

Theory and Politics

The Politics of Knowing and Being Known

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In 1970 members of the Yolngu Aboriginal communities of North-East Arnhemland attempted to gain some control over the process by which Aboriginal Australia comes to be known by non-Aboriginal Australia. They began a legal challenge to the invasion of their lands by a mining company and instituted a public elaboration of the logical and moral basis of Yolngu ownership of land.¹ The communities found to their cost that their elaboration was not heeded by non-Aboriginal legal authorities; the challenge was unsuccessful. The Australian legal system constructed Aboriginal Australia as 'nature' rather than 'culture'² in primarily serving the colonial enterprise. As politics, however, the challenge was more successful. Australian life was significantly changed by this group of Aboriginal-Australians insisting on some control over the ways they are known by non-Aboriginal Australia, and over the social policies that follow from this knowing. Complex social institutions — Land Rights Acts, Lands Councils, sacred sites legislation and so on — have developed from this initiative. The Aboriginal claim to control over the ways Aboriginal Australia is known is an actively contested issue in contemporary Australian political life.

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Indicating that the politics of being known are not separable from the politics of knowing, these same Yolngu communities are now extending their struggle for self-determination through attempting to regain full control of the construction of knowing within contemporary Yolngu life. They are challenging the order through which, for the past thirty years or so, young Yolngu Australians have come to know themselves and are asserting their right to control the schooling of Yolngu children. Identifying that in the past

schools have been used quite openly to capture the minds of Aboriginal children and turn them towards the dominant Balanda³ culture [and that schools] have been most significant in the attempt by non-Aboriginal Australians to assimilate Aborigines into the Balanda society⁴ . . .

the Yolngu communities grasped control of administration, curriculum and pedagogy in Yolngu schools through establishing a school council properly integrated into the traditional Yolngu polity. They have successfully removed Yolngu schools from the direct control of the Northern Territory Minister for Education.⁵ As part of the structure of the school council, an Action Group⁶ directs the affairs of the school. The work of the Action Group is influencing the development of the community in profound ways. In developing curricula useful for Yolngu learners other social

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1. See Nancy Williams, *The Yolngu and their Land: A system of land tenure and the fight for its recognition*, Canberra, Institute of Aboriginal Studies, 1986.
 2. The finding of the Court was that the Yolngu feeling of obligation to the land was stronger than a feeling of ownership: '... it seems easier, on the evidence, to say that the clan belongs to the land, than the land belongs to the clan', in Williams, p. 199.
 3. In general Yolngu describe non-Aboriginal people as 'Balanda', 'foreigner', derived from the word 'Hollander', which was adopted by the Yolngu from the Macassan traders who annually visited Australia for centuries before European settlement. It can be used in English as either a collective noun or an adjective.
 4. Wesley Lanhupuy, Occasional Address at the graduation ceremony for students of the Deakin-Bachelor Aboriginal Teacher Education Program, Bachelor College, Northern Territory, 1987.
 5. Raymattja Marika, Dayngawa Ngurruwuttnun and Leon White, *Always Together: Yaka gana*, Participatory Research at Yirrkala as part of the development of a Yolngu education, presented to the International Participatory Research Conference, University of Calgary, Canada, July 1989.
 6. The Action group is made up of all the Yolngu members of the school staff. This includes administrative, clerical, ancillary, linguistic and teaching staff]. The Action Group is a sub-committee of the Yirrkala Community School Council.

institutions of non-Aboriginal Australia are confronted. One of these is the discipline of anthropology. In particular, many Yolngu feel that anthropological accounts of the so-called 'kinship system' render something which is a matter of logic into familiar social relations, thus diminishing and trivializing it. In challenging the analogies which anthropology has used in constructing Aboriginal Australia within non-Aboriginal Australia, Yolngu people are engaging the politics of knowing and being known in a systematic endeavour to halt and to reverse the impulse for domination of European-derived Australia. It is the work of many Yolngu people and a few Balanda people whom they have chosen to help them.⁷

We who are part of this action take our work to be a transformative praxis. Using the present and our developing understandings of how our past has constructed the present, we seek to work against relations of dominance. This is work done at the intersection of knowledge, power and ethics. We undertake empirical enquiry which is a 'wilful contradiction' of accepted understandings. Our transformative praxis is unabashedly committed to using deconstructive methods, methods of displacement which 'multiply the levels of knowing and doing upon which resistance can act'.⁸ One characteristic of the work is a determination to maintain the social relations of the research problematic. This requires the participants to publicly negotiate and set the directions of their endeavour. Places to start and directions in which to proceed must be negotiated and kept on the agenda for re-negotiation.⁹

One level of our inquiry is concerned with systems of codified logic in a practical focus relating to mathematics education. We are reconstructing the mathematics curriculum in Yolngu schools on the basis of radically new understandings of what mathematics is, how it relates to traditions of Yolngu knowledge, and how Yolngu learners might appropriate it. After some three years of work we are able to identify that in discussing the nature of

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7. Mandawuy Yunupingu, 'Language and Power: The Yolngu Rise to Power at Yirrkala School', *Ngoonjook*, Batchelor Journal of Aboriginal Education, September 1989, p. 1.
 8. Gayatri Spivak, in Sarah Harasym, 'Practical politics of the open end: An interview with Gayatri Spivak', *Canadian Journal of Political and Social Theory* 12 (1-2), 1988, pp. 51-69.
 9. See Helen Watson with the Yolngu Community at Yirrkala and D. W. Chambers, *Singing the land signing the land*, Deakin University Press, 1990, Ch. 1, for a discussion of the conceptual basis of these negotiations.

codified logics in the Yolngu and Western traditions, we are talking of three major domains: logic in language; organizing recursions; metaphysical concerns. In 1988 it became obvious that the place to start in reformulating the mathematics curriculum of Yolngu schools was with the notion of organizing recursions; that is, with the formalized 'patterns which connect' in a social sense.

We identified that the number system of Western life and the *gurrutu* system of Yolngu life (known in English as 'the kinship system') are disparate codifications of a common logical phenomenon, they are both a set of formal relations which have the form of a recursion. They are formalized patterns which have the social function of connecting disparate sorts of things. At first the number system and the *gurrutu* system seem to be very different patterns. But with a little reflection we can identify a meta-pattern, the meta-pattern of re-occurring pattern, or recursivity. A formalized recursion such as the number system or the *gurrutu* system is in fact a formalization of the idea of 'and so on in the same pattern'. The number system has one type of pattern base, the *gurrutu* system has another type of pattern as its base. What they hold in common is that the base pattern re-occurs endlessly, and that each is used in a systematic way to organize social life.

Australians both of Western traditions and Yolngu traditions are quite conscious of the fact that they and their social arrangements use pattern to connect various aspects of social life. We can look at Yolngu communities, and at Western communities and say 'Here is the pattern by which social life is organized', 'it is the number pattern' or 'it is the *gurrutu* pattern'. We variously take these patterns, which form part of the background of our lives, to be logical, obvious and inherent patterns of the world. Nevertheless it is rare to focus on these connecting patterns as such. Normally, immersed and enmeshed in the working of the patterns, we just go on using them.

In February 1989 the *Galtha Rom* Community Seminar was established in the North-East Arnhem Region. This seminar is committed to working through the understanding that both Yolngu traditions and Western traditions in contemporary Australia arrange all life in patterned and organized ways, yet we acknowledge that Western and Yolngu social orders differ in the ways they achieve this. The seminar bases its work around the understanding that each tradition has a set of codified logical practices which links the social order as well as the natural order, across both time and space. And we find that the connecting

patterns which are to be seen in contemporary Western and in contemporary Yolngu life are similar in form, though the types of elements they deal in are disparate.

The Connecting Pattern of Yolngu Life

When Yolngu invite a stranger to their community — a stranger whom they anticipate will have some prolonged personal contact with the community — the significant stranger first needs to be located in the *gurrutu* system, only then can she contribute in any way to Yolngu society. Of course a stranger who is a Warlpiri or Pintupi Aboriginal Australian say, and is already located in a connected 'kinship system', must have her location in her local system translated into the *gurrutu* system of the Yolngu also. Through a series of intermediates, the relation between the Warlpiri or Pintupi person and a particular Yolngu person will be established. Once the relation between the stranger and one person has been worked through, then the relations between this person and all other Yolngu is known.

Right from the beginning of their lives, babies are instructed on the relation that this or that person has to them. The *gurrutu* system where everybody is exhaustively located with respect to everybody else is what we might call a *genealogical recursion*. The recursion cycles with a three generational interval known as the *mari-gutharra* (grandmother/father — granddaughter/son) cycle. The entire cycle can be considered as containing two subsets of eight elements in a cycle. The *gurrutu* system is the recursive, linguistically mediated pattern by which everything is maintained in proper relation and located order in Yolngu life. Using the *gurrutu* system, the relations between all the elements of the world can be known and used.

The three 'horizontal' levels of the *gurrutu* system might be considered as generations, while the two 'vertical' levels of the *gurrutu* system are named as moieties, the *Dhuwa* sub-world and the *Yirritja* sub-world. Every person who has dealings in the Yolngu world is either *Yirritja* or *Dhuwa* and every named thing is likewise either *Yirritja* or *Dhuwa* (or sometimes both). One is the same moiety as one's father and a different moiety to one's mother and one's spouse.

So, the world is exhaustively ordered into two moieties, the *Yirritja* and *Dhuwa*. Through *gurrutu* the proper partners for the reproduction of the two moieties and thus the Yolngu world are determined. *Gurrutu* is a recursive locative system with a finite number of elements; it locates the proper partners for the total range of social interactions of Yolngu life (potential marri-

age is merely one of these relations) and maintains an ordered society across time and space. The most important function of the *gurrutu* system is the orderliness it imposes on the relations of individuals and groups to the land.

The triple generational/dual moiety recursion constitutes an encompassing pattern of Yolngu life and social order. It involves notions of hierarchy and equivalence, but it is not a centralized hierarchy. Each individual plays different roles in several different hierarchies, the many hierarchies are woven together to form a decentralized orderly mesh of hierarchies. The mesh is worked through its corporate units constituted through the *gurrutu* recursion, and dependent on competition between individuals being subsumed by co-operation; by social differentiation being subsumed by social relatedness. *Gurrutu* carries a powerful ideology; it achieves a general ordering of both the social and the natural world. It maintains an image of continuity and permanence across both time and space.

The Connecting Pattern of European Derived Australian Life

Can we look at Western society and say 'Here is a recursion by which Western life is ordered'? Yes, the number system. English-speaking mothers and fathers teach their babies the number names, the babies learn a chant and a set of activities that go along with saying the chant — counting pegs or people or pieces of toast. They learn the number names in songs 'One, two, three, four, five, Once I caught a fish alive . . .' Learning to use the number names properly and to quantify is considered to be one of the most important things that children learn at primary school. The number system mediates all but the most intimate of human relations in the Western world.

The base ten number system which dominates contemporary Western life is a linguistically mediated infinite recursion around the base of a pattern derived from our fingers; it is a re-occurring pattern with ten elements. The number system constitutes a tallying recursion. The value of something, its total size or quantity is revealed when a number name is used in talk of that thing. We can put numbers on just about anything, and so give whatever it is we are talking about a specific value. Using its value we can fit it into the scheme of things. Any number series is a linguistic pattern and it encodes the social practice of adding up (tallying) the individuated things, encoding the practice of tallying on fingers. At its base the system of number names is a way of using a small number of names over and over again so that you can keep adding for ever and ever.

To encode practices of material modelling with language use is to develop a numeral system, for a numeral system encodes the patterns made in the process of material modelling. Since fingers are the 'handiest' model, we find that the patterns which have been encoded-over in most of the numeral systems which have been studied, derive from the patterns of human digits.¹⁰ This might be using a finger to encode the passing of a sheep through a gate, or the placing of a pebble to encode the pointing at a soldier, or the engraving of a line on a piece of bone or wood to record the filling of a vessel with grain.

Numerals constitute an infinite series by having a base about which repetition occurs, and a rule by which any element may be derived from the element which precedes it. Contemporary number systems associated with Indo-European languages have ten as their base unit. In a decimal system, ten is the point in the series which marks the end of the basic set of numerals. As each ten is reached, the basic series is started again, another level is begun, each time there must be a record in the numeral of how many tens have been passed.

One can easily imagine the involvement of fingers and toes in tally keeping in a non-linguistic way. One separated finger codes for one separated item. But if we then extend the coding operation and say a word which codes for the finger or toe, we have done something much more complex, and ended up with a code which is much more useful than material fingers and toes. In saying a word as a finger is held up to code for an item, we understand that the word we say does not name either the item, or the finger. It names a position in a progression. Numerals are words that code for a position in a series. Base ten numerals are a linguistic code with which one may record how far through the series of fingers we have progressed, and how many times we have done it.¹¹

Notions of equivalence and hierarchy (and many other notions as well) are enabled through the system of number names. The number system is one centralized hierarchical system. Each suc-

10. Karl Menninger, *Number Words and Number Symbols* trans. Paul Broneer, Cambridge Massachusetts, MIT Press, 1969, George Ifrah, *From One to Zero A Universal History of Numbers*, trans. Lowell Blair, New York, Viking Penguin, 1985.

11. A more detailed elaboration of the practical origin of numbers can be found in Helen Watson, 'Investigating the Social Foundations of Mathematics: Natural Number in Culturally Diverse Forms of Life', *Social Studies of Science*, 20, 2, 1990.

ceeding number has a higher value than all antecedent numbers. The tallying recursion is the encompassing one of Western life, it appears to be worked as a system by individuals for their own benefit. It seems to fit 'naturally' with notions of hierarchy and competition over value-place in the hierarchy. The working of the number system carries a powerful ideology—a particular image of orderliness across space and time seems to be conjured up; the orderliness of a central hierarchy. The number system constitutes a particular sort of grid which can be 'placed over' the lumpy, bumpy world and make that world easier for people to deal with.

The Pattern of the Patterns

We have identified two recursions, but they are very different in their content. Should that worry us? Should we wonder at the disparity in content of the ordering recursions which act as connecting patterns? These two great recursions—the tallying recursion codified in counting, and the genealogic recursion codified in ordering ancestry—are of a kind, albeit different in form. They differ in structure: each number has one direct antecedent and one direct successor, and each *gurrutu* position has two direct antecedent positions and one successor position. However, the two systems are characterized by recursive definition, a form of mathematical induction.¹² Natural number can be defined recursively:

One is a natural number and successors of natural numbers are natural numbers.

We can set strict limits:

There are no natural numbers but what this requires.

Similarly *gurrutu* positions can be defined recursively:

Yolngu is a *gurrutu* position and successors of *gurrutu* positions are *gurrutu* positions.

This too can be limited:

There are no *gurrutu* positions but what this requires.

Using only English words this definition would come out something like

The parents of x are ancestors of x, and the parents of ancestors of x are ancestors of x.

The limitation is that:

There are no ancestors of x but what this requires.

12. W. V. O. Quine, *Quiddities. An Intermittently Philosophical Dictionary*, Harvard University Press, 1987, p. 173.

The recursive form of this argument was used in the Western tradition as far back as Euclid; Fermat expressly recognized it as a form of reasoning, mathematical induction, three centuries ago.

A recursive definition formalizes the idea of 'and so on'. It is a mathematical definition in the weaker sense, in being indirect. However, it can be given a more direct form as was elegantly demonstrated a little over a hundred years ago by Frege.¹³ We can define *gurrutu* positions as the members shared by all classes that contain a *gurrutu* position, and the successors of all their own members. Similarly we can define the natural numbers as the members shared by all classes that contain one and the successors of all their own members.

It seems that there are two great recursions which, in varying degrees, entertain all humankind, and both these great recursions are manifest to varying extents in the social organization in all human societies. By noting the emphasis on the genealogical system in Yolngu society we are not saying that the tallying recursion (collecting and distributing material things in patterned ways) is entirely absent from Yolngu life — it is not. Nor, in noting the predominance of tallying in European derived Australia are we saying that the genealogical recursion (arranging matters on the basis of close and distant kinship) is entirely absent from Western life. What we are saying is that in Yolngu life the tallying recursion does not carry the organizing burden that the genealogical recursion does. Conversely, in Western society the genealogical recursion carries very little by way of organizing the knowledge system or the productive processes.

Nor are we suggesting that the 'great recursions' operate quite independently of one another. They seem to be mutually constitutive and supportive. In the Western world the tallying recursion predominates, it is the recursion by which most social relations are effectively ordered. This is not to deny the influence that the genealogical recursion retains. Yet genealogical classifications are not exhaustive and applicable as apparently neutral and objective classification throughout the community as we see them in Yolngu life. In Western life kinship classifications are discontinuous and discrete. They are variously regarded as important or not. Westerners can reject their genealogy and invent ancestors with impunity. They can lie about their genealogical relations. The genealogical recursion is taken as significant (that

13. Gottlob Frege, *Begriffsschrift*, Halle, 1879.

is, objective, inevitable and deterministic) only in the biological sense. In the social sense people can choose to invoke or not to invoke the recursion.

In contrast to the dominant place of the tallying recursion in Western life, it is involved in the reproductive processes of Yolngu life in only a secondary way. Distributive arrangements for turtle eggs invoke such a recursion; here a recursive material arrangement, base five, is engaged and linguistically encoded. In contemporary Yolngu society the use of the tallying recursion, as expressed in money, is subordinate to the working of the *gurrutu* system. Little hangs on the functioning of the tallying system in Yolngu life. It does not carry the deterministic weight, the aura of objectivity and inevitability, that it carries in non-Aboriginal Australia. People can choose or not to invoke the tallying recursion. In all Aboriginal-Australian communities the genealogical recursion carries the productive processes of the social order.

We should not go away with the idea that all genealogical recursions of Aboriginal Australia are worked in exactly the same way. Just as the tallying recursion can be worked differently for different purposes and by different groups, so Aboriginal-Australian communities work with the genealogical recursion in different ways. In Yolngu life there are two distinct genealogical recursions which serve distinct functions. The distinction between them is something like the distinction between ordinal and cardinal number.

Starting with an understanding of recursion and its role in Yolngu and Balanda life and logic, the *Galtha Rom* Community Seminar is developing as a research endeavour which involves many of the Yolngu communities in North-East Arnhemland. This research is part of the communities' challenge to past colonization through the schools. In part the research seeks to understand the ways that Western knowledge, mathematics in particular, is remaking Yolngu life; thus the work is useful too for non-Aboriginal Australia, for it gives us a new and different view of the politics of our Western traditions of knowing.