rotations in some areas into which they diffused. For instance, in the Pilbara of Western Australia, in the systems shown in the tables below, Kariera (1) and Coastal Nyangumarta (2) have the same arrangement except that the term Milangka has replaced the older term Palyeri (Palyarri). However in Inland Nyuangumarts (3) the terms have switched around positions on the grid – Karimarra the classificatory mother or daughter of Panaka on the coast has become his/her spouse inland, and Purungu the reverse process has occurred

1. Kariera sections (Radcliffe-Brown ,1913)

A	Banaka	B	Burung
C	Karimera	D	Palyeri

2. Coastal Nyangumarta sections (O'Grady & Mooney, 1973)

A	Panaka	B	Purungu
C	Karimarra	D	Milangka

3. Inland Nyangumarta sections (O'Grady & Mooney, 1973)

A	Panaka	B	Karimarra
C	Purungu	D	Milangka

In part of the Western Desert a partial merger of two section systems took place yielding what was known as a 6-section system (but see Doussset 2005 for a different interpretation). A more dramatic merger of two sections systems with a particular pattern of marriage alliance yielded the original subsection system (McConvell, 1985, 1997).

McConvell (1985) also analyses the various permutations of subsection terms in Arnhem Land as a historical sequence and advances the idea that 'bottlenecks' allow for such changes to occur, where unorthodox marriages occur among fringe isolated groups leading to change in the systems. This kind of hypothesis will be investigated further in AustKin II.

It is important for the AustKin II project to have a clear method of coding the meaning and structure of section and subsection systems. The Pilbara examples above illustrate the method introduced by Radcliffe-Brown, in which each position in the grid has a letter A-D (and a number 1-2 in the case of subsections). This system potentially indicates two things:

(a) the (pseudo-) kinship relationships between the sections A-B (spouse, cross-cousin etc); A-C (mother-child, MB-niece/nephes etc) and so on.

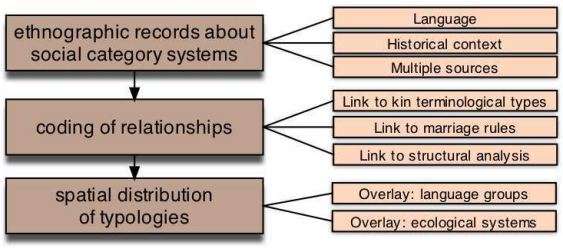
(b) the 'pragmatic equivalence' between two sections/subsections with the same alphanumeric code in different language groups, that is that A refers to the same category of people in wider dealing between groups, withut necessarily using a linguistically related form

It is necessary to include the Radcliffe-Brown (1930-31) coding in the database simply because this is the most widely used standard. However while criterion (b) is clear from the literature in some cases, in others it is less so and requires fine grained historical and ethnological research – bearing in mind also that these systems are no longer in use in many areas and not well remembered. Pragmatic equivalence is a key to understanding how systems work, however, since they are inherently wide-scale linking together people in large marriage and socioeconomic networks.

Other coding schemas or types of representations will have to be included, such as those proposed by Cresswell (1975) or Service (1960). However, in addition to the coding of sections and subsections in an optimal way, we also need to code for moieties and other social institutions and category systems such as clans. Matrimoieties and patrimoieties are found in different areas, sometimes close together. Berndt (2000) represents such social classifications across Australia in a map, but the lack of ability to show layering and overlaps of different kinds of systems is a drawback with such representations (cf. McConvell's maps in Peterson et al. (2005):91).

Moreover, moieties have clans (matriclans or patriclans) affiliated to them. Both moieties and clans often carry totemic animal names. Testart (1978) has argued, from evidence of associated clan species, that the matrimoieties historically preceded the patrimoieties and that there was a transformation of matrimoieties into patrimoieties.

Figure 4: The general work plan for setting up the social category database



2.3 Analysis of synchronic and diachronic relationships between kin, skins and marriage

In relation to Australia here has been a tradition of combining kinship terminology, marriage rules and social categories (sections and subsections) into a unitary 'kinship system' in which these elements are inextricably connected by close functional cohesion. This perception of how Australian systems operate became especially influential due to analyses of section systems by anthropologists exploring componential approaches such as Burling (1962), Often this nglects the relative independence and differing histories of these elements.

More significantly for our project, such an approach does not facilitate comparison and the tracing of diachronic interactions of kinship terminology, marriage and social categories which we have identified as a major goal.

We need to design the AustKin II database so that these elements are in separate modules but their relationships can be tracked both visualization by historical-geographical maps and subject to statistical analysis showing how closely the elements match with each other. We already have standard assumptions which we can recast as hypotheses and pay close attention to the mismatches and deviations.

Beyond these three components there is also a demographic one, in particular how actual marriage patterns relate to maintenance and change of marriage rules, kinship systems and social categories. The possibility of 'bottlenecks' leading to change in social category systems has been mentioned– this relates both to marriage patterns, general interaction and perhaps population size and density.

A number of writers have proposed hypotheses relating different types of social categories to differing ecological conditions (e.g, Yengoyan, 1976, cf. McKnight, 1981). Ecological determinist hypotheses generally do not work well, and are flawed by their synchronic and ahistorical nature – when what is needed is understanding of movements which drive diffusion of such systems.

Hypotheses such as Keen (1982, 2004) linking polygyny to types of marriage and associated age structure and marriage network flows in different areas of Arnhem Land are more promising. The work done in AustKin I developing a diachronic dimension for Yolngu kinship in North-east Arnhem land (McConvell & Keen, 2011) can now be put together with the correlational work by Keen to explore the dynamics of how kinship, marriage and demography influence each other over time.

Another more wide ranging hypothesis to which we pay attention is that of White and Denham (2009), where the functional advantage of types of kinship systems such as Omaha skewing and social categories like sections and subsections lies in their driving force towards exogamy, rescuing small groups from otherwise almost certain demographic collapse. Simulations could play a role in testing these kinds of hypotheses.

If our historical reconstruction work can begin to find relative or even absolute dates for these institutional changes, we can contribute to debate which has gone on for some time over whether the type of society of recent times in Australia is very ancient or whether there was a major change, perhaps related to 'intensification' (economic and population growth) identified by archaeologists in the Holocene. It has been argued that this led to more stable groupings and ethnicities, based on specific types of kinship, marriage and social organisation.

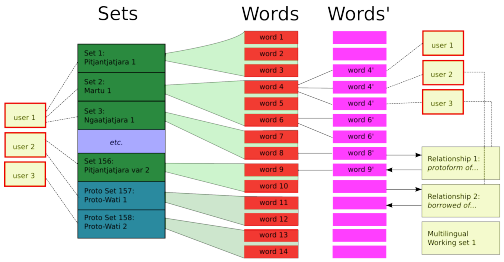
The hypothesis of the origin and spread of subsections now has a secure foundation, but requires much more detailed work of the kind outlined for the AustKin II project. The question of the origin of sections, the older system from which subsections evolved by merger of two section systems, is still at an earlier stage .

3.Technology

As is the case with AustKin I (Dousset et al., 2010), AustKin II will be based on a rather classic LAMP environment (Linux-Apache-MySQL-PHP) to assure portability, redeployment and simultaneous multiuser tasking. Data itself is stored in a highly flat and atomized manner in multiple small-scale tables linked to each other through multiple

relationships. Groupings, filtering, sorting, recombination, or hierarchical relationships are reconstructed through the PHP scripts on the fly and if necessary stored in other database tables to ensure as strictly as possible a clear distinction between interpretation or analysis and the raw data itself. In AustKin II, this model will allow us to reconstruct data following different modes of representation and Coding (Radcliffe-Brown, Cresswell, Service etc.) without actually modifying the raw data itself.

Figure 5: Simplified relationships between tables in AustKin I, model for AustKin II



4. Conclusions

The study of the evolution of Australian kinship systems and the relationship between them and marriage and social category ('skins') systems is significant not just for Australia. It has been claimed by Allen (1998) that the primordial world social organization was based on a 'tetradic' structure similar to sections, from which evolved Dravidian-Kariera systems. Hage (2003) claimed to have found 'Kariera' systems in proto-languages in many part of the world.

If the earliest kinship systems we can detect in Australia by our reconstruction methods are Kariera, then this adds some weight to the world primordial (or very early) Dravidian-Kariera hypothesis, but is by no means convincing, as we are probably dealing with proto-languages of not much more than 5000 years in age. A similar problem of relative short age also besets the idea that Australian sections may be relics of a very early human type of social organization. It may be that sections are in fact younger than the proto-languages e.g. proto-Pama-Nyungan) and this is something AustKin II may be able to find out.In order to give credible answers to such questions we should not indulge in speculation, as so many have. We have some good methods in linguistics and ethnology and these have to be put to work systematically.

We have made a good start with AustKin I and its database of Australian indigenous kinship terminology, which enables us to reconstruct systems going back some thousands of years and visualize the distributions of patterns and changes. The next step, AustKin II, brings this together with other modules in a database dealing with marriage and the social category systems, especially sections and subsections. With these tools in hand we will explore the co-evolution of these systems - their interaction with each other over time.

References

Nicholas Allen. 1998. The prehistory of Dravidian-type terminologies. In Maurice Godelier, Thomas Trautmann & F. Tjon Sie Fat (eds.) *Transformations of kinship*, 314-331.

Ronald Berndt. 2000. *The World of the First Australians.* Canberra: Aboriginal Studies Press.

Robert Blust. 1980. Early Austronesian Social Organization: The Evidence of Language. *Current Anthropology,* 21(2):205-47.

Robbins Burling. 1962. A structural restatement of Njamal kinship terminology. *Man,* 62:122-124.

R. Cresswell. 1975. La parenté, Cresswell R. (ed.) *Elements d'Ethnologie*, 2: 132-174. Paris: Armand Collin.

Wouter De Nooy, Andrej Mrvar and Vladimir Batagelj. 2011. *Exploratory Social Network Analysis with Pajek.* Cambridge: Cambridge University Press.

Laurent. Dousset. 2002. Accounting for context and substance: the Australian Western Desert kinship system. *Anthropological Forum*, 12(2):193-204.

Laurent Dousset. 2003. On the misinterpretation of the Aluridja kinship system type (Australian Western Desert). *Social Anthropology*, 11(1): 43-61.

Laurent Dousset. 2005. *Assimilating identities: Social Networks and the Diffusion of Sections.* Sydney: Oceania Monograph 57.

Laurent Dousset. 2011. *Australian Aboriginal Kinship: an introductory handbook with particular emphasis on the Western Desert.* Pacific-credo Publications.

Laurent Dousset. In press. Horizontal and vertical skewing: similar objectives, two solutions. In Thomas R. Trautmann and Peter M. Whiteley (eds) *Crow-Omaha: New Light on a Classic Problem of Kinship Analysis*. Arizona University Press.

Laurent Dousset, Rachel Hendery, Claire Bowern, Harold Koch & Patrick McConvell. 2010. Developing a database for Australian Indigenous kinship terminology: The AustKin project, *Australian Aboriginal Studies,* 2010(1):42-56.

Maurice Godelier, Thomas Trautmann and F. Tjon Sie Fat (eds.). 1998. *Transformations of kinship.* Washington DC: Smithsonian.

J. Patrick Gray. 1998. Ethnographic Atlas Codebook. *World Cultures,* 10(1):86-136.

Per Hage. 2003. The ancient Maya kinship system. *Journal of Anthropological Research.* 59:5-21.

Mark Harvey. 2008. *Proto-Mirndi.* Canberra: Pacific Linguistics.

Doug Jones and Bojka Milicic (eds.). 2010. *Kinship, language and prehistory: Per Hage and the Renaissance in Kinship Studies.* Salt Lake City: University of Utah Press.

Ian Keen. 1982. How Some Murngin Men Marry Ten Wives: The Marital Implications of Matrilateral Cross-Cousin Structures. *Man,* 17(4): 620-642.

Ian Keen. 2002. Seven Aboriginal marriage systems and their correlates. *Anthropological Forum*, 12(2):145-157.

Ian Keen. 2004. *Aboriginal Economy and Society: Australia at the threshold of Colonisation.* Melbourne: Oxford University Press.

David Kronenfeld. 2009. *Fanti kinship and the analysis of kinship terminologies.* Champagne: University of Illinois Press.

Patrick McConvell. 1985. The Origin of Subsections in Northern Australia. *Oceania,* 56:1-33.

Patrick McConvell. In press. Omaha skewing in Australia: overlays, dynamism and change. In Thomas R. Trautmann and Peter M. Whiteley (eds) *Crow-Omaha: New Light on a Classic Problem of Kinship Analysis*. Arizona University Press.

Patrick McConvell. 1997. Long lost relations: Pama-Nyungan and Northern kinship. In Patrick McConvell and Nicholas Evans (eds.) *Archeology and Linguistics: Aboriginal Australia in Global Perspective,* 207-236.

Patrick McConvell and Nicholas Evans (eds.). 1997. *Archaeology and Linguistics: Aboriginal Australia in Global Perspective.* Melbourne: Oxford University Press.

Patrick McConvell and Rachel Hendery. To appear. What is a Kariera kinship system?

Patrick McConvell and Ian Keen. 2010. The transition from Kariera to an asymmetrical system: Cape York Peninsula to North-east Arnhem Land. In Doug Jones and Bojka Milicic (eds.) *Kinship, language and prehistory: Per Hage and the Renaissance in Kinship Studies,* 99-132.

Patrick McConvell, Ian Keen and Rachel Hendery (eds.). In press. *Kinship change and reconstruction.* Salt Lake City: University of Utah Press.

David McKnight. 1981. Distribution of Australian Aboriginal 'Marriage Classes': Environmental and Demographic Influences. *Man (N.S.),* 16: 75-89.

Lewis Henry Morgan. 1997. *Systems of consanguinity and affinity of the Human Family*. Lincoln & London: University of Nebraska Press [Smithsonian Institution volume 17 [1871].

George P. Murdock. 1967. *Ethnographic Atlas*. Pittsburgh: Pittsburgh University Press.

Geoffrey O'Grady and Kathleen Mooney. 1973. Nyangumarda Kinship Terminology. *Anthropological Linguistics,* 15(1):1-23.

Nicolas Peterson and Patrick McConvell. 2005. Social Organisation. In Bill Arthur and Frances Morphy (eds.) *Macquarie Atlas of Indigenous Australia,* 88-112. Sydney:Macquarie.

Alfred Reginald Radcliffe-Brown. 1913. Three Tribes of Western Australia. *Journal of the Royal Anthropological Institut*e, 43:143-19

Alfred Reginald Radcliffe-Brown. 1930-31. The social organization of Australian tribes. *Oceania*, 1(1-4): 34-63; 206-46; 322-41; 426-56.

Elman R. Service. 1960. Sociocentric Relationship Terms and the Australian Class System, G.E. Dole & R.L. Carneiro (eds.) *Essays in the Science of Culture in Honour of Leslie G. White,* 416-436. New York: Thomas Crowell.

Alain Testart. 1978. *Des Classifications dualistes en Australie.* Paris: Maison des Sciences de l'homme.

Thomas Trautmann, and Peter Whiteley (eds.). In press. *Crow-Omaha: New Light on a Classic Problem of Kinship Analysis.* Tucson: University of Arizona Press.

James Wafer, Amanda Lissarague and Jean Harkins. 2008. *A handbook of Aboriginal languages of New South Wales and the Australian Capital Territory.* Nambucca Heads: Muurbay.

Kenneth Whistler. 1980. *Proto-Wintun Kin Classification: a case study of reconstruction of a complex semantic system.* Ph.D dissertation, University of California Berkeley.

Douglas White and Woodrow Denham. 2007. The Indigenous Marriage Paradox. Paper for SASci meeting , San Antonio.

Aram Yengoyan. I976. Structure, event and ecology in Aboriginal Australia: a comparative viewpoint. In Nicolas Peterson (eds.) *Tribes and boundaries in Australia*, 121-140. Canberra: Australian Institute of Aboriginal Studies.