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A Personal Construct Approach to Cognitive Structure with a Group of Preliterate Aboriginal Australians

> Thesis submitted by Dorothy May Jones BA (Hons) (Qld) in May 1990

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D.M. Jones

19 March 1990

DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education . Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

D.M. Jones

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Most importantly I was dependent on the patience and cooperation of Aboriginal respondents during grid administration and on their collaboration when recording ethnographic material and learning language. I have come to understand that the majority of this group of Aboriginal Australians do not like to be singled out by mention by name in print. It has distressed some in the past to a degree beyond being 'shamed' and embarrassed. Four who would not mind and deserve special thanks are the last initiated men , Joe Kinjin and Mick Murray together with Rosie Runaway and Rosie One Arm. Unfortunately all are now deceased. Beyond that the secrecy of the grids and personal preference dictates no others be named. They know and I know who they were and how generously and patiently they gave of their time and knowledge to 'help out' and 'to sort it out' in an atmosphere of working together which was crucial to this study.

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ABSTRACT

This investigation concerns the cognitive structure of a group of preliterate, traditionally orientated, rainforest Aboriginal Australians. The model used was the Personal Construct Psychology of George Kelly (1955, 1963). In conjunction a detailed ethnographic account of the rainforest culture was recorded on the initiative of the initiated men who wished their knowledge to survive them. Chapter 1 addresses general methodological issues of taking psychological tests across cultural boundaries and in-built biases in tests which may compromise results. Included are discussions of the emic-etic distinction, the phenomenological or philosophical roots of psychological theory and anticipatory approaches to psychological testing in another culture. In order to establish the general background of Aboriginal cognitive studies, results of psychological testing with Aboriginal Australians are very briefly noted together with the difficulty of identifying causes for the general reports of lower performance scores on such tests in comparison with white Australians. General antecedents are discussed on lines of genetic (intelligence) and environmental factors. It is argued that it might be productive to investigate process divorced from content by using an alternative model. One such alternative direction would be to investigate Aboriginal cognition through an approach based on similarities rather than differences and against which differences could be interpreted. The model proposed is Kelly's (1955, 1963) approach to cognitive structure through an investigation of how personal constructs are organized, thus using the yardstick of the Aboriginals themselves.

The structural implications of Kelly's model are described in Chapter 2 together with a personal construct approach to those

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variables indicated in Chapter 1 which are reported to have been found to influence cognitive behaviour. These include a personal construct approach to reality; to environmental influences; to the durability of traditional beliefs in the face of presumably invalidating evidence from the dominant culture; to learning and therefore incidentally to psychological change; to intelligence; to behaviour; to the interaction between culture and cognition and to the individual as a cultural person. The argument is that persons should not be conceptually separated from their culture at the outset and culture and individuals treated as separate things for investigation because otherwise the problem arises of trying to reunite them later.

In Chapter 3 the literature on cognitive structure as embodied in Kelly's model is reviewed together with structural measures derived from Kelly's psychology. The psychological concepts of differentiation, integration, complexity and rigidity found in Kelly's personal construct theory are compared with the use of similar structural terms in relation to socio-cultural systems. The view taken is that socio-cultural structure and cognitve structure cannot be compared when disparate definitions of structure apply. The theme used to unite them in this study is the construction of the individual.

Chapter 4 introduces the cultural component together with a description of the ecological setting. Not all cultural systems and constructions are described. Those briefly described have been selected with the twofold intention of providing an indication of the type of culture traditionally observed and as an indication of the background in response to which individuals have developed their own personal construct systems. The chapter also provides a brief record

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of the history of contact not from the usual historical source material orientation of white settlers and officials but from the aspect of Aboriginals and their perception, defensible or not, of the effects of white settlement on the systems of their culture. The view is taken that it is to these perceptions and handed down historical traditions presently existing that Aboriginals respond by developing their constructions.

Chapter 5 discusses problems inherent in introducing grid methodology to a non-standard preliterate population of another culture and basic problems of identifying pre-existing emic domains and of determining a grid format and response style to accomodate the limitations of their counting system and cultural protocols. Potential problems are discussed as well as unforseen problems which arose. A resistance to change grid, successfully completed but providing an unreliable result, is briefly reported to indicate what can happen when unwarranted assumptions are made about emic categories.

6 is the Method chapter. Here the individual Chapter respondents are described. Construct and element elicitation methods are described together with examples of how some constructs were Constructs elicited are listed as well as elements for derived. those grids which reflected construction in the subsystems of beings from the mythical period and entities which continue to inhabit the country bringing fear and causing harm to the incautious. Oral administration and the completion of grids is described together with methods of statistical analysis. For comparison purposes grids were administered to a small sample of literate younger Aboriginals who had been educated within the State education system and, to test for the effects of aging, to a small sample of aged Euro-Australian

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people.

Results of the structural analysis of grids are described in Chapter 7. In general results show that the grids of the preliterate traditionally instructed Aboriginals show a cognitively nonmonolithic, undifferentiated structure, which i 🖘 complex, hierarchically rigidly organized in relatively inflexible ways. Furthermore the inflexibile use of constructs appears directly related to cultural prescriptions. The results of preliterate Aboriginals who received no traditional cultural instruction display a cognitively simple segmented undifferentiated structure which is unintegrated and loosely organized. The structure revealed in the grids of educated Aboriginals shows a monolithic structure which is more differentiated and loose than that of the first group. The grids of the aged Euro-Australian sample display a monolithic structure which is differentiated and integrated but not inflexibly so as are those of the traditionally instructed Aboriginal group. In the results show a continuum of highly integrated, short undifferentiated; loosely integrated, undifferentiated; integrated, undifferentiated; integrated, more differentiated. In this study the preliterate non-tribally educated Aboriginals are distinguished from the preliterate tribally instructed ones in cognitive structure and the literate Aboriginal group tend more towards the type of cognitive structure revealed in the grids of the Euro-Australian group, but a less efficient version.

In Chapter 8 the implications of the above type of cognitive structures for construction, for change and for learning are discussed in terms of the theoretical issues of Kelly's model and of variables introduced in Chapter 1. The utility and quality of the cognitive structure is discussed also in terms of cultural

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requirements for cultural cohesion and the limitations for learning and psychological change are assessed. The implication of a direct cultural influence and of the apparent effect of failure of the cultural systems and lack of substitute systems on the use of constructs is discussed in relation to the cognitive structure of what might be termed the transitional group. Evidence revealed in the grids of how new elements, provided by religious influences, are being incorporated in the personal construct systems of respondents and evidence from repeat grids of one respondent as a response to the stress of outside disconfirming religious pressure is discussed in relation to Kelly's hypotheses as to how change will take place. Some observations regarding the lack of equivalence between Aboriginal – English translations of Aboriginal language constructs are recorded as well as the understanding this confers on otherwise naive sounding constructions.

The implications of personal construct research as a crosscultural research tool are assessed.

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INTRODUCTION

Results from psychological tests with Aboriginal Australians indicate that, on the whole, the performance of Aboriginals tends to be lower than that of Euro-Australians and that performance level improves in proportion to the quality and degree of contact they have had with Euro-Australians. However, identifying possible sources for the difference in performance has proved a difficult undertaking with no certain answers. The deficit model does not appear to provide a satisfactory explanation nor has the identification of skills of Aboriginals helped solve the problem of failure to achieve under the standards of the dominant Euro-Australian culture which are usually the standards of the formal education system. The problem seems to be of effecting a transfer of those identified skills to the classroom situation.

Different approaches have identified apparent areas of difference. One approach which appears promising is to keep cognitive content and cognitive processes conceptually distinct and to explore processes. A model which appears to have advantages in this direction and particular advantages for cross-cultural work because it uses the yardstick of the culture is the personal construct model of George Kelly. Measures deriving from Kelly's model which he claims tap processes are measures of cognitve structure.

Psychological investigations involve a minimum of two people, the investigator and the investigated. Both bring to the study arena pre-existing knowledge and perhaps even convictions. The investigator has an informed background of the literature and reported results from studies which are relevant to the general area of enquiry - in this case Aboriginal cognition. Few would dispute

that basic cognitive processes do not differ between cultures and that factors influencing performance levels should be sought in environmental conditions, using environment in its broadest sense, and also in the suitability of the tests.

The Aboriginals collaborating in this study, however, have a different approach. Those who raised the issue are convinced that in addition to holding different beliefs, with such beliefs being right way for them and white people's beliefs being right way for white people, there is a fundamental difference in basic cognitive processes between Aboriginal and white. The younger Aboriginals who first mentioned this conviction have generally repudiated cultural beliefs but are confident that once Aboriginal cognitive processes are documented there is hope for improvement in their generally disadvantaged position. This conviction carries the implication that it is futile to attempt to cope with any learning system which does not recognize a difference in basic processing. This is a much stronger position than blaming their lot on lack of employment opportunities, inadequate housing and generally unfair treatment.

Aboriginal Australians have provided an especially attractive natural laboratory. No longer, as Kearney (1973, p.17) points out, is this because of concepts of primitiveness which reflected early enthusiasms for Darwinian themes (see Chase & von Sturmer, 1973, for early southern appraisals and Jones, 1961, 1973, 1976, for rainforest contact observations) but because of especially challenging unique features. Antiquity of residence in Australia by a people probably the ancestors of modern Aboriginals (Nulvaney, 1975) is being tentatively extended beyond 40,000 B.P. as archaeological evidence accumulates. This, combined with the knowledge that Australia is the only continent to be exclusively occupied by hunter gatherers before white settlement; an as yet undetermined racial history and a culture

different from any other has encouraged perennial interest by both Australian and non-Australian behavioural scientists. However as Burridge (1973) indicates, the large volume of work generated by this interest still seems to lack a guiding point of reference and apparent discontinuities have to be accounted for along whatever theoretical path is taken. Imposed domains are never discrete and the 'harder' the data, the more imprecise the domain boundaries For example, with the present sample an apparently full become. description of taking turtle still lacks the amalgam of the relationship between turtle and hunter, hunter and a particular sucker fish, essential reciprocal behaviour expectancies, the significance of the hunter's saliva and probably other more elusive cultural beliefs, for a complete understanding of an activity which can be observed, described, and imitated by anyone. It is what is in the mind of the hunter which is at the core of what is peculiarly Aboriginal.

Anthropologists have contributed most to knowledge of the content of Aboriginal belief systems. Themes and systems which have interested them are reflected in general texts such as Abbie (1969); R. M. and C. H. Berndt (1977); Elkin (1976); Maddock (1978); or by more specific enquiries such as Gale (1978); L. R. Hiatt (1965, 1975, 1978); Kaberry (1939); Nalinowski (1913); Mathew (1899); McConnell (1957); Petersen (1976); Radcliffe-Brown (1930, 1971); Roheim (1978); Scheffler (1978); Shapiro (1979); Sharp (1952); Stanner (1966); Strehlow (1947); Tindale (1974); Worsley (1968).

Psychological research has not kept apace with the number and range of anthropological studies. Only 4% of the citations in Greenaway's 1963 bibliography (cited by Burridge, 1973, p. 56-7), referred to work involving 'psychological and mental capacities, medicine and disease'. The rapidly expanding programme of research

on Aboriginal cognition is more recent. Davidson (1980) has calculated that of the 280 studies cited in the bibliography of psychological research compiled by Kearney and McElwain (1975), 70% were commenced or published after 1970. Even so, psychological Aboriginal Australians has a research with long and more unidirectional history beginning with the classical pioneering work of the Cambridge Expedition to Torres Strait in 1898, through the extensive work of Porteus, the pre-war work of the Piddingtons and the work of Fowler and his colleagues, Trayden and McElwain in Western Australia, later furthered by McElwain.

Considering the concentration on the documentation of cultural knowledge and the analyses of systems, some domains are less well developed than others as Burridge (1973) has indicated and some Aboriginal groups have received only modest, if any, amateur \mathbf{or} academic attention. Among these are the tropical rainforest Aboriginal groups and in particular the Gulnay and coastal Dyirbal to whom no references have been traced even in historical sources. Roth (1900) is careful to emphasize lower Tully in the title of his unpublished report, and in the text identifies the Aboriginals concerned in his report as Tully River coast blacks (p.36) or elsewhere as Clump Point Natives. His reference to upriver people he had not encountered and their use of rafts, never canoes, is clear indication he refers to Gulnay and Dyirbal who are always careful to emphasize that a distinguishing feature of their culture is that they had rafts, never canoes. Other internal evidence and knowledge of the locality he worked in and of the location of the family who assisted him and whose workers he studied supports the opinion that Roth's ethnographical report refers to the Dyiru and the horde across the river in the Barretts Lagoon area whom present day Aboriginals identify as Giramay. Confusion of the use of the descriptive term

'malanbara' as a tribal name may be at the root of subsequent identification Roth clearly did not intend. Henry's (1967) popular collection of some stories, vocabulary and lore could be supported as a reference only so long as more reliable sources were unavailable. Such a source is Dixon's (1972) work on the greater Dyirbal language. This together with an unpublished Material Culture thesis of the Giramay (Kumm, 1980) are recent exceptions to the lack of academic work. Reports of officials, explorers and anecdotal memoir writers refer in the research area to the coastal Giramay, Dyiru and Bandyin tribes. Prominent sources for early rainforest contact material are Banfield (1908, 1912, 1925); Dalrymple (1874); Gribble (1930); Johnstone (1874, 1903-4); Logan Jack (1888); Meston (1889,1904); and Palmerston (1883,1886,1887a,1887b). The most popularly quoted source has been the Norwegian collector, Carl Lumholtz (1889) who worked 70 miles south of the Tully River. The explorer and Swedish Naturalist, Mjoberg (1925) had late contact with Tableland Dyirbal. However, virtually uncited academically are the three years of work with rainforest tribes from 1904 onwards by Dr. H. Klaatsch, Professor of Anatomy and Anthropology at Heidelberg University. His activities were reported in the then irreverent journalistic style of the Cairns Post. Large specimen collections, especially of skulls and mummies, left Australia with Klaatsch, who was primarily interested in craniology and feet measurement.

Klaatsch addressed the anthropological section at the Science Congress at Heidelberg probably late 1906, on his work in tropical Queensland (Cairns Post, 1904, 1905a, 1905b, 1905c, 1907. He saw a fortuitous likeness between Aboriginal skulls and those of early European people, which had been first pointed out by Thomas Huxley who had himself spent a few weeks in Rockingham Bay in 1848 (McGillivray, 1852; Huxley, 1935). Klaatsch considered humankind as a

whole and the apes originated in or somewhere near Australia and thence spread world wide. He considered Aboriginal Australians preserved the physical characteristics of ancestral people. The apparent unavailability in Australia of most of Klaatsch's work is disappointing considering the information he undoubtedly collected and the professional approach he would have brought to his observations when tribal life was intact.

Different Race Claims

There have been perennial claims for a different race inhabiting the rainforest although no such claims have been substantiated to date. Harris (1978) describes rainforest people as "unique" in the use of decorated shields, large wooden swords, several types of nut stones, domed thatched huts, tapa like cloth and such traditional behaviours as the fighting corroboree (buya), cannibalism and mummification.

True cannibalism as opposed to ritual cannibalism among the rainforest groups is a controversial issue. Evidence is persuasive not only in official reports, inquest records, and early sources (e.g. Dalrymple, 1874; Meston, 1889; Parry-Okeden, 1897) but in the extremely detailed accounts from personal knowledge of some present day Aboriginals. Even so it appears to have been infrequent. Informants describe two or at most three instances each in the period of their youth.

Some stone artifacts such as the ooyurka, the morah and the huge thin ground edge teardrop slabs are disputed by modern aged Aboriginals as being used by their people and attribute them to an earlier race (sic).

Early maritime surveyors, explorers, and pioneers saw evidence of a different race in an appearance different from the Aboriginals familiar to them in the south. King (1820) suggested part Polynesian

or Melanesian ancestry. Carron (1849) saw a finer race, while palrymple (1874) suggested the diet of parent stock, Papuan or polynesian had perpetuated characteristics of that race. Johnstone (1874,1903) suggested Malay descent. Native Mounted Police recruited in the south, said the rainforest Aboriginals were the same as Kanakas (Johnstone, 1874). Allan Cunningham saw similarities to 'Tahie-te' in artifacts, especially the ground ovens (King,1820). Meston (1889), echoed by Stephens (1945), found strong semitic features while Cairns early settlers were convinced two races existed in their area. The "scrub (rainforest) blacks" were seen to differ in appearance, culture and behaviour. They were considered cleaner, more fastidious in their habits, they skinned, gutted, and jointed game before cooking in banana leaf wrapped parcels in the underground ovens. They also were said to treat their women better than Aboriginals of open forest country (Jones, 1976).

The Harvard and Adelaide Universities expedition of 1939 considered the smaller rainforest Aboriginals to be extant evidence of a race of negritoes for whom Birdsell proposed the name Barrineans (Tindale & Birdsell, 1941). A Giramay participant in this study volunteered that the people who always lived in the 'scrub' were different. As a child he had been taught to avoid them as they emerged only to raid for women or people to eat. These he claims were the cannibals and whom he had watched when he was young bartering for people to eat at a buya, "just the same as cattle sales today". He referred to the Gulnay and Dyirbal.

That traditionally orientated people, however inevitably modified those post contact traditions may be, should still exist in an apparently closely settled and agriculturally developed area is itself interesting. It is not necessary to pursue the history of land use as opposed to selection which has contributed to this

durability (see Jones, 1961 for details). Key factors have been early undesirability of heavy rainforest country; the late clearing of Tully river country after 1925 and then only through controlled and successive expansion by assignment of cane land. The most recent large rainforest clearing for cane expansion was in 1951 into the edge of Gulnay country. The major clearing of some Gulnay and coastal Dyirbal country was undertaken by an American company in the 1960's. Later still the intensive clearing of the Murray lands began although it had long been occupied.

Aproximately 10% of the Cardwell Shire population is of Aboriginal descent and despite apparent intensive cultivation, only 34% of the Shire's area is rateable. The remainder is taken up by Forestry Reserves, State Forests, National Parks and very little vacant Crown Land. Significant Aboriginal sites still exist in virgin country although the people to whom they are significant are aging.

The last mummification was probably held in the mid 1930's. The last known and well publicized act of cannibalism occurred about 1940. All respondents to this study were to a greater or lesser degree associated with that event. The last buya was held on the Tully in the early 1950's, while a camp of dome shaped huts was still occupied near Brick Creek mid 1940's. Traditional beliefs continue to the present among the older people. Claims of retribution deaths, gubi (clever man) activities, encounters with spirits and the necessity of having the appropriate person along to talk to the powers in "strange places" are part of everyday life (see Biernoff, 1978 for "dangerous places").

Aging initiated men who wished their knowledge to survive them, instigated the recording of ethnographic material and acted as determined teachers of language. All the mature people collaborated in the collection of ethnographic information. The work reported here

has a background of long-standing and extensive contact with people of the Gulnay, Dyirbal and Giramay tribes whose traditional country is contiguous in the Tully and Murray river areas.(see Figure 1). The background includes 'hard' ethnographic data, especially of nonmaterial culture; a useful knowledge of Gulnay vocabulary together with understanding of spoken language but a lack of fluency in speaking it.

The criteria of traditional instruction only and preliteracy limit the size of the sample. Also comparison data have not yet been established and the research area is not well developed. Therefore one should not lose sight of the smallness of the sample and of the exploratory component of this investigation even to the extent of the feasibility of using Kelly's grid technique with such a non-standard population. Cross-cultural Psychology and an Overview of Results from Psychological Testing of Aboriginal Australians

CHAPTER 1

Two converging lines of research have dominated investigations of Aboriginal Australian cognition. These are the documentation of differences, combined with attempts to identify cultural elements at the root of the difference, and the universalistic approach based on the documentation of similarities. However there is more needed than the documentation of differences and similarities in cognitive functioning and to date there has been more emphasis on the difference approach as being the more fertile avenue to pursue when the long term objective is seen as the development of remedial or supplementary programmes.

Differences in performance between Aboriginal Australians and Euro-Australians on tests for cognitive ability have been reported since psychological testing began. So much so that McElwain and Kearney (1973), for example, have stated that results of the Qld test show that the average performance of Aboriginal Australians is lower than that of Euro-Australians of the same age by about one standard deviation and they are inferior to Europeans in approximately the same degree they have lacked European contact. It is a conclusion not confined to Australian indigenous groups. A tendency to uneven performance is reported from most cross-cultural studies. Scribner's comment that in all cultures, populations designated as traditional or preliterate, have slightly more than an even chance solution rate across all types of problem material (Scribner, 1977,) is a fair reflection of a paradoxical situation where evidence seems to indicate the universality of basic cognitive capacity (Cole & Scribner, 1974; McElwain & Kearney, 1973; Scribner & Cole, 1973; Triandis, 1975). Triandis points out that a distinction can be drawn
between basic processes and functional cognitive systems and where differences occur it is in how basic processes are combined in the cognitive functional system and in the weights people give to information.

Cole and Scribner (1971) suggest the source of differences is more in the situation than in the process.

THE ADVANTAGES OF CROSS-CULTURAL STUDIES

The original interest in cultural variation was for better understanding of the origins of different races as part of an evolutionary continuum. The more recent trend towards cross-cultural psychological work owes its momentum to scepticism about the universality of laboratory type responses and fears they may be situation specific together with the conviction that psychology should be responsive to everyday life and not relevant only to the contrived environment of the laboratory (Claxton, 1980; Johnson-Laird & Wason, 1977; Neisser, 1976). This call for psychology to access more everyday cognitive functioning combined with an appreciation of the unrepresentative status of the usual western undergraduate subject (e.g. Jahoda, 1977; Serpell, 1976; Warren, 1977) fostered what Berry (1976) has called the broadening perspective.

Advantages for Psychology

The advantages for mainline psychology in taking a wider perspective have been well expressed elsewhere (e.g. Berry, 1976; Berry & Dasen, 1974; Brislin, Bochner & Lonner, 1975; Triandis, Malpass & Davidson, 1973). They include understanding the range and variability of cognitive behaviour; investigating the differences in cognition as a function of a cultural variable; transporting present hypotheses and theory across cultural boundaries to test for their applicability or generalizability; and exploring and comparing in order to generate more universal descriptions. Jahoda (1970) has

argued that in order to establish generality of psychological laws

Advantages to Participants

Implicit in every investigation is an interaction between two parties with each contributing to the interaction their own expectancies, motivations and undisclosed biases. Few psychologists are exclusively engaged in theory development. Probably the cooperation of no respondent group is altruistically based in a desire to contribute to the development of universal theory. So cross-cultural studies of cognition usually include an applied aspect of trying to identify factors contributing to a mutually recognized general disadvantaged position.

Whatever the attractions of using cultures as a natural laboratory (Cole, 1975) and while naturally occurring human variation is a resource not to be neglected, a sense of social responsibility among behavioral scientists adds the practical dimension to most studies.

WHY STUDY ABORIGINAL COGNITION

Australians of Aboriginal descent form a rapidly increasing population. Like other traditional or minority groups they find themselves disadvantaged in most situations involving the dominant culture and are becoming increasingly vocal with demands for selfdetermination and more equal and understanding treatment by the majority of Australians. That many problems exist is widely acknowledged although not all problems are uniquely Aboriginal in origin. There appears to be no general consensus as to the roots of problems nor unequivocal answers to their antecedents, nor in which directions possible solutions should be sought.

McElwain's (1976) conclusion, that the average performance of Aboriginal Australians is lower than that of Euro-Australians of the

same age, is evidence that more than highly visible socio-economic issues contribute to the generally disadvantaged position which is reported from almost the first sustained encounters with the dominant culture in the Australian education system. It is a situation where the investigation of cognitive functioning has a potential for identifying some of the factors contributing to a failure to achieve within the educational and vocational training systems when such achievment is eventually the basis of criteria for selection for higher education or employment.

It can be accepted that no Aboriginal Australian groups non exist isolated from any white contact although some traditionally oriented groups remain in remote areas. Nhatever their age and relevant cultural status, and whether located in the limbo of crowded urban areas, the fringes of country towns or bush camps, all Aboriginal Australians are affected to some extent by the systems of Euro-Australian culture either directly or through the their families. So there is a need for understanding the many aspects of Aboriginal cognitive behaviour for their relevance to policy planning and for remedial or new approach programmes to be formulated from the security of an informed base.

Euro-Australian culture is itself in flux. New technologies are accompanied by a shift in emphasis on skills needed to cope and help programmes for Aboriginals need to encourage more than some sort of assimilation or compatability with the dominant cultural systems. They also need to be able to accomodate to this fluidity with a flexibility of cognitive functioning not always evident in white Australians. All intervention or assistance programmes effectively require change of some sort as a response even at socio-economic levels. As there can be no change in any direction without psychological change, it may well be that the role of cognition in

the processes of psychological change and the relevance of cognitive strategies to learning and social development will turn out to be crucial.

THE MATRIX OF DECISION TAKING FOR CROSS-CULTURAL INVESTIGATION

Taking decisions as to what to measure, how to measure and the unit of measure is a standard procedure at the beginning of any psychological investigation. Difficulties with such decision taking are compounded, when cultural boundaries are crossed, by the cultural dimension itself.

Methodological Issues

Methodological issues cover such areas as the appropriateness of tests validated in one culture for use in another and if modified for such use what is the resultant status of validation and what confidence can be put in whether the test measures the same thing in different cultures (Fredericksen, 1977). There are matters of linguistic equivalence to be considered (Brislin, 1970) and the effects of translation on reliability. There are the 'how well do they do our tricks' reservations of Wober (1969). Uncertainty is expressed as to whether control groups are properly matched and whether results are compromised by the failure of respondents to understand the criteria. Cognitive style variables may make some types of test items inappropriate for certain cultures. Some tests may be particularly sensitive to the effects of culture. Above all there remains the perennial problem that failure to demonstrate some competence is no guarantee that it does or does not exist. As it cannot be disproved it has to be assumed to exist and needing a different situation to elicit it (Curran, 1980).

The great range in cross-cultural variation in institutionalized behaviour and belief systems is well documented by anthropologists but it cannot be automatically assumed that all individuals in a

culture respond uniformly to their cultural systems and socialization processes. So any such assumption can exaggerate the internal consistencies of cultural responses. Individual differences are in danger of being lost when descriptions are given at a too general level.

It is claimed that cross-cultural psychology is identifiable by its methodology (Berry, 1976) and most sources contain detailed descriptions of the cross-cultural method (e.g. Berry, 1969; Brislin, 1976; Brislin, Lonner, & Thorndike, 1973; Frijda & Jahoda, 1966; Lonner & Berry, 1986; Malpass, 1977; Naroll & Cohen, 1970; Price-Williams, 1974; Sheehan, 1976; Triandis et al., 1973; Triandis, Vassilou, Vassilou, Tanaka, & Shanmugan, 1972).

The cross-cultural method, relies on content analysis of the Human Relations Area File (HRAF) which may become a less secure source as geographically situated contemporary Aboriginal groups can no longer always be equated with the original territorial group and certainly cannot be studied within the traditional systems and behaviours of some putative tribal affiliation of hunter/gatherer ancestors. Yarrabah immediately comes to mind as an example of how contact can alter the cultural composition and observances of a group. Established a century ago, sedentism was enforced; Yarrabah was used as a penal resource for the whole north; escapees were vigourously pursued; Islanders were imported specifically to teach their building skills and slash and burn agricultural style and within 10 years the Fraser Island Mission, one thousand miles south, was closed and the Kabi-Kabi people of south Queensland sent to Yarrabah. Their descendents are significantly representative of this northern area (see Jones, 1976).

The critical requirement of the cross-cultural method is the element of data comparability which technically puts the word 'cross'

in cross-cultural. However it is the need to accomodate the cultural element, implicit in western culture, explicit in others, which largely indicates how the comparability requirement is to be achieved. This is the emic-etic distinction which needs to be continually conceptually monitored as an investigation proceeds.

Emic-Etic Issues

The emic-etic distinction, described in various sources, (e.g. Berry, 1969; Brislin, 1981; Brislin et al., 1973; Price-Williams, 1974; Triandis, 1980) derives from linguistic useage of phonemic and phonetic. Defined in slightly different ways, the utility of the distinction is the subject of some debate (e.g. Jahoda, 1983). Basically, emic, the preferred anthropological approach, refers to description from within the culture in its own terms. Etic refers to a description from outside the culture, a non-culture specific description, a universal description. Emic data may not be compared across cultures but may be used to derive a universal concept which may be compared. Etic data may be compared and are essential for generalization. Combined with these considerations is the need for understanding every basic psychological process within the cultural and social context of the individual, that is an ethnographically and ecologically sound psychology (Brislin et al., 1973; Cole, 1975; Cole & Scribner,1977; Draguns, 1979; Epting, 1984; Hallowell, 1958; Krech, 1951).

Failure to understand operative rules, in comparisons for example, may compromise interpretation of results. Judith Irvine's (1979) failure to replicate Greenfield's (1966) study of magical thinking in Wolof children has been attributed to Greenfield not allowing for Wolof difficulties in distinguishing 'equal' from 'same as' or the significance of silence. The Gulnay of this study make distinctions on the criteria of 'same', 'same but different', and

'different altogether' which can be misleading unless these distinctions are known.

The above suggests an ideal of an emic approach for data input from presumably universal domains such as problem solving or child rearing which should permit the derivation of etic concepts. Type of analysis used also produces results characterised by the emic etic distinction. Multi-dimensional scaling provides emic results, some form of component analysis produces etic patterns in emic data.

When the distinction is not clear-cut problems arise with what has been labelled a pseudo-etic approach (Berry, 1969; Triandis et al., 1973). This approach transports what is actually an emic measure from its cultural source for use in another culture on the assumption it is etic relative to the second culture.

However, whatever the methodological criteria, the problem must always be addressed of reconciling the realities of any particular cultural situation with the stringencies of the cross-cultural method.

Tests, Models, and Biases

Tests depend on some theoretical position and each theoretical position has an underlying philosophical or phenomenonological root. Therefore method is data specific and every test leads in certain directions and not in others. This can be regarded as an embedded issues of psychological theory reflecting bias. The some metaphysical, philosophical or phenomenonological model are periodically discussed (e.g. Eckensberger, 1979; Macleod, 1958; Pepper, 1942; Sarbin, 1977) and become pertinent when cultural boundaries are crossed if the particular model is incompatible with the rationale of the culture involved. The existence of this type of bias is acknowledged in various ways. Every test can be regarded, for example, as having an embedded etic (Berry, 1969); or

discriminating against people with little or no Western style education (Davidson, 1988) or a philosophical bias (Mancusco, 1977; Sarbin, 1977; Scott, Osgood, & Petersen, 1979); or an anticipatory bias such as the realm of logic (Price-Williams, 1974); or a range of convenience (Kelly, 1955). Eckensberger (1979) nominated five metaphysical types of tests. Pepper's (1942) analysis of philosophies is a pertinent approach to the type of bias operating in He allocated world views to one of six philosophical underpinnings. classes, namely Animism, Mysticism, Formism, Mechanism, Contextualism, and Organicism. A root metaphor, implicit in each class, restricts the frame for the categories of analysis, types of questions put, and interpretations of events in the natural and constructed world.

Pepper rejected Animism (which would cover the syncretism of Aboriginal Australian world views) and Mysticism because, although appealing to humankind, they provide inadequate scope for communicable categories.

Formism, examples being Realism, Platonic Idealism, is exemplified by theories holding that the organization of the world is based on similarities, differences, and patterns. The root metaphor Pepper suggests is that of an artisan creating things from the same pattern and natural objects replicating themselves. Plato, Aristotle and the Scholastics, Neo-realists, Cambridge realists and perhaps Freud's phallic and other symbols are examples. Psychological theories using the principles of Formism are the early structuralists and the personality trait theorists (Sarbin, 1977).

Mechanism with its root metaphor of the machine dominates world views at present. Pepper associates it with Democritus, Lucretius, Gallileo, Hobbes, Locke, Descartes, Berkley, Hume, Spinoza. Mechanistic theories conceive of natural events as the transmittal of

forces, such as a lever or a push and pull device, with emphasis on action by contact. It is central to the scientific quest for causality. Cause and effect, stimulus-response, efficient causality are mechanistic concepts. In psychology mechanism is reflected in complex mental states being regarded as analyzable without residue into a relatively small number of mental elements. Pepper says it is intellectually satisfying and almost works. Sarbin (1977) associates many Gestaltists e.g. Kohler and the Behaviourists Watson and Skinner with Mechanism. Mechanistic models see man as a performing task orientated organism.

Contextualism is equivalent to pragmatism and is the orientation of C.S. Pierce, Hilliam James, Bergsen, Dewey, G.H. Mead. Contextualist hypotheses move from the analytical type of world views of Formism and Mechanism to a synthetic type of theory. Pepper suggests an appropriate root metaphor is the historic event, not in the sense of the past but what is happening now; or an act within its context. Contextualist categories stress change, novelty, quality Events are in flux. The contextualist argues that the and texture. texture of an event can be understood by noting the integration of conditions of the event within the context of the event. Nhere Piaget's theory embodies a conception of persistent change it is illustrative of contextualist paradigms as are also Kelly (1955) and Neisser (1967).

Organicism is absolute idealism and is particularly congenial to artistic and religious people. Integration is probably the root metaphor. Every actual event in the world is understood as a concealed organic process so categories involve steps and process, and the ultimately realized organic structure. The whole is greater than the sum of its parts is an organistic notion. This view is associated with Hegel, Green, Bradley, Bosanquet, Royce and among psychologists,

Maslow (self-actualization), K. Goldstein (the organism), Rogers (personal growth) and the developmental psychologists who depend on the notion of stages of maturation.

The point to be taken from the philosophical roots of models and theory is the potential for bias in a test which may predispose tests towards some interpretation at the expense of others.

Empirical Bias

If tests contribute a hidden bias to the interactive process of the testing experience just as surely do respondents. One, usually undisclosed which biases responses to some types of test items is what Scribner (1977) has labelled an empirical bias. It has been encountered by Cole and his associates, by Luria (1976) and is reported from this study where it was conceived at first as a refusal to deal with hypothetical situations. Only facts as accepted as true by the culture are used as a basis for responding to questions. This is a significant bias considering that without hypothetical thinking the idea of proof has no meaning.

ANTICIPATORY APPROACHES

Anticipatory approaches are of several kinds and in some circumstances could be regarded as acting as biases.

Primitive Thinking

Early attributions of primitiveness to contemporary preliterate societies, in an evolutionary sense, have largely gone by default. However genuine attitudes that there is a basic difference between western and non-western type of thinking emerge periodically (e.g. Werner, 1957). Segall (1979) points out that this is not a resurgence of Levy-Bruhl's (1975) qualitative difference in the sense of inferior but rather a difference in kind.

Psychic Unity of Mankind

Different versions of reality found in other cultures continue

to attract attention and demand they be accounted for.

When such cognitive products can be seen as the result of the criteria through which the train of thought is led and not a result of cognitive process, the culture can be regarded as primitive and the individual as a victim of acculturation in a primitive culture. Hence the individual may be regarded as lacking only knowledge and opportunity to encounter alternative explanations to achieve western type thinking. This separation of the cognitive product from the cognitive process opened the door for the assumption of the psychic unity of mankind. While the assumption is widely accepted among anthropologists (e.g. Levi-Strauss, 1966), it is not accepted unreservedly by psychologists. Several workers (e.g. Brislin et al., 1975; Cole & Scribner, 1971) suggest investigations commence by assuming it is true with allowance made for the possibility of disconfirmation. Warren (1977) suggests the question should be put as to in what sense and to what degree may the psychic unity of mankind be said to obtain. Even if the assumption is supported by hard evidence, it does not follow that there are no differences between people and that the quality of cognitive strategies is not a legitimate area for investigation.

Deficit Approach

One consequence of the assumption of psychic unity is the deficit approach repudiated by Cole and Bruner (1971). The deficit model takes many forms from genetically inferior (e.g. Jensen, 1969) to evolutionary stages (Porteus 1965) to cognitive capacities being considered equal with the socializations processes of the culture being deficient in some way which is remedial.

Cole and Bruner's (1971) repudiation was based on concerns with demonstrated differences being assumed to indicate deficiencies which were manifest when required tasks were different from those provided

by the cultural background. This appreciation of the probelm would require the identification of a range of capacities and then an enquiry as to whether this range was adequate for cultural needs. This approach would change an apparent deprivation into a cultural difference and emphasize the context of relevance.

Relativistic Approach

This approach holds that behaviour is only fully intelligible within the context of the culture. There are no absolutes, no inherent properties. What is relative to the culture are particular details so that criminality (say) has a meaning independent of what is criminal behaviour in a particular culture.

Different but Equal Approach

The approach very rarely in evidence is the 'different but equal' approach adopted by Kearney, de Lacey, and Davidson (1973) and Cole and his colleagues. It is worth noting that Aboriginal collaborators in this study are convinced Aboriginal cognitive processes are 'different altogether' and make no comment as to equality or superiority. Rather they say it is their way and right for them.

Cultural Advancement Leading to Higher Cognitive Functioning

This approach has affinities with the deficit approach. Luria (1976) from his work with Central Asian peasants reported his results showed that cultural transition to the literate, educated, technological world causes a transformation in cognitive processes.

Comparative statements are frequently made by psychologists and anthropologists as Cole (1975) demonstrates of cultural advancement as cultures become modernized. There is also considerable evidence from cross-cultural studies that different education experience gives rise to different functional learning systems. Cole points out that schooling; literacy (Goody & Watt, 1962), and acculturation

(Doob, 1960) are all seen as providing people with new cognitive processes or new intellectual tools. The implication of this type of reasoning is a presupposition of the inadequacy of intellectual processes without interventions such as new technological challenges and experience. A consequent implication is that without such interventions thought and culture are stagnant and preliterate groups can be seen as bound to an optimum level of development in the Piagetian sense (e.g., Hallpike, 1979). This comes close to the tenets of Levy-Bruhl (1975).

Luria's assumption that the structure of thought covaries with the structure of the dominant type of activity in different cultures is finding some support in ecological psychology. Berry (1976) reports field-dependent and field-independent perceptual cognitive styles are linked to sedentary versus nomadic cultural behaviours.

However these so called new processes may be the use of different modes or cognitive tools or skills and not processes, with the processes previously available but rarely resorted to in a culture traditionally perferring to encourage different skills.

It 'is essential that skills be conceptually distinguished from cognitive capacities (Scribner & Cole, 1973). There is a high level of cognitive competence in culturally familiar tasks and anecdotal evidence exists for the complexity of some traditional skills and systems. If interpreted differently, however, they may prove to be not evidence of cognitive complexity but of overlearned culturally encouraged skills and systems such as the legal debates and the oblique reference style - Sanza- of the Zande (Cole, 1975), Gladwin's (1974) South Sea Islander navigational skills, Porteus' (1931) Aboriginal tracking skills and the complexities of Aboriginal kin and marriage systems. A suitable criterion for separating skills from capacities could be to determine if the expertise is potentially

teachable to another.

OUTCOMES OF TESTING

Three broad categories of cognitive functioning are characteristic of tests with Aboriginal Australians. These are general intelligence, psycholinguistic abilities and Piagetian stages of development.

Intelligence Testing

Interest in intellectual capacity dominated early work. Findings from this period of the first use of modern psychometric techniques in Australia by Porteus in 1915 suggested that that mean Aboriginal IQs were lower than those for Europeans (Porteus, 1917). Fowler (1940), emphasizing that range as well as means be reported, found a wide range of IQs with a higher mean IQ in some Aboriginal groups than others. His impression was that numbers of Aboriginals were capable of considerable development and that some exhibited intelligence of a high degree. However the lower mean IQ for Aboriginals in comparison with that for Euro-Australians as intelligence is currently being measured has been reported throughout the period of testing (see Gregor & McPherson, 1963; Kearney & McElwain, 1973; Klich & Davidson, 1984; McElwain,1976; McElwain & Kearney, 1973; Porteus, 1965; Porteus & Gregor, 1963).

The Queensland Test

McElwain and Kearney (1970) taking a different theoretical approach developed the Queensland Test which has proved an important contribution to the study of Aboriginal cognition.

The Queensland Test, a battery of performance tests was specially conceived and adapted for suitability for use with indigenous populations. It is communication enriched; is administered individually; administration and response is non verbal; test material is non-representational; the test is essentially non-speeded

material is non-representational; the test is essentially non-speeded and a correct result is scored whatever the method used to achieve it. McElwain and Kearney (1973, p. 47) after extensive application of this test, report that "not only are the mean scores lower but the rate of increase of score with age - the linear regression of score on age - in the range 7 to 12 years is also lower." (see also Kearney, 1967).

Psycholinguistic Tests

Watts (1982) reports consistent findings of inferior performance by Aboriginal children from 15 studies of general intelligence using the Peabody Picture Vocabulary Test (PPVT: Dunn, 1965) and she queries the value of this test standardized in America for use with Aboriginal Australians.

Similarly inferior performance on many scales of the extensively used Illinois Test of Psycholinguistic Abilities (ITPA: Kirk, McCarthy, and Kirk, 1968) has been reported (Kearney & McElwain, 1976). Piagetian Testing

Piagetian tests, global in conception, have been shown to transport successfully. A series of investigations using Piagetian research models has been undertaken among Aboriginal Australians (Dasen, 1973; de Lacey, 1970, 1971a, 1971b; de Lemos, 1969; Taylor, Nurcombe, & de Lacey, 1973). Generally when used with Aboriginal Australians a lag is observed in achieving stages of development. De Lemos (1969) reported a lag in achieving conservation and also an inversion of order together with a better performance by part Aboriginals. Nhile the latter finding might suggest such contributing factors as heredity, schooling, and European contact, Dasen (1973) did not replicate the finding of reversal nor the superior performance of part Aboriginals and suggests that failure by some Aboriginal children to reach the concrete operational stage

could explain the moderate success of primary schooling and the failure of secondary. Hypothetical arithmetic concepts are introduced by the 4th year of primary school and this has been claimed the limit of educatability of Aboriginals as education existed at the time (Nurcombe & Moffitt, 1970).

Furthermore, Dasen (1973) found that the influence of European contact is less where concepts central to Aboriginal culture are concerned. Such concepts are more resistant to change. It can be argued from Dawson's (1969) finding – that the highest level of unresolved attitudinal conflict is to be found in high affect attitude objects such as magic and clever men – that those constructs most resistant to change should be those particularly pertinent to the domains of magic, clever men and archival myths.

Aboriginal Capacities

Kearins (1976) in an interesting study decided to test Aboriginals at 'their own tricks'. Using visual memory patterns and memory skills with adolescent Aboriginals of the desert, she reported performance superior to that of Europeans. Drinkwater's (1976) findings did not support Kearins' results.

Cognitive Style Variables

McIntyre (1976) suggested that a concentration on the cognitive process rather than the cognitive product could prove a useful procedure. As a result she investigated cognitive style. The field is a developing one in which approaches are as diverse as the underlying theories (see Goldstein & Blackman, 1976). As Scott et al. (1979) point out the structural bases of such variables have generally not been explicitly formulated but they all suggest ways of utilizing and processing information. McIntyre compared urban and rural groups of Euro-Australian and Aboriginal Australian children on field independence, reflectivity, and conceptual style. She reported no

discriminant function differentiated between the groups' cognitive styles tested on the basis of culture. However as Watts (1976) has pointed out a child's cognitive style determines the utilization of intellectual abilities but will not determine the level of performance.

Anthropologists query deductions about ability drawn from performance on tests when they have observed the use of the stratagems in natural settings which the tests failed to elicit. They regard such tests as ethnocentric. Cole (1975) has objected to the extension of justified criticism of inferences drawn from poor performance, to unjustified concepts of culturally linked differences in performance. He and his associates (Cole, Gay, Glick.& Sharp, 1971) also observed participants in their studies use stratagems analagous to tasks they were unable to perform in a test situation. Thev came to the conclusion that cultural differences reside more in situations than in the existence of a process in one group and not in another. However situations are also what the individual interprets them to be.

Psychologists stress the need to maintain conceptual distinctions between performance and capacity and having a cognitive process and using it (e.g. Ciborowski, 1976; Cole & Bruner, 1971; Curran, 1980; Dasen, 1977; Labov, 1969; Scribner, 1974). Davidson and Klich (1984) bring out the difficulties in recognizing strategies for what they really are. As G.R. Davidson (1979) shows, Aboriginals playing cards may be assumed by the observer to make astute mathematical calculations when they are employing a strategy of pattern recognition.

ANTECEDENT SOURCES

Current emphasis in studies is concerned with establishing contributory factors or antecedents for this discrepancy in

performance and asking the question, as McElwain and Kearney did (1976), is the situation remedial in regard to potentiality for coping with educational, vocational, social and employment expectancies.

Antecedent sources fall into two broad categories - genetic or environmental.

Genetic Antecedents

Intelligence is generally considered mainly genetic in origin. The strongest comment of Aboriginal poor performance being innate has been that of Porteus (1965, p.164) who was convinced of a "biologically determined inferiority". Burt (1966) suggests 80% of cognitive ability in European type samples is genetic (see also Kearney, 1973; Kelly, 1979). Kearney's (1967) evidence from Palm Island children, many being descended from rainforest Aboriginals, supported the genetic contribution to IQ test score variance to be the same as for Europeans. However Cronbach (1975) is of the opinion that the idea of general ability being innate and fixed, whether developed or not, has plagued psychology for many years.

Intelligence tests for cross-cultural work have fallen into disfavour and their usefulness queried (Berry, 1969; Fowler, 1940). Although theories of intelligence have tried to provide a measure independent of culture (Cole, 1975) and the concept of relative intelligence has proved an important one, cultural definitions of intelligence vary. Such variation affects what cognitive behaviour a culture may foster at the expense of others. Emphasis might be better placed on enquiring as to the efficiency, quality and adaptability of the cognitive functioning and so make process the focus of enquiry rather than content. Greenfield and Bruner (1973) argue that IQ is not a process but the cognitive product of many complex cognitive processes which other methods are needed to unravel.

The linking of intelligence to genetic inheritance in current work is not to resurrect the old insoluable nature versus nurture debate but to investigate how culture and intellectual development depend on environment and what kinds of cultural differences make an intellectual difference (Greenfield & Bruner, 1973)

Perhaps the whole question of IQ might be more usefully considered on a relative basis and it could eventuate that Aboriginal communities rank the relative intelligence of their members in the same order as established by standardized tests (McElwain, 1976). Societies may vary not only in the rules they see governing a task but also in what their concept of intelligence is; how it is acquired and how it is related to skills.

Issues of variation in definitions of intelligence and hence what a culture encourages have been frequently raised (e.g. Goodnow, 1976,1979; Horton, 1967a, 1967b; Serpell,1976; Wober,1974). The Giramay, Gulnay and Dyirbal of this study, for example, consider intelligence resides in the ear or just behind it (see also Sommer, 1978 for Cape York data). 'Are you deaf?' in local Aboriginal- English means 'Are you stupid?' Hands clapped over the ears is a gesture equivalent to a spiralling finger on the temple. A conversation during grid completion provided the comment " he has always been stupid, somebody, sometime, perhaps the old people, blocked up his ears long ago. " Another conversation overheard between a white employer and an Aboriginal employee was of the order of :-"Why were you not at work on Monday?" "Are you deaf boss? You yourself gave me a lift Sunday evening and you saw I carried two flagons of wine." This appears to be a genuine physical description and not a type of metaphorical allusion. Metaphorical allusions are however not absent and are explained as being used because of a perceived similarity. For example the word for a wave in the sea is

'water knee' because the water bends like a knee.

Degree of intelligence is judged on ability with language. One participant in this study remarked that he had difficulty assessing the intelligence of those younger Aboriginals who spoke only English. 'Clever' in local Aboriginal English is used in relation to a gubi and his activities as in 'clever man','clever rope', 'clever bone' and the Gulnay and Mamu word at least is 'gayga' which is also the word for eye and possibly derives from a paranormal way of seeing and knowing. 'Clever' is not necessarily a compliment.

Various expedients have been tried to determine whether poor performance is a reflection of an underlying lack of ability. Modification of tests and test materials has been one avenue pursued. Culture free tests are considered unlikely to be attained (Berry, 1976; McElwain & Kearney, 1973).

Culture fair tests may be possible. One method used has been to keep the cultural variable constant and alter the task and or materials to optimize achievment.(e.g., Cole and his colleagues, Serpell and his colleagues, Kingsley and his co-workers in Africa). Such attempts to produce a culture fair test could be in danger of producing a culture specific test. However Cole and Scribner (1974) report a shift in cognitive processing skills if familiar materials and tasks are used.

The commonsense notion behind this is that people will be good at doing the kinds of things they are used to doing - the familiarity concept of Deregowski (1978) - with the alternative that unfamiliar materials produce difficulties.

Environmental Antecedents

Environmental influences in a broad sense are reported from most studies. Many possible variables are suggested as contributing to lower test performance. These include such items as unfamiliarity

with test material, nervousness, boredom, efforts to end procedures (Brislin, 1976). Triandis and his colleagues (1973) suggest as contributing factors, motivation, experimenter biases, comprehension of instructions, differential reliability and validity of tests and response sets. Others report impoverished environmental influences (e.g., de Lacey, 1970; de Lacey & Nurcombe, 1977; de Lemos, 1969; McElwain & Kearney, 1973; Nurcombe, 1976)

NcElwain and Kearney (1973) suggest a subsidiary contributory factor is the Aboriginal language system and lack of quantitative components. Several systems of variables are usually implicated in influencing cognitive functioning. These are ecology, the subsistence systems, cultural systems, social systems, socialization processes, the projective systems (Triandis, 1977) which are broadly reducible to culture.

<u>Rigidity</u>

Rigidity as a cultural factor together with stereotypic responses is indicated from several studies. Kendall (1977) has reported rigidity in a series of tests of African workers.

Two other cross-cultural studies may be interpreted to suggest rigidity. These are the work of Kirk and Burton (1977) with the Masai people of Kenya and that of White (1980) who worked with the A'ara people of Santa Isabel, Solomon islands.

Kirk and Burton (1977) studied implicit personality theories and found clear evidence that inferential relations varied systematically as a function of social identity. White also used similarity judgments of personality descriptors and found a two-dimensional configuration adequately represented the input data. This configuration he interpreted in terms of two orthogonal bipolar properties - solidarity and dominance and from a review of other work concludes there is a universal two dimensional structure of trait

terms. Thus, sorting a person into a social category associated with one of these dimensions should lead to a consistent set of inferences and anticipations. White further concludes these distinctions are central to language for describing others and are thus quite likely to be important for cultures beyond the one he studied. This can be interpreted as stereotypy or rigidity at least in person perception and if indicative of a cultural norm, can be linked to Scribner's empirical bias.

Deregowski (1978) suggests that lack of flexibility and not lack of mental ability might be a major factor contributing to poor performance. Lack of flexibility could further be linked to a nonarticulated cognitive structure.

Triandis et al. (1973) recognized that cultures can have systems which inhibit development and proposed that the cognitive style facilitating development is cognitive complexity with the three dimensions of discrimination, differentiation, and integration. He proposed two other factors deriving from the above should also be considered - cognitive flexibility of Cohen (1968, cited by Berry, 1980) and the coping style of Diaz-Guerro (1973). Diaz-Guerro describes coping style as active or passive where 'active' refers to changing the physical and social environment and passive as adjusting to it.

A further requirement suggested here is the need for hypothetical thinking.

Exposure Variable

Cole and his colleagues have shown that when tests were modified to approximate real life experiences, the more the non-westernized African tribesmen performed like westerners. But, the more people were schooled in Western type systems (e.g. Scribner, 1977) the more their performance was like that of westerners.

Australian evidence shows that performance improves in proportion to the extent of Euro-Australian contact (de Lacey, 1971 testing for classificatory performance; Gregor & McPherson, 1963 using the Porteus maze; Kearney, 1967 using the QLD test; McElwain, 1976; McIntyre, 1976 using the QLD test).

Kearney (1973) suggests that a reinterpretation of evidence from work of both Porteus and his co-workers shows a close the relationship between Mental Age of Aboriginal Australians and the degree of European contact they have experienced. Nevertheless, despite improvement in performance being shown to correlate significantly with Europeanization, Aboriginal children within the education system still perform at a level lower than that of Euro-Australian children (Keats, 1973; Seagrim & Lendon, 1976; Natts, 1973). Schooling is clearly not the panacea and schooling together with other variables such as literacy, numeracy, socialization, urbanization and nutritional levels do not necessarily covary with Aboriginal Australian populations. As Ciborowski (1976) suggests, probably no single variable will be found to account for the discrepancies in performance.

AN ALTERNATIVE APPROACH USING KELLY'S MODEL

Arguments have been advanced by various workers for the need to begin cross-cultural studies with theories at a high level of abstraction which are neither context nor culture bound. Subsequently culturally relevant measures of the theoretical constructs can be developed (Brislin, 1976; A.Davidson, 1977; Malpass, 1977; Triandis, 1977). Equally arguments have been advanced of the hazards for reliability in using a method divorced from its theoretical base (Adams- Webber, 1979); of working without a theoretical base (Eckensberger, 1979); of mixing several root metaphors (Pepper, 1942); and of the security of a strong theoretical

framework (A. Davidson, 1979).

Approaches to the investigation of Aboriginal cognition have ranged from the 'how well do they do our tricks' to the 'how well do they do their tricks'(e.g., Kearins, 1976; Porteus, 1931). Alternatively, McIntyre (1976) suggested a concentration on process rather than cognitive product but still using the 'our tricks' criteria.

The proposal for this investigation is to investigate process but rather based on similarities than differences, i.e. how do they do tricks common to all people. This follows a line of reasoning promoted by A. Davidson (1979). The reasoning is that differences are interpretable against a background of similarity and in the absence of similarity it is impossible to distinguish cultural differences from a large number of alternative explanations.

The theoretical model proposed is George Kelly's (1955) Psychology of Personal Constructs. Such a model has been suggested by Claxton (1980) and by Triandis (1964) who considered it to be one of the most promising procedures available for cross-cultural work.

There has been only rare application of Kelly's grid methodology with developing cultural groups, and then not necessarily in conjunction with his theory. Orley (1976) used Kelly's grid methodology to record how literate Ganda villagers view classes of spirits. Lemon's (1975) work with Ganda high school students used Kelly's model. Ross (1983) used personal constructs with Aboriginal Australians to elicit attitudes to housing.

Personal construct theory (PCT) research is a question of what the research is about and like other models it takes a particular direction. It is about the process of how people come to understand what they do and how they live out that knowledge. Consequently it has some aspects which appear of considerable advantage for cross-

cultural studies.

Advantages of Kelly's Model

Kelly's model accepts differences between cultures and rejects the idea of superiority of one culture over another. It is applicable to all ages and to all people, and it rejects the idea that adaptation to a contact culture or any adaptation inevitably leads to higher forms.

Kelly clearly repudiates the idea that cognition is a passive process and accepts that while individuals have a vested interest in what their construct system predicts, it is the investigator who is interested in how it predicts. The personal construct model accepts an individual's constructs with credulity; it provides emic data and uses the yardstick of the construer. There are no right or wrong answers to be assessed, normative questions are not applicable, and the theory has an in-built model for change.

Kelly's model is formulated for the whole rather than the segmented person and he sought to integrate all aspects in one theoretical model. So it is a matter of working with rather than on people and using pre-existing constructs of everyday life. The individual is the focus of any investigation and the platform from which any enquiry is launched. The model is exploratory in the sense it discovers what exists in the direction of interest. It is not committed to any particular avenue for remedial procedures.

The progession of testing of Aboriginal Australians has seen more emphasis placed on school children possibly because of access, quantity, and availability. Traditional groups provide smaller sample numbers living in remote areas. The present sample is traditionally orientated mature preliterate Aboriginals, who have received traditional instruction only. Their first language is an Aboriginal dialect which is used for preference between themselves.

Several females speak only an Aboriginal dialect.

This age group was selected because the cultural component is kept at an optimum and variables such as western style education excluded. It is assumed that the mature of the group represent a level where cultural influences have had most impact and whose influence on younger groups is most likely to reflect these cultural influences.

OUTLINE OF THE INVESTIGATION

Many variables have been raised in this chapter and definitions avoided. Kelly (1955) has redefined many such variables and so a PCT perspective to such variables is presented in Chapter 2 together with the theoretical implications of Kellys model.

In Chapter 3 the concepts of cognitive structure based on work using Kelly's model are outlined.

Chapter 4 introduces the cultural component with a brief outline of the effects of contact and consequent change in cultural systems from the Aboriginals' appreciation of events. This is necessary in understanding grid constructs and elements because no ethnographic account of the rainforest Aboriginals exists. Roth's unpublished material (Roth, 1900) clearly refers to Dyiru as explained in the Introduction.

Chapter 5 provides details of the sample and special methodological considerations.

Chapter 6 is the Method chapter with results shown in Chapter 7. The implications for learning and change of the type of cognitive structure revealed by the grids is discussed in Chapter 8 together with observations of the discrepancy between Aboriginal English translations of Aborginal constructs and their meaning in the emic use in personal construct systems.

CHAPTER 2

A Personal Construct Approach to Cognition, Variables, Behaviour, Culture and the Cultural Individual

Because Kelly's approach uses alternative operational definitions, which sometimes differ substantially from most approaches, definitions were avoided in Chapter 1. Here the personal construct theory approach to such variables is described.

general objectives for taking the broader perspective of The cross-cultural studies have already been mentioned. To demonstrate that Kelly's model may or may not be usefully used with a preliterate Aboriginal Australian population is to acknowledge only one such objective. Plausibly, the total environment, including cultural systems, is generally held to determine behaviour and influence cognition in a linear, causal, sequential manner with some allowance made for feedback loops (Triandis, 1977). This seems reasonable with reference to behaviour which may be observed and to the cognitive product which may be supplied. Cognitive processes are typically not so evident and less direct methods are needed to access them. Α central objective of working with groups from a different culture has always been to attempt to relate culture and cognition and to describe the nature of the relationship (Jahoda, 1977). An indication of the perceived complexity of the chain of influence is the diversity of cultural variables reported in the literature as affecting cognition [e.g. Berry (ecology), 1976, 1980; Dawson (biosocial systems), 1969; Horton (causality), 1967; Levy-Bruhl (knowledge systems), 1975; Porteus (environment), 1937; Rosch (categorization), 1975, 1977; Schweder (correlational thinking), 1977]. When appropriate in this investigation, approaches to such and other variables will be from the PCT perspective.

This investigation, therefore, may be conceptualized as having two broad interrelated components, the cognitive and the cultural, with the relationship between them being explored through one set of phenomena - personal constructs. The PCT approach to both components will be considered separately and then their interaction described.

A PERSONAL CONSTRUCT APPROACH TO COGNITION

Kelly's model of humankind is based on the philosophical position of Constructive Alternativism. His Fundamental Postulate and eleven elaborative corollaries represent a departure from usual psychological models (Kelly, 1955, 1963).

Kelly (1955,1963) was concerned with people as scientists trying to make sense of their world. This is done by setting up hypotheses in the form of anticipations and interpretations and putting them to the test. Anticipations are based on the construct. Constructs have been erected by the individual's perception of similarities and contrast in events in the environment and the anticipation of their replication. Constructs are seen as being organized into an hierarchical system consisting of constructs in relative positions of superordinancy and subordinancy. Within such a system some constructs form a subsytem. Some constructs may vary according to the subsystem and the context involved. What a construct is cannot be appreciated unless both poles are known, that is what the alternative is.

It is to be expected that construct systems reflect the values and beliefs of individuals and of their culture.

The Fundamental Postulate states that "a person's processes are psychologically channelized by the ways in which he anticipates events." (Kelly, 1963, p.46). The essential psychological feature derived from this position is that the psychological initiative is the property of the individual (Kelly, 1970a). Meaning is not inherent in events; it does not pre-exist in nature. Constructs are

imposed on events by the individual and not extracted from them (Kelly, 1970a). Structure is indicated by the concept that people devise their own constructs which they use in an unique way to organize their responses to events. Constructs can then be regarded as being used as reference axes onto which events are projected or as portable yardsticks against which events are monitored.

The Construction Corollary states "a person anticipates events by constructing their replications." (Kelly, 1963, p. 50). The essential psychological features introduced here are the appreciation of repetitive themes only by the simultaneous recognition of perceived similarity and difference; the theme of representation and the theme of organization (Kelly, 1969).

The Dichotomy Corollary states that "a person's construction system is composed of a finite number of dichotomous constructs." (Kelly, 1963, p. 59). Most reservations regarding Kelly's theory refer to this corollary (e.g. Slater, 1976). However such reservations may be overcome if Kelly's conception of a construct is observed rather than transferring to a construct those assumptions which are more applicable to a concept. If a construct is seen as functioning as a reference axis and not misconstrued as a symbol of anything, then a construct can be regarded as the nature of a distinction made between events by an individual. Any sort of relativism, or 'more or less' scale, can then be regarded as a property of the objects construed; the construct itself is absolute (Kelly, 1970a).

The Range Corollary - "A construct is convenient for the anticipation of a finite range of events only" (Kelly, 1963, p. 68) limits the applicability of any specific construct, or of the construct system which is itself finitely composed. For example it is appropriate to say of a desk, 'that is not a table.' It is inappropriate to say of a sunset 'that is not a table.'

The Organization Corollary - "Each person characteristically evolves, for his own convenience in anticipating events, a construction system embracing ordinal relationships between constructs" (Kelly, 1963, p.56) - provides notions of hierarchical structure where some constructs are perceived as being more crucial than others.

The Choice Corollary - "A person chooses for himself that alternative in a dichotomized construct through which he anticipates the greater possibility for the elaboration of his system" (Kelly, 1963, p.64) - introduces the notion of directionality of behaviour (Kelly, 1955).

Individuals, in their role as scientists trying to make sense of their world, derive their hypotheses from the interrelationships in their personal construct systems. Choice in anticipation is based on awareness of the available possibilities. Such a choice among specific alternatives which pre-exist in the system will be based on either utility; or the possibilities for enhancing the capacity of the system to anticipate events; or the perceived need for tightening procedures to minimize inconsistencies in the system; or to explore and to expand by extending the range of a construct into new areas of experience.

The persistent theme in Kelly's model is flux within relative stability; the system being seen as relatively more stable than the individual constructs within it.

Kelly's emphasis is always on the individual and the approach to any variable is from the orientation of the individual.

The Individuality Corollary states "that persons differ from each other in their construction of events." Kelly (1970a) explains that this corollary means that not only do people erect their own idiosyncratic interpretations of the same events but that such

constructions will be assembled together according to their idiosyncratic set of implicated relationships.

While each individual is regarded as psychologically unique, this does not mean that individuals are isolated in a construing world of their own (Kelly, 1969; Nestott, 1977). The cultural background expectations under which individuals have validated their constructs cannot be ignored. In Kelly's view, the person is only constituted in relation to others (Kelly, 1979) and he has written: -

"If a man's private domain, within which his behavior aligns itself within his own lawful system is ignored, it becomes necessary to explain him as an inert object wafted about in a public domain by external forces or a solitary datum sitting on its own continuum. If a man's existence in the public domain is ignored, our painstakingly acquired knowledge of one man will not help us understand his younger brother"(Kelly, 1963, p. 39).

Because of the existence of the Individuality Corollary Kelly needed to recognize and account for the relationship between uniquely construing individuals, the content and process of their personal constructions and their environmental situation. He has done so with other corollaries.

The Commonality Corollary states that "To the extent that one person employs a construction of experience which is similar to that employed by another, his psychological processes are similar to those of the other person." (Kelly, 1963, p. 90). This is an acknowledgment of the existence of similar constructions among, in this case, members of the same cultural group although all consequential implications of constructs held in common are not necessarily similar. Neither events nor validational efforts need to be similar in order for psychological processes to be similar. What is essential is that the construction of experience, that is the conclusions arrived at, be The assumption that cultural systems are wholly similar. and idealistically replicated in the minds of each member is not compatible with Kelly's viewpoint. Rather this corollary moves the

focus from the individual and enables the investigation of cognitive differences within and between cultures.

Alone the Commonality Corolllary does not serve to complete the elaboration of Kelly's Fundamental Postulate. His Sociality Corollary, independent from his Commonality Corollary, is designed to take account of the processes of social interaction and interpersonal understanding.

It states "To the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person." (Kelly, 1963, p. 95). By this Kelly intended that "social psychology must be a psychology of interpersonal understanding, not merely a psychology of common understandings." (Kelly, 1955, p. 95).

Kelly introduces here a reconceptualization of 'role' as a psychological process based upon the role player's construction of aspects of the construction system of those with whom he interacts. A distinction is drawn between construing the behaviour of another and construing the construction process of another (Kelly, 1970a).

A Personal Construct Approach to Reality

Throughout the history of encounters with preliterate societies, it is the product of the construction process which has encouraged facile expressions of a qualitative difference in cognition and the pejorative label 'primitive thinking'. Human experience is represented in so many different ways that no model of humanity could attempt to reflect even some of the ways that human experience finds expression. The only appropriate approach within any model is to try to account for the existence of the variety itself.

Kelly sees a person's life as one of personal enquiry. He makes a central position of Constructive Alternativism that the significance of events, their construed meaning and anticipated

outcomes, antecedents and consequences are all the property of the individual. The events themselves, in which such personally significant anticipations are invested, "hold no institutional loyalties. They are in the public domain" (Kelly, 1963, p. 10) and it is the individual who "creates his own ways of seeing the world, the world does not create them for him" (Kelly, 1963, p. 12).

Events are open to as many constructions as people can devise. Kelly (1955) is committed to the view that the world is real, it is integral and it can be understood only from the perspective of time. The individual's psychological processes are based on personal versions of that reality and these personal versions are personal constructs. Thus a construct is a representation of the universe, erected by an individual and then tested against the reality of that universe (Kelly, 1963, p. 135).

Individual's constructs about reality are also real and really exist although the correspondence between them and an objective reality may be an approximation at best and is capable of being changed. Objective reality demarcates no boundaries for a person's experiences. Demarcation lines are in the construct system of the individual and any impediment to seeing reality in more objective terms is the responsibility of the individual.

A Personal Construct Approach to Environment

While Kelly (1963) sees no event as having an unique interpretation and the world theoretically as open to as many constructions as may be devised, available options for any individual cannot be infinite. People, in their roles as scientists, are trying to come to understand their universe and so are limited by the objective reality within the radius of their knowing. That is to say that the cycle of anticipation links the perceiver to the world and so anticipations can only develop along avenues the known world

offers. Individual perceivers also can only pick up what their construct systems can accomodate. Everything else must be ignored.

All alternative constructions within these limits are not of equal usefulness. The one selected is that one which has most utility for the purposes of the construer, especially in anticipations. Should the anticipatory sequences fail, the construct system is available for reconstruction. Even so, the responsibility for any particular version of reality is placed firmly in the construct system of the construer. In the business of trying to understand the world it is conceded that it is better to have a false theory than no theory at all. False theories anyhow are not the prerogative of preliterate cultures.

Kelly sees life as involving the interesting relationship between parts of the universe, where, one part, humanity, is able to represent the other part, the universe and thus he stresses the creative capacity of individuals to represent their environment and not merely respond to it (Kelly, 1963). More and more it is appreciated that what is known by individuals depends on who they are, and where they are. However care must be taken to avoid the idea that particular groups of people place particular interpretations on the environment because of who they are, e.g. Aboriginal Australians. Everyone has a different version of reality and Aboriginals have developed theirs in response to the questions they have asked about the environment.

How human beings reach out to come to grips with the unknown and come to 'know it' has fascinated Kelly (1977) and he has written that he suspects that historically, the questions people have asked are more important than the conclusions they have reached. However, as he sees it, asking questions leads to further questions based on the original and conclusions reached can "perpetuate themselves and often

serve to limit, if not stultify, both action and thought. Thus the living history of man is the story of the questions he has enacted, rather than the conclusions he has anchored in science or dogma" (Kelly, 1969, p. 12).

Personal Construct Approach to the Durability of Traditions

While Kelly's conceptualization accounts for how cultural processes lead to an extensive consensus regarding constructs of 'public' knowledge and distinguishes between 'public' knowledge and 'private' knowing (Kelly, 1955), there remains the need to account for the durablity in both sectors of apparent misconceptions about the nature of the universe in face of, it has to be assumed, repeated invalidational evidence from contact with a more developed culture. This may be best approached through learning.

<u>A Personal Construct Approach to Learning</u>

Whatever representation of reality the individual experiences as reality itself, functions as a base for reaching out to comprehend and incorporate novel events. That is, as Kelly (1963) explains it, all thinking is based on prior convictions. Feedback from the environment is assessed in terms of those prior convictions already existing within the construct system and so, as Mischel points out, all anticipations enjoy the maximum opportunity for being selffulfilling. However, when an event occurs which makes it impossible for the person to persist in adherence to his or her original constructs, change will take place. (Mischel, 1964). Nevertheless it is the same system which acknowledged the incongruity of the event which itself must produce the change. All change evolves from the old. As Kelly (1955, p. 183) says "One does not escape from his cultural controls (assuming that there is ever any reason to escape) simply by ignoring them - he must construe his way out."

Change does not necessarily inevitably happen in the face of

invalidating evidence. There is reliance on and security in the familiar. People tend to do things as they have been done before. Innovations are often disruptive and objective reality is not an impediment to people, such as those associated with this study, who look beyond the physical qualities of a rock and see it as the transformed presence of an entity which still retains the original power to cause harm. People may have too much of their lifetime's construction invested in their construct system to be prepared to jettison it and its security and familiarity in the face of all the potentiality for impending chaos and anxiety implicit in the unknown.

As Kelly (1977) says, people cannot make facts, even validated ones, responsible for their conclusions because all they eventually have at their disposal are their own interpretations. If their ingenuity in deriving constructions is limited it is still they and not facts which hold the key to their ultimate future (Kelly, 1970b). So, if people retain their 'misconceptions' about reality it is because they find them more useful in anticipating events and they want to keep it that way. Moreover, the more immediate the possibility of disconfirmation, the more likely change will take place. When the construct system is used to monitor remote events such as happenings of creation or life after death with little chance of putting the construing to test, then such things are not likely to be open for revision. They are the essence of traditional archival myth systems.

Kelly (1979) sees the role of the educator as more than passing on the social heriatge of a society and that individuals must be taught how to manipulate it, use it, select from it and build on it. Most reports on performance are from the viewpoint of the investigator and on achievment levels from the viewpoint of the educator. As the PCT approach is always from the viewpoint of the individual, the appropriate perspective is to consider education, of
whatever kind, from the viewpoint of the individual learner where the learner concept is not limited by age, nor is learning limited to a formal educational situation. The assumption that Aboriginal Australians have difficulty with learning from the viewpoint of the educator in a formal education situation is well supported.

How does a person learn in PCT terms? Kelly sees a learner as a hypothesis tester and he makes the learner responsible for the learning process. Things do not change, only understanding and interpretations change and this is irrevocably the business of the individual. Learning involves experience and rather than say one learns by experience, Kelly says learning is experience in the sense that if individuals have 'collided' with many events and experienced nothing, they have learned nothing. Change is a prerequisite of learning and change involves experience, choice, and modulation with respect to the pre-existing construct system, as all change develops from the old.

What needs to be known are the rules for extension of the system, for revision of the existing system, how new knowledge, new elements and novel events are incorporated, assimilated or coped with and what are the limits of coping. These criteria are covered by Kelly in several corollaries.

According to the Experience Corollary, individuals' construct systems vary as they successively construe the replication of events. Those workers who are interested in developmental issues see Constructive Alternativism as implying a personal construct system can become progressively differentiated in terms of the number of independently organized subsystems it contains (e.g. Adams-Webber, 1979). Kelly does not appear to see developmental processes as automatic, dependent only on stages of maturation but rather, that they are ultimately under the control of the individual.

Kelly replaces the notion of reinforcement with processes of validation and invalidation of a person's constructs (hypotheses) and these are the processes central to change. As the individual is in control of the construct system, if change occurs, it changes by itself. Invalidation changing represents incompatability (subjectively construed) between the individuals' own predictions and the outcomes they observe (Kelly,1955). Conversely, validation represents confirmation of predictions (again subjectively construed). Both validation and invalidation may be the occasion for change but changes in the form and content of construing occur mainly in response to invalidation of anticipations. The essential point to be made is that it is the same construct system which provided the invalidated construction which must provide a replacement.

Individuals direct their processes to ensuring the effectiveness of their construct systems for anticipating events by concentrating on those events which are incongruent with the validated constructs against which they are being monitored. For Kelly it is this resolution of incongruent events which commands most of the construer's attention.

Not any hypothesis will suffice to resolve discrepancy. The selection of the replacement is limited to those possibilities which allow for the greater elaboration, extension and definition of the system (Choice Corollary). So the focus of interest is not the fixed system but the process of maintaining the utility of the system for the individual's anticipation and, consequently, learning in PCT terms from the orientation of the learner is the construction and incorporation meanings and understandings and of new the reconstruction of existing understandings in directions which are important to the learner.

The interpretations valued are those relevant to the learners'

purposes and viable in maintaining and supporting their systems. What is learned is conditional on the specific anticipations and idiosyncratic structure of interrelationships already established within their construct system. That is, knowledge already assimilated determines what, if anything, will be acquired next as new events are not simply attached to a system. They must be incorporated into it. This is Kelly's area of departure from traditional learning theory. What is learned is not directly determined by the nature of the stimuli but is constrained by the pre-existing anticipations within the construct system. Stimuli are what the person construes them to be.

Learning involves change and change is most likely to occur after invalidation. In the face of invalidating evidence, several avenues for coping are available. The person can move to the contrast pole of the construct, e.g. seeing an accountant previously construed as honest, as dishonest. Construing can be re-routed through existing pathways and other constructs tried for applicability. The accountant previously construed on the dishonest-honest construct may be construed on a careful-careless construct. New evidence may be rejected as irrelevant. Persons may decide they have not taken everything into account and repeat the 'experiment'. They can attempt to alter the events so that the evidence supports their preconceived notions and thus behave in a 'hostile' manner in Kelly's use of the can become 'anxious' and loosen their construct word. Thev interrelationships to incorporate the new evidence or they can feel under 'threat' and tighten their construct interrelationships in an attempt to define more exactly what their system for living predicts. Hhile loosening and tightening are efforts to preserve the system, contextualists would argue that for there to be any change there must be movement in the tight-loose dimension.

Initial attempts to incorporate novel events will be along routes which promise as little disruption of the system as possible. It is by processes of validation and invalidation and consequential revision of the system according to outcomes of these processes that learning takes place and events get locked into psychological space in greater depth (Kelly, 1955).

Limits to coping with new knowledge and disconfirming events are also the responsibility of the individual and are locked in the construction system. Important limiting aspects are explained by the Nodulation Corrollary which states that " The variation in a person's construction system is limited by the permeability of the constructs within whose range of convenience the variants lie."(Kelly, 1955, p. 77). As Bannister and Mair (1968) point out, everyone is familiar with people who do not change their ideas or opinions when evidence to support them is not forthcoming. Range of convenience is a personal limit. Everything else is irrelevant to objects located in a certain range.

Constructs themselves are used in ways that can be exploratory or inhibiting. A permeable construct is one which permits the judicious addition of new experiences and new events to its range. The relative degree of permeability is the limiting factor to the development of the system. Kelly suggests that with permeable superordinate constructs, the individual can systematically vary subordinate aspects of his construction system "without making his whole psychological house fall down." (Kelly, 1955, p. 81). Conversely, the more impermeable the superordinate constructs the less change can be accomplished. Facility to change is in ratio to the degree of impermeability. By definition, the range of convenience of the permeable aspects of the superordinate structure limits the maintenance of overall consistency. So in order to be able to

incorporate New components of structure systematically, it is essential for persons to be able to continually readjust their superordinate constructs to minimize inconsistencies at the highest level of abstraction (Kelly, 1955).

Modulation by means of relatively permeable superordinate constructions and the progressive differentiation of substructures permits a corresponding extension of the range of convenience of the system as a whole and an increasing variety of events can be assimilated within the system. Constructs within the system are like pathways along which the construer is free to move. It follows that the more flexible the system, the more it is available for amplification and elaboration, the more pathways and links will exist, the more movement is possible and the more new events can be incorporated. Kelly (1955) points out that those constructs significantly correlated with the constructs on which the original anticipations were based will be the most affected by predictive failure. Therefore, the more highly interrelated all the constructs within a given system or subsystem, the greater will be the effect of any disconfirming experience in terms of the implications throughout the system or subsystem. A consequence could be a high degree of resistance to change.

So it can be seen that learning, change, the incorporation of new knowledge and differentiation of the system is not random and if individuals do not modify constructs with respect to their validational fortunes they do not learn. Further, what they learn is a direct consequence of what pre-exists in their system and is limited by the utility, quality and efficiency of the system for coping with new information.

The question of the development of the individual's system, which involves both content and the degree of complexity of the

system, change, and modulation, is of critical importance. It is relevant to understanding in some way the problematic issue of education as discussed in Chapter 1, to learning , as learning appears to need the development of complex, flexible and adaptive construct systems, and to coping with all aspects of life. From the aspect of development, as opposed to the additive process of new elements, development is generally seen as progressive differentiation into organized subsystems and increasing integration (e.g. Adams-Webber, 1970; Salmon, (1970).

It has been reported frequently that those cross-cultural subjects with some degree of Western type education achieve higher performance scores on tests than do those who have received traditional instruction only. Further, Australian studies indicate that the performance of Aboriginal Australians is higher in ratio to the extent of the European contact they have had (e.g. de Lacey, 1967; Gregor & McPherson, 1963; Kearney, 1967; McElwain, 1976; Seagrim & Lendon, 1976).

A PCT approach would invest the responsibility for improvement in those individiduals who had responded to European contact by modulating their construct system to incorporate what they had experienced.

Constructs may also be used in ways which facilitate or inhibit learning in addition to the limitations imposed by aspects of permeability. A construct may be pre-emptive in the sense of 'a ball is nothing but a ball' or 'an Aboriginal is nothing but an Aboriginal' and cannot be regarded as also a philosopher, poet or scientist.

A construct may be used in a constellatory way in that it allows elements to belong to other categories but fixes their membership in the sense that 'a thing called a ball must be round and bounce' or

'if people are Aboriginal Australians they must also be lazy, dirty, or noble savages.'

A propositional construct is one which leaves its elements free, that is any roundish mass may be considered among other things as a ball or these people may be considered among other things as Aboriginal Australians. As the aim of construction is to make the world of events more predictable and the person feel in control of his or her life, reliance on using constructs exclusively in any of the above ways is non-productive.

A Personal Construct Approach to Rigidity

As rigidity was raised in Chapter 1 as possibly contributing to poor performance the use of constellatory and pre-emptive constructs needs further elabortion as they are indicative of overly tight and inflexible systems if used to the extreme.

With the aim of trying to maintain a system with a high anticipatory value for the construer, change would be rejected if the change posed a threat in that anticipatory capabilities were diminished or failed. While propositional constructs leave all options open, a system containing tight interrelationships where all constructs are highly correlated and concretely pyramided has fixed and few routes where all lines of reasoning eventually converge on a single superordinate construct. Such a system is the outcome of excessive use of constellatory constructs. This useage is at the base of stereotypic thinking.

Kelly proposed two limiting extremes for a construct system, extremely tight and extremely loose. Both are an impediment to learning. The tight system resists change, the loose system makes decision taking virtually impossible. But what of people who decide the event is intransigent, prefer to be aware of its existence and acknowledge they do not know what it is and decide to treat it as

irrelevant in preference for a familiar system they feel in control of? They are likely to tighten their systems further to make them more secure. Kelly (1955) noted that persons with construct systems which are relatively undifferentiated in structure are reluctant to risk adjustment at any level for fear of putting themselves in a more ambiguous position regarding the outcome of their anticipations. This has been supported by the work of Crockett and Meisel (1974).

When such social and cultural factors as are found in preliterate societies are construed in relation to the processes of learning and change, they can account for the durability of cultural beliefs and systems in the face of disconfirming evidence from the contact culture. They may also act as influences which hamper or encourage individual development by their systems for internalization of cultural belief systems and regulation of behaviour. This still leaves room for the individuals' active part in and responsibility for their ways of construing the cultural knowledge systems and as such the model is antithetical to the simple moulding into shape model of culture.

A Personal Construct Approach to Intelligence

As Kelly points out (1963), the psychology of personal constructs is founded on an intellectual model although this does not confine its application to what is commonly called 'intellectual'. Intellect, as he further points out, has been classically described as the controlling feature of the human mind. Kelly associates the intellect with communicable constructs. If, as he says, individuals can communicate the construct under which they are operating, it can be understood by an observer and their behaviour makes sense. If such communication fails, their behaviour is uncontrolled, little sense may be made of it and they are regarded as stupid.

Kelly links the degree of intelligence itself to the quality and

efficiency of the construct system in the sense of its availability for anticipating many events and its adaptability to changing circumstances and its capacity to incorporate new evidence. He has considered the question of a biological or environmental basis for intelligence and together with others, inclines to the view that as evidence now stands, intelligence is mainly biological in origin. Neverthless, in regard to the old insoluable 'nature versus nurture' debate, he points out that "for a given culture level, nature is more significant, but for a given biological level, culture is more significant" (Kelly, 1979, p.9-10), and in practice he has noted that 'nature' needs considerable 'nurture'. He concludes that a person's place in society "is finally determined somewhat by the relative amount of culture at his command. This relative amount of culture ... seems to be a function of his intelligence." (Kelly, 1979, p. 10). Greenfield and Bruner (1974) express a similar opinion with their view that intelligence is to a large extent the internalization of tools provided by a given culture.

While Kelly supports the view that biological factors contribute most to an individual's intelligence, he argues that the conservative estimate should be to favour the individual and so environment, which is manipulable, should receive most attention.

Kelly's conceptualization of intelligence, with its emphasis on adaptability and capability for change according to circumstances, transcends many of the problems inherent in a conception of general intelligence. Global in conception, it is not biased to Western criteria but rather encompasses the need of all people to utilize different environments for their needs; to cope with changing environments and circumstances and to acquire new knowledge and skills. The approach allows for the development of the construct system and has in-built notions of potentiality for adapting to new

demands and benefitting from educational, vocational, and social opportunities. Without the quality of adaptability, cognitive capacity could remain under-realized.

A Personal Construct Psychology Approach to Behaviour

Kelly's position on behaviour is a departure from traditions which see the behaviour of the individual as a dependent variable. It is an unorthodox but not essentially unique concept which will possibly gain at least partial support as more cross-cultural work is undertaken. The position is based on a need to avoid thinking in terms of a goal which is a logically implied outcome of behaviour but which is not psychologically contained within the behaviour. Kelly's (1969) attitude is that a person's behaviour is not the answer to the psychological question, it is the question and is therefore the independent variable. This thinking finds some degree of support in other sources where through cross-cultural experience it is seen as no longer possible to simply treat cultural variables as antecedent and behavioural variables as consequent (Berry, 1976). For example, as Brislin, et al. (1975, p.14) put it, the dependent variables in cross-cultural psychology make it more difficult to assume behaviour consists of: -

"static and molecular responses" because "even a partially blind person realizes sooner or later that the responses of individuals (the traditional dependent variable category of general psychology) are also an ingredient in the cultural environment (or independent variable) that contributes to the determination of those very same responses."

The problem still remains of explaining behaviour in personal construct theory terms. It is a problem which has interested several workers, notably Mair (1977); Radley (1977); and Sarbin (1977); into exploring the possibility of extending the theory or interpreting the existing theory to incorporate action and behaviour.

Kelly (1970a) recognizes some antecedent influence on behaviour of individuals but in the main, it is not events of the past, nor of

childhood but of the present and the anticipatory nature of their construct systems. The only avenue for the past to influence behaviour is through its contribution as a possible derivatory source of the presently operating construct system (Kelly, 1963). Kelly's thinking on behaviour might be best realized through the criteria of a construct.

As a construct embodies contrast and anticipation so does The nature of a person's behaviour cannot be fully behaviour. until what it might alternatively have appreciated been is As Kelly (1969) points out, behaviour takes understood. on additional meaning when it is seen as a denial, an abandonment of alternatives or as a choice which has left other possibilities unexplored. Kelly sees behaviour as not separate from mind, nor does behaviour always effect a preconceived end controlled by the mind; nor is it determined by outside events. The person responds to external events rather than reacts to them and derives the directionality of response from the realm of relevance of the personal construct system. In this way actions are not consequent to previous events but are expressions of what is affirmed or denied in the construct system. Kelly (1970b) sees human beings through their behaviour as putting their constructs of events to the test. The outcome of such experiments with living may change the person; that is the person is changed by an experience and, in this sense the person is a product of behaviour in the situation. This is why Kelly prefers to say learning is experience and seems to be what he meant by saying behaviour is the independent variable.

A PERSONAL CONSTRUCT APPROACH TO CULTURE

Culture is a very imprecise term. Kroeber and Kluckhohn (1952) identified over 150 definitions and many more will have since been added. Kelly considered the word 'culture' should be reserved for the

meaning of cultivatedness. He preferred that human original institutions, language, tools, methods, governments, schools, folkways, mores, facts, manner of living, be considered the elements which make up an individual's 'social inheritance'. Kelly's argument is that culture, without excluding any development of the human mind which is transmissible, becomes the sum and total of things human. So in his terms, any distinction drawn regarding the relative importance of the knowledge of how to make a wallaby net or the knowledge of mvths is irrelevant. Relevance is secured in archival the recognition that both are elements of a social inheritance (Kelly, 1979).

However, Kelly's position on the function of culture is stronger than that merely of a context. He considered the cognitive and the cultural elements exist in a mutual relationship (Stringer, 1979). The theme which binds them is the person. This approach avoids the difficulties of trying to relate the two components in instances where both are treated as separate things to be analysed. It also the bias of preemptive construction about culture and avoids prohibits cultural factors being investigated as if divorced from the person and so in some way functioning as variables which determine the person's thoughts and responses. So, under the mantle of Kelly's model, culture is brought into the realm of psychology as a legitimate avenue for research rather than left as a topic of separate enquiry (Kelly, 1963, 1977). Nevertheless, if some difficulties in conceptualization are overcome by this approach, others are created.

Kelly (1955) sees the individual as making sense of reality and coming to grips with the unknown through a personal construct system which is anticipatory in nature and which the individual has erected. He also sees individuals as creating their personal ways of knowing

within the confines of and through access to their social inheritance. However, the constructs available through social inheritance are also themselves psychologically generated and the principal cultural controls are internal to the individual. The result is, as Radley (1979, p. 87) explains, there is a need to adopt a "dual attitude" where people are conceptualized as having the determination of their own lives but must be understood in the actuality of their being part of a cultural group.

Construing involves choices and it is people who make the choices not the culture. Kelly sees culture as man-made and does not accept that any cultural knowledge can be passively absorbed. For Kelly no situation or event is intrinsically anything until the individual construes it as being something. How individuals construe cultural evidence is their own affair. As Fransella and Bannister (1977, p. 7) point out, even 'public' constructs are personal in the sense of individually given meaning and 'public' constructs may have consensus support because of repeatedly demonstrated implications of predictions and because their meaning is frequently rehearsed.

A PERSONAL CONSTRUCT APPROACH TO THE SOURCE OF CONTROL

Kelly (1963) sees three ways available to individuals for achieving control of their own constructions. They can rely on preemptive construing, the 'this and nothing but this' type, and thereby contract their anticipation of events to a single meaningful dimension, excluding all other possible construction as irrelevant.

The second method, constriction, is to exclude parts of the perceptual field in order to make control more flexible and thus minimize apparent incompatabilities. As Reid (1979) summarizes the above, preemptive construction involves restricting the interpretation of events, constriction involves restricting the events to be interpreted. Mair (1979) says that every way of knowing

is also a way of ignoring because people respond to some aspects of the world and ignore others.

The third method of control is choice (embedded in the Choice Corollary). Choice for Kelly is always elaborative. The person elects to extend understanding, to test hypotheses or to seek security in the familiar and so tighten the construct system to define more rigidly presently existing interpretations. As Kelly (1963) puts it experience calls for consolidation of some aspects, and revision or abandonment of existing systems if the person is to learn. It is the option of the individual only whether to order life on a few tightly related constructs or on broad principles.

Cultural Controls

The major cultural controls are internal to the individual, that is they are built into the individual's construct system as it is developed within the limits of the cultural system, which system, in turn, provides the individual with validational experience for the whole range of constructs - physical, psychological, ideological and thereby directly affects the implications of the individual's choices. So, the individual's construct system is constrained to evolve within the limiting framework of a common cultural experience. This differs from those models of culture which reflect culture as having a fixed content of available knowledge which is replicated in the minds of its members as a socially derived and socially based set of representations which can be socially developed with the individual remaining passive in the process of socialization. Kelly conceives of cultural values as being constructed anew by each individual. Piaget prefers to say the child invents anew for himself.

PERSONAL CONSTRUCT APPROACH TO THE INTERACTION BETHEEN

CULTURE AND COGNITION

Culture is theoretically within the Range of Convenience of

Kelly's personal construct psychology. Kelly's conceptualization of the interaction between culture and cognition is in some important psychological ways a departure from the traditional position. The convenience of regarding culture as in some way functioning as an independent variable is unavailable. Equally unavailable are related approaches of the individual reacting to or passively adapting to cultural and or environmental forms. Neither may the individual's construct system with its core of culturally validated constructs be regarded as a determined predictor of behaviour.

The difficulty is of how to conceptualize the interaction between cultural material and material on individuals within a mutual and psychological relationship based in the tenets of construction. One way is to accept the challenge of Kelly's suggestion of adopting a questioning approach and explore the outcome of considering people culturally and culture psychologically. To some extent this is to reach beyond matters Kelly addressed specifically but not necessarily to reach beyond implications of his model.

The Individual from a Cultural Aspect

By definition of his Experience Corollary Kelly (1955) recognizes the individual as a cultural being. From the point of view of the individual as a cultural being three sets of phenomena exist in the immediate world - self, others and culture. From the point of view of the observer these may be translated as individuals, groups and culture.

The Psychology of the Group

There is ample evidence (e.g. Abercrombie, 1972; Asch, 1951; Kelly, 1955; Stringer & Bannister, 1979; Zajonc, 1965) that people in groups tend to behave in the same way. Acceptance within a group depends on conformity to group norms and adoption of group values. Not to conform is seen as threat in Kelly's terms. Processes to

conform exist in cultures and simply by being in the presence of others causes people to respond in a group accepted way (Zajonc, 1965). By social agreement all small groups develop rules for conformity and to guide future action. They institute norms, shared patterns of perceiving and thinking, of communication and attitudes, and beliefs which govern the approved style of behaviour. Kessen (1971) believes that the structure of the matrix within which decisions are made is also socially determined.

Attitudes to other groups are also formed and hostility to an outgroup can arise without any conflict of interest as experiments by (1970) have indicated. Subjects in his trials Tajfel dave preferential treatment to those they believed belonged to the same aroup. Further, Asch (1951) in his experiments showed that people who faced invalidating evidence from the group, responded by doubting their own correct judgments. Salmon (1969) reports from her experiments on conforming behaviour that acceptance by a group is a function of congruence of beliefs rather than of any genetic inheritance. The work of Rokeach and his colleagues (Rokeach, 1961) tends to support this finding. They found that beliefs and attitudes are more important as criteria for group acceptance of the individual than any criteria based on race. Conversely, Triandis and his colleagues (Triandis, 1961; Triandis & Davis, 1965) give a higher profile to race as a criterion for group acceptance.

In order for individuals to function at all as a member of a culture it is necessary for their construct systems to be congruent with those of other members. Inherent in the social inheritance of a preliterate culture are the relatively stable cultural systems of 'facts', norms, values and archival knowledge which have enormous relevance for every aspect of cultural identity and as such are the specifications for the superordinate dimensions along which the

behaviour of individuals is to be monitored. Harri-Augstein conceives of these systems in terms of the 'mindpool' which has stabilized into a system of meaning where it is preserved as ritual and dogma. The individual is expected to learn the rules and contents of the 'mindpool' and to practise them in the ways specified by the culture (Harri-Augstein, 1978). Kelly (1963) is more specific as to how commonly held cultural constructs and expectancies eventuate and emphasizes the crucial role of individual construction. He sees people as tending to behave similarly because they tend to expect the same things and in this sense common expectancies tend to act as validators for personal constructs (Kelly, 1963). Individuals are dependent on the evidence of others for those events of which they can have no first hand experience. So if all people in the culture believe that Warigal was the first man to die and all say that all still births are caused by yamini (the rainbow snake), the individual may have to accept this as fact and in this the opinions of others of the culture act as validators for the individual's constructs.

Individuals in maintaining a stance as to their personal behaviour have to accept the groups' expectancies as validators otherwise contrary behaviour could be interpreted by the group as threatening to their anticipations (Kelly, 1963). Acceptance, by definition, of group 'expectancy-governing' constructs, as validators of individual's 'role constructs' is essential. It is through the above ways Kelly (1963) considers traditionalism, social controls, law, cultural identification and cultural unity can properly be brought into the realm of psychology. So Kelly envisaged relatively limited overt, external, institutionalized cultural constraints to individuals' actions and to the course of development of their construct systems.

While, in practical terms, the individual's way of understanding

the world of events is probably directed by the presuppositions of his or her culture, personal constructs are not merely a function of culture as cultural controls are internal to the individual. The idea of culture constraining by making certain things available and not others is well held in anthropology (e.g. Levine, 1973). But Kelly (1963) sees people constrained by their culture to the degree they construe themselves as so constrained. This is not the same as the proposition put by Rokeach (1960) where individuals in a closed society think as they do because they cannot think otherwise. Kelly (1955) argues that each human being must be allowed the possibility of freedom of thought and of control of their own cognitive processes.

The principal thing human beings gain from their culture is their identity. As members of any close-knit society they are subjected to virtually the same socialization processes . Simply by being born into a culture which has devised for itself a distinctive mode of making sense of the world and of experience, the individual gains access to the systems prevailing in that culture. Through participation in the systems people develop a personal construct system which is inherently their own. For Kelly (1963) constructs so developed are not the product of experience but the tools of knowing. However, by the fact of being born in a particular culture, the individual learns to attribute significance to the world of events in culturally sanctionned ways (Shotter, 1970). Personal constructs are validated by reference to cultural constructs and when necessary validational evidence is extracted from archival knowledge systems.

A Personal Construct Approach to Groups

Kelly (1963) considers three typical conceptualizations of the relationship between the individual and culture which influence the interpretation of perceived similarities and differences between

people.

Perhaps the most common is to regard persons as grouped according to similarities in upbringing and environment and consequently differences can be understood in terms of stimuli and responses. The second view has affinities with sociological theory in that similarities among individual cultural members lies in what those members expect of each other. The third view is that similarity lies in the members' perception of what is expected of them. This view, which is the more congenial to the personal construct model, turns the perspective back to the outlook of each individual. In PCT terms culture is essentially a similarity in what individuals perceive is expected of them, what they anticipate others will do and what they think they are expected to do. These perceptions are anticipatory in nature and therefore the approach to cultural similarity and difference is by way of the similarities and contrasts in the anticipations and channels the individuals have constructed for their predictions.

For Kelly interest is not limited to similarity of what is predicted, i.e. cognitive content, but includes similarity in the manner of arriving at predictions. So for Kelly, "People belong to the same cultural group, not merely because they behave alike nor because they expect the same things of others, but especially because they construe their experience in the same way" (Kelly, 1963, p. 94).

This conception of the cohesion of a cultural group does not seem relevant to preliterate cultures where a person is born into a pre-existing culture and there are no options available to choose otherwise. Whether options existed for leaving or whether expulsion was the rule in traditional times is scarcely the point when Aboriginal cultures are involved. Ethnographic data collected as a preliminary for this work suggests that when a person's behaviour

became untenable he or she was killed and thus neither options were available. It does appear even if the options were available, that wherever cultural Aboriginals might go, by the many links through kin, totems, land and their birthright, they remained irrevocably a member of a particular Aboriginal Australian group.

The Cultural Individual

Stringer (1979) and Hargreaves (1979) point out individuals view themselves and others as co-existing in a world which is both social and cultural. So individual persons in their cultural aspect should be considered through the intermediary of their membership of a group whose regulating influence is both that of what is known of the psychology of a group and that of a particular culture. Groups may be discussed in general terms where particulars only are culturally relative.

Access to cultural systems is through interaction with others. As Kelly says "A person must be a participant either in concert or in opposition within a group movement." (Kelly 1955, p. 98). It is this interaction within a group as Radley (1979) points out that prevents people in their cultural aspect being seen merely as tradition honouring, rule following entities.

Kelly (1963) goes beyond what is unique in the individual with his Sociality Corollary and concept of role. Personal construct systems must be congruent with others to be able to function in a society. The concept of sociality is the key to understanding the cultural group in personal construct theory terms. Kelly himself (1955) sees it as the starting point for an advance into a Social Psychology framework but it was an issue he himself did not really explore. His view of role remained from the viewpont of the individual and when he did address social issues (Kelly, 1962) he treated the group as generalized individuals.

Culture from a Psychological Aspect

The approach to viewing the person culturally has been based on the social nature of human beings and the varying sources of personal constructs in a cultural context. However culture transcends the individual members at any particlar time. Nor do its characteristics belong to individuals.

Several psychologists (e.g. Hargreaves, 1979; Radley, 1979) working within Kelly's model have come to terms with the reality that children are born into a pre-existing social world and must develop a personal construct system which will cope with existing rules, regulations and systems and best serve them in living their lives. Developmental issues arise as to how construct systems emerge and these must go back to mutual interaction in the processes of socialization.

This pre-existing social world does not exist exclusively in the minds of individual members but it depends on them for its perpetuation and on the views individuals hold of its systems for their institutionalized functions (Mischel, 1964).

Cultures are not capricious systems. They have been developed to their present forms, put to the test, elaborated or more tightly defined to serve some perceived useful purpose. Kelly (1955) would see that purpose as enabling prediction by the use of concepts of replication, similarity or dissimilarity of events.

This is not to reify culture but to acknowledge that in its objectified form it has for the individual an apparent external authority and existence. Evidence from Shotter's (1970) work suggests that individuals who share in a culture take their world as intelligble and given. Aboriginal Australians, or at least those collaborating in this study, appeared to have no concept of culture as it is generally understood. When asked for reasons or

explanations their recourse was to 'the law' which they construed as having an existence independent of themselves. They take no credit for human involvment in the development of their way of life, only for obeying 'the law'. It should further be remarked that 'the law' is geared to preserve traditions rather than to encourage innovation and it is viewed by individuals as existing eternally in time. The cultural world is largely a product of memory and interaction, with individuals acting as vehicles of the cultural traditions. Kellv (1969) writes in terms of culture consisting of adopted ideas which are retained until replaced and thus a store of social capital is accumulated. It is the existence or absence of facilities for interaction to produce new ideas which is a function of the culture.

While all cultural systems cannot be fully described within psychological terms cultural systems do have some effect on psychological consequences. This can be seen in the work of Lemon (1975) with bilingual Tanzanian high school students. Lemon found higher levels of construct relatedness when nations were judged on the basis of English constructs and peers were judged on the basis of Swahili constructs.

Culture can be seen as providing a mindpool for personal constructs (Harri-Augstein, 1978; Harri-Augstein & Thomas, 1979); and as providing validational evidence providing it is understood that what is taken by the individual as source or evidence is itself psychologically generated. Culture also defines relevancies of events, identity as a group and prescriptive features of obligations, society's requirements and 'the law'.

Salmon's (1969) study suggests that the individual's responses to conformity processes are to a significant extent a function of the culture which is in turn mediated by the degree of acceptance enjoyed, that is the constructs other members have of the indivdual.

Culture further prepares the individual to be receptive to certain kinds of information and not to others. As Kelly (1963) puts it, information already acquired determines what will be picked up next. That is, construction assures the continuance of perception over time by anticipation. Radley feels that Kelly's conception of culture is inadequate if it is limited to the idea of a culture being maintained through the mutual validation of individual's constructions. Individuals are already part of the world they seek to understand individuals' behaviour is the result of the culture's and expectations as well as their own expectations (Radley, 1979). So, if culture's prescriptions are not solely constituted in the а anticipations of the individuals, they are, from the individual's point of view, what his or her validated interpretations of them are. Kelly's argument is that it is through interaction with others that constructs are mainly available and this interaction involves the negotiation of meaning within the context of the interaction as well as through the more general and socially determined presuppositions. By the processes of negotiation of interpretation and meaning and mutual cross-validation the culture itself is being continually influenced by the ideas generated by the members of the culture. This negotiated consensus and contribution to the 'mindpool' does not however necessarily generate or guarantee progress and could in Kelly's view stultify it.

It is Mair's (1977) perception that the culture of the Hest is orientated towards individuality and individual responsibility for behaviour. The reverse could be argued for preliterate societes where cohesion of a small isolated culture is more dependent on a community of common anticipations with individuality being seen as potentially destructive and hence discouraged. Fransella (1978) has said that individuals can only deviate so far from acceptable norms

before their behaviour is seen as delinquent and appropriate action . taken by the society.

This chapter began with the substance of Kelly's model which consists of a fundamental philosophical position elaborated by 11 corollaries. It then decribed a PCT approach to variables which have been identified as influencing results of psychological tests used with Aboriginal Australians.

The view taken is that respondents should be understood within the terms of their everyday life and the cultural background of their cognition. However if we begin with culture and individuals as separate events to be analysed there are difficulties of how to relate one to the other on the basis of a common denominator. There is a need for individuals and their culture to be considered from the viewpoint of the individual on some middle ground which acknowledges the mutual relationship between culture and the individual. There is also a need for a unifying perspective which has been attempted here as viewing the culture psychologically and the individual culturally.

The emphasis has been on relationships rather than any specific cultural systems. Further there is a need to distinguish between personal knowledge and the ability of the individual to manipulate and extend that knowledge and by experience increase that knowledge. The view taken is that this may be approached by conceptually separating the content of knowing and the cognitive process and investigate one aspect of the complexity of human cognition through the structural aspects of personal construct theory. It is Kelly's (1963) conception that some cognitive process may be approached by way of how construct systems are structured. This is reviewed in the next chapter.

CHAPTER 3

The Nature of a Personal Construct Theoretical Approach to Cognitive

Structure

Cognitive processes operationalized as a construct shows variation along a number of dimensions. Cognitive structure is one dimension which appears to be a powerful indicator of individual Usually described under some form cognitive behaviour. of psychological differentiation, the term cognitive structure as used in psychology has no single meaning (see Berry, 1976; Scott, Osgood,& Petersen, 1979; Triandis, 1977). Generally differentiation has been operationalized differently by the four major research programmes, viz. that of Kelly and his disciples; of Harvey, Hunt, and Schroder (1961); of Scott (1963, 1979) and of Witkin and his disciples (e.g. Berry, 1976). There is little evidence that the measures relate to each other (Triandis, 1977).

The notions of structure and of process used here are those embedded in Kelly's (1955) fundamental postulate and several of its corollaries. These have enabled refinements of the original repertory grid test and the development of sophisticated measurement protocols which derive logically from the tenets of his theory.

Although work on cognitive structure based on Kelly's model is a comparatively recent and complicated area, concepts of structure are fundamental to Kelly's thinking and structural terms pervade his Nithout stipulations of structure and replication, writing. the world of events would be disorganized confusion. Tt. is the perception of recurrent themes and thereby the separation and reintegration of events into manageable units, produced by the individual by his or her perception of abstracted similarity of two events, which imposes the individual's control of his or her anticipations. It is the idiosyncratic way that this process of

construction proceeds which permits the various operational definitions of structural measures and the conceptualization of the grid as revealing the structures on which the process relies. The constructs are in themselves inert. They cannot organize or activate themselves in an intelligent way. The purpose of this chapter is to consider those structural phenomena included in Kelly's model which are appropriate for this study and their refinements, operational definitions, and measures of subsequent workers within personal construct psychology.

The Grid Methodology

Kelly's development of the repertory grid format derived from his concern with the assessment of structural properties andconstruct interrelationships, as well as from the need to formalize the documentation of an individual's construct system. Because of the hypothesized dichotomous nature of constructs the grid matrix lends itself to various types of statistical analysis. The assumption is that relationships between constructs thus revealed reflect functional relationships and psychological reality for the individual. The specification of an underlying theoretical position accompanying the grid methodology carries the advantage that, to the extent the assumptions of the theoretical position are supported, the grid may be considered as an experimental test of certain tenets of that model. Major appraisals of studies evolving from Kelly's model and practical guides to grid completion are available, for example Adams - Webber (1979), Bannister and Mair (1968), Bonarius (1965), Crockett (1965), Easterby - Smith (1980a, 1980b), Fransella and Bannister (1977), Shaw (1981), and Slater (1976, 1977).

Content versus Process

While all cognitive processes and cognitive content are mutually dependent, structural measures require that structure and content be

held conceptually distinct in that, theoretically, revealed structures are not content specific. Statistical factors are seen as indicating some of the fundamental dimensions on which individuals base their anticipations and, whether described as clusters or components or implications, such description is of content. It is when the type of relationships between sortings or constructs, and not the constructs or sortings themselves, can be seen as indicating a process that considerations of cognitive structure become relevant. Grid Structure

Structure in a grid can be demonstrated statistically as independent of content under some methods described by Kelly for modulation of the system. Where either elements are sorted on the opposite pole, or construct implications are changed, or both eventualities prevail, the correlation coefficients between rows and columns will remain the same, that is to say the basic step for indicating structure remains unchanged in the face of a changed content and also the presumed psychological upheaval of, for example, one's best friend suddenly being construed as worst enemy (Fransella & Joyston-Bechal, 1971; Slater, 1972). Kelly's conception is of relative stability of structure within flux and it is when ambiguous events cannot be accomodated within the context of the current system that new structure may emerge (Adams - Webber, 1970a). As results from investigations based on Kelly's model have indicated, particularly with reference to the work of Bannister and his colleagues, this is a more drastic response, and not necessarily in anticipated directions, to unsuccessful efforts to preserve the system with as little disruption as possible.

Cognitive Structure, Trait or not?

The variety of properties in structural concepts is limited compared with those of content of systems and Kelly's notion is that

the nature of the underlying process may be indicated by the structural characteristics of the sortings within the grid matrix, it is necessary to consider whether such structural properties are properties of a particular grid, of the subsystem tested, or whether they are variables of the total personal construct system or whether they are characteristics of the individual in the sense of a personality trait.

Implications of a trait are particularly evident with work on the structural measure of cognitive complexity introduced by Bieri (1955), and furthered by Bieri and Blacker (1956). From an initial structural characteristic of a single grid, respondents are referred to as either cognitively simple or cognitively complex in a relatively fixed sense and therefore every individual is seen as occupying a fixed position on an hypothetical dimension. While these terms have unfortunate pejorative overtones, this is also a major departure from Kelly's model where the stress is on a system's development, extension, elaboration, or definition dependent on its validational fortunes.

Some investigators (e.g. Bannister & Fransella, 1971; Crockett, 1965; Fransella & Bannister, 1977; Scott, 1963; Zajonc, 1960) take the approach that the degree of cognitive complexity is a less enduring characteristic applicable only to the realm tested. Technically, the structure is in a particular grid matrix and the question becomes how generalizable across subsytems is the structure revealed as characteristic of one subsystem.

It seems reasonable to assume that differences in structure will not be abrupt from one subsystem to another just as it seems reasonable to assume that all subsystems are not inevitably of an equal degree of complexity or that sections of a single subsystem are equally complex. As Kelly (1963, p. 151) points out, there are people

who deal abstractly with one type of problem and concretely with another. There is evidence (e.g. Bannister & Salmon, 1966; Macpherson & Buckley, 1970; Radley, 1974) that different subsystems within the same personal construct system can vary independently of one another in terms of the relative level of internal organization.

Epting (1972) was concerned with the generalizability of cognitive complexity and argued that structural similarity between subsystems would be extremely unlikely. He used three measures of cognitive complexity and demonstrated that generalizability across different content areas is limited (e.g. Crockett, 1965; Epting, 1967 cited by Epting, 1972). To view people as typologically cognitively complex or simple would not account for the evidence of Baldwin (1972); Runkel and Damrin (1961), who reported that after a period of training changes were towards greater simplicity.

Kelly recognized the necessity for a construct system to operate within a socially defined context and with his Range Corollary limited the applicability of a set of constructs. His concept is of subsystems within a system. Separate grids are necessary for each subsystem tested. Stipulating the realm and the subsystem restricts assumptions of the type of revealed structure to such domains. Testing subsystems in several domains allows for comparision among disclosed structure to establish empirically the degree of intersystem generality. All elements may belong to several systems, that is they may be construed differently in different contexts. So, elements could well be considered as defining the system and the constructs as defining the subsystem. For example, wines as elements could be construed on subsytems of say geographic origin, taste, colour, drinker response, or price.

Kelly (1963, p.11) is explicit about the realm intended when he says "The system or theory which we are about to expound and expose

has a limited range of convenience, the range being restricted, as far as we can see it at the moment, to human personality and, more particularly to problems of interpersonal relationships." That is what Bonarius (1965) calls 'personal others'. When the realm of acquaintances is tested, according to Kelly's criteria, acquaintances be viewed in different aspects such as psychological, may physiological, social, employment. This aspect of Kelly's thinking has been insufficiently acknowledged. Slightly more reference has been made to the type of constructs likely to prove most productive (e.g. Easterby - Smith, 1980a; Hunt, 1951 cited by Kelly , 1963; Kelly, 1963). Kelly (1963, p.48) stipulated that psychology is the realm to which his model applies; that the estimated range is limited to this realm and that the realm is not necessarily overlapped by physiology or sociology. This means that the conceptualization is of the processes of individuals in their psychological aspect, not that the processes themselves are inherently psychological. From this conceptualization comes the focus of Kelly's theory despite the fact that the methodology has been used successfully in other fields such as town planning. Subsequent workers within the area of psychology have also extended the range and used elements other than personal others [e.g. Applebee, 1975 (stories); Lawlor & Cochran, 1981 (career roles); Leenaars, 1981 (drugs)]. Shaw and Thomas (1978) report their use of sculpture, significant learning events, audio-visual graphic art, L.P. records, examination scripts, equipment, mathematical concepts, and books.

Constructs of Validity and Reliability

Cronbach's (1956) comment as to the complexity of the data generated by a repertory grid luring Kelly's students into involved analysis and thereby obscuring errors in reasoning, occasioned Bonarius (1965) to suggest that a study of the reliability and

validity of measures used could prevent some of the resultant faulty analyses. Subsequently major accounts have addressed the problems of ambiguity of results, proliferation of new hypotheses and new measures, the use of the grid technique unaligned with Kelly's theory and the various questionable outcomes of such procedures. Useful discussions of reliability and validity of grid measures are to be found in Adams-Webber (1979); Bannister and Mair (1968); Bonarius (1965); Fransella and Bannister (1977); and Slater (1976, 1977).

General conclusions support Bannister and Mair (1968) in that with the proliferation of grid formats, there is no longer any such thing as 'the' grid and consequently no such thing as 'the' reliability of the' grid. As conventional tests are validated in a specific context for a specific purpose, so as each grid is an investigation in itself, grids and measures deriving from them should be validated by the user and the innovator.

For Kelly (1955) reliability is equivalent to stability and methods of establishing reliability in this sense have been operationally conceived as establishing the stability of the various units comprising a grid, that is stability of constructs, of elements and of their interaction. The established term is 'consistency', so there is reference to construct consistency, element consistency and so on (see Fransella, 1970; Slater, 1972). The degree of consistency or relative stability is measured by a repeat grid and conceptualized as a test re-test situation. This definition of consistency has become a measure of structure although not all conceptualisations of consistency are compatible. Bannister for example (1960, 1962a) has shown the reliability correlation coefficient can serve as a score. The inconsistency (unreliability) apparent in thought disordered schizophrenics' repeat grids has been operationally defined in grid terms and developed into a test (Bannister & Fransella, 1966).

High levels of consistency are reported for repeat grids but elapsed time has been short, generally from immediate retest to a fortnight's gap (Bieri & Blacker, 1956; Fjeld & Landfield, 1961; Fransella & Adams, 1966; Fransella & Joyston - Bechal, 1971; Hunt, 1951 cited by Bonarius, 1965; Pedersen, 1958 cited by Bonarius, 1965).

Such findings support Kelly's (1955) assumption that preexisting constructs are elicited. Bonarius (1965) finds that it is also an indication that because constructs are applied to different elements in a repeat grid, the constructs elicited are permeable. However, as in so much personal construct work, apparently incongruent findings are reported. Landsdown (1975) reported that with children, reliability reduced as the time interval increased, which finding is however congruent with Kelly's postulate of relative stability within flux and the evolution of construct systems. Kelly (1955, 1969) and Bannister and Mair (1968) have examined extensively the proposition that the grid is an effective measure of cognitive structure, that is the relationship between an individual's constructs. Mair (1966) has pointed out that a grid treats the responses of an individual as a population of one and therefore population statistics apply. The demonstration of the existence of statistically significant relationships in a respondent's grid therefore is an indication of one kind of validity for the measure used and for the grid methodology in general. So, for the purposes of this investigation one form of reliability and validity may be seen in terms of an evaluation of the outcome as to whether the basic rationale of the resultant grids makes sense, and of whether their application produces results.

As personal construct theory is reliant on the hypothesis that people construe events in an organized manner, its durability as a

theory is reliant on evidence that significant relationships are found in most grids for most people. This particular kind of validity has been demonstrated repeatedly since the inception of the grid methodology. As Bannister and Mair (1968) point out, the measurement of internal relationships is a characteristic peculiar to grids and the almost invariable finding of statistically significant construct relationships in grid matrices is a fact of considerable theoretical importance.

At a more basic level, the criterion must be that any grid can only be as reliable as the units of which it is composed, that is the constructs, the elements and the sortings. While it must be conceded that the potential will always exist, particularly with a nonstandard population, for failure to comprehend the requirements of the task, for random sortings, or for the elicitation of nonrepresentative constructs and elements. Surprisingly, faking a grid is reputedly very difficult.

STRUCTURAL CONSTRUCTS AND STRUCTURAL MEASURES USED

Measures of structure in repertory grids generally rely on some form of relationship between constructs such as similarity (correlation) or distance. However initially structural measures seemed more dependent on construct useage and simple counts in a highly content orientated way.

The principal structural measures of concern for this study are those related to consistency and those related to some aspect of differentiation. The measures of Consistency and Intensity introduced by Bannister and his colleagues would appear to be measures of content. However, Bannister, Fransella and Agnew (1971) have argued that they are structural measures totally unrelated to content. It seems difficult to be precise about the separation of content from structure in all instances.

Consistency

Understanding consistency with Kelly's model is not easy. For Kelly (1963 p.85) no individual is seeking consistency as an end in itself. He asks what is supposed to be consistent with what and out that if everything is consistent and "properly points accumulative", the standard definition of a construct is violated, that is the way two events are alike and different from a third. Part of the problem is that consistency and inconsistency are personal labels and subjectively determined. Kelly suggests that the operational definition of consistency can be expressed in terms of the ways events are anticipated; do in fact the wagers on life add up or cancel out and writes "our assumption is simply that it is in the context of the more permeable aspects of one's system that consistency is the law." (Kelly, 1963 p.87). So, as he says, considering the Fragmentation Corollary in the context of the Modulation Corollary, while the individuals' anticipations of minor events may appear to be inconsistent, their anticipations on the outcome of life do add up. How much incompatability a person can tolerate is also, according to Kelly (1963, p. 89), limited by the definition of regnant constructs and is dependent on permeability. A regnant construct assigns each of its elements to a category on an all-or-none basis, as in classical logic (Kelly, 1955, p.564-565). Should the superordinate constructs be loosely defined the person has difficulty in making a decision , shuttles back and forth and is eventually obliged to rely on more elementary, less effectual but more permeable constructs.

Relationship Consistency

The evaluation of relationship consistency in repertory grids has been carried out by Bannister (1960, 1962a, 1962b) and by Bannister and Fransella (1966). As more sophisticated measurement

tools have become available, consistency, now variously conceptualized, is correspondingly more sophisticatedly measured and more involved with other concepts. Slater (1972) conceives of it as residing in whether constructs are applied in the same or nearly identical way to the same elements on two separate occasions. Correlations between any two constructs can remain approximately the same although the sorting of particular figures has changed, provided elements are changed in terms of both constructs in a consistent way. Therefore, content consistency is clearly different from structural consistency.

Differentiation

Most structural measures which have been developed are differentiation related. The notion of cognitive complexity introduced and operationally defined by Bieri (1955) and subsequently re-assessed by other workers has been the most extensively explored structural measure derived from grid methodology. It is frequently referred to as differentiation but because of some difficulties in seeing Bieri's conception as synonomous with the functional definitions of differentiation of other workers, Bieri's terminology is retained for Bieri's personal construct of the dimension which is cognitive complexity - cognitive simplicity.

Bieri hypothesized that people who tend to sort elements in an identical or near identical manner on several constructs are cognitively simple. However Kelly's (1969, p.108) thinking reveals that two constructs which are used in an identical way are themselves identical and Adams - Webber's (1979) suggestion that the greater the degree of functional similarity between a person's constructs, the less differentiated is the system as an operational whole, derives logically from Kelly's (1969) criteria. But Bieri's model appears to assume not only that the whole construct system is

characterized by a single structural quality but the structural quality applies to the individual as a fixed trait. That Bieri's operational definition of cognitive complexity derives from Kelly's model or is a justifiable extension has been challenged (e.g. Adams-Nebber, 1979; Bannister & Mair, 1968). However, Bieri (1955, p. 263) seems to imply the greater the differential perceptions, the greater the degree of complexity and therefore the greater the degree of predictive ability. Bieri has demonstrated that cognitively complex respondents (Bieri's measure) predict differences between self and others more accurately than they do similarities. This finding has been supported by Adams-Webber (1968 cited by Adams-Webber, 1979) and Leventhal (1957) who also found that cognitively complex people differentiate more between persons, but, on the whole no general significant relationship between cognitive complexity and predictive accuracy of the constructs of others has been established (see Honess, 1976; Leventhal, 1957; Sechrest & Jackson, 1961).

Such an hypothesis is not compatible with Kelly's model which is not if individuals can predict with accuracy the constructs of another but if they can identify the personal axes of reference of others in order to be able to communicate and understand. However, from the viewpoint of the individual, and this impression is conditioned by observation of the apparently compulsory nature \mathbf{of} cultural norms and values in some domains of the cognitive world of the Aboriginal Australians participating in this investigation, the less differentiated the system, the higher is the degree of subjectively perceived predictive accuracy. From such subjectively assessed successful outcomes of anticipations of a traditionally persuaded cultural person, problems could arise with Bieri's paradigm.

In reverse it could be argued that if individuals experience a
high degree of success in anticipating the constructs and behaviour of others, they are cognitively complex and in the case of lack of success, they are cognitively simple. Both eventualities could well occur in groups where social constructs are widely shared and some behaviours institutionalised, so that individuals could be measured as cognitively complex in relation to construing their own group and have a cognitively simple structure, on the same measure, in relation to construing Euro-Australians. This anomaly would support the view that structure is in the system and is not a trait of the individual. Successful validational outcomes may be more a function of with whom one interacts than an indication on Bieri's measure of the degree of differentiation in this instance.

The measures of Bieri and his associates (Bieri, 1955; Bieri & Blacker, 1956) have received mixed support. What has been one outcome of some related work is knowledge of what people with cognitively simple or cognitively complex construct sytems tend to do. Those with a simple cognitive structure assume those with whom they interact are similar to themselves (Campbell, 1960 cited by Bieri, 1961); they are seen to have a greater tendency to sort people on the good - bad dichotomy (Crockett, 1965). Evidence for this is deduced from the fact that people who sort events in a structurally complex manner are more likely to use both positive and negative terms in describing others. Scott (1963) suggests that the construct cognitive complexity - cognitive simplicity be limited to structural concepts and he himself has preferred to write in terms of cognitive balance following Heider (1958). The more balanced the structure, the simpler the structure. Lawlor and Cochran (1981) point out that individuals with simple cognitive structure prefer univalent impressions, those with cognitively complex structure tend to

integrate both poles of the constructs and achieve more ambivalent impressions.

Crockett (1965) introduced an alternative measure of differentiation which related the structural complexity of а construct system to the numerical level of constructs and suggested that such constructs are hierarchically integrated by relatively extensive linkages. Influenced by the developmental model of Werner (1957), Crockett suggested that the development of an individual's interpersonal relations system evolves not only by increasing differentiation but also by integration. Crockett concluded that it has been shown convincingly that people with structurally complex systems as opposed to those with structurally simple systems, distinguish more distinctly between people and tend to assume others are less similar to themselves. This claim has received no support. He and his students (Crockett, 1965) did find that the number of constructs usually used in interpersonal construing is dependent on the degree of social experience involved and therefore people use more constructs to characterize those who are close associates than This is inconsistent with Irwin, Tripodi and Bieri's others (1967) finding that people discriminate more among negative figures, that is people they do not like who, according to Benjafield and Green (1978), should comprise 38% of acquaintances.

Crockett's measure of differentiation, basically, is related to the number of constructs used in interpersonal construing, Bieri's measure is the extent constructs differentiate among acquaintances. No significant relationship has been established between Bieri, Atkins, Briar, Leaman, Miller and Tripodi's (1966) test and Crockett's (1965) index (Epting & Wilkins, 1974; Irwin et al., 1967; Miller, 1969).

While the various measures and conceptualizations of cognitive

complexity or differentiation present a picture of ambiguity as to precisely what is being measured, it can be accepted that their predictive usefulness as an individual difference variable has been Nevertheless they fail to account for other essential demonstrated. attributes of a cognitively complex system such as the level \mathbf{of} integrative complexity. This is particularly highlighted by the work his of Bannister anđ colleagues яhen thought disordered schizophrenics' griðs are compared with those \mathbf{of} normals. Investigations of thought disordered schizophrenia is an extensive field of research which is of interest to this investigation because a corollary of the research is that operative measures of cognitive structure are being developed and tested with normal control groups and as such have concomitant value for non-clinical investigations. It is to be understood that the thought disorder referred to is a structural concept and not the systematized delusions of the insane. Not all schizophrenics are thought disordered.

Bannister developed two measures, one of Intensity, which is seen as the degree of construct linkage and association and one $\mathbf{O}\mathbf{f}$ Consistency which was previously discussed as an indication of reliability. Bannister reported (1960, 1962b) that hiah differentiation (i.e. Bieri's cognitive complexity) was the distinguishing feature of the grids of thought disordered schizophrenics. If Bieri's interpretation of cognitive complexity (differentiation) is to be supported, this initial finding suggests that thought disordered schizophrenics are the most cognitively complex group in existence. Alternative explanations have been based the proposal that the sortings are random rather than complex, onwith randomness being the most mathematically complex system there is (Bannister & Fransella, 1971; Bannister & Mair, 1968; Fransella & Bannister, 1977). Draffan (1973) however, reported grids she had

completed by the use of random numbers did not reflect the pattern displayed by the thought disordered schizophrenics' grids. She suggested such grids did have structure which was very weak. To add further confusion, Slater (1976, p.143) reports that grids with the highest complexity scores as analysed by his computer programme are actually the ones most approximate to quasis, that is randomly sorted grids.

Other investigations may be interpreted as indicating that the grids of thought disordered schizophrenics are characterized by very weak, unstable relations between constructs (Bannister, 1960, 1962b; Bannister & Fransella, 1966; Bannister & Salmon, 1966; Bannister, Adams-Webber, Penn, & Radley, 1975; Bannister, Fransella & Agnew, 1971). Bannister (1960) suggested that there is a relationship between the degree of construct relations on rank order grids (correlation) and Kelly's limiting extremes of tight and loose construing. The general argument that the construct systems \mathbf{of} thought disordered schizophrenics may be explained by loose construing is not accepted without reservation. That this explanation may not account for the structure has been suggested by the work of Frith and Lillie (1972) and Haynes and Phillips (1973). There is no need here to pursue alternative explanations to account for the distinguishing feature of thought disordered schizophrenia but rather to consider alternative structural measures and criteria developed in the process. It is a very confused area where Bannister's measure of Intensity is seen as an anologue of Bieri's (1955, 1961) measure of cognitive complexity but as Warren (1966) points out they have opposing interpretations where a high degree of integration (Bannister) is equivalent to cognitive complexity for Bieri with the result as Langley (1971) says it is difficult to know if cognitive complexity is represented by high differentiation

(Bieri's measure) or low integration (Bannister's measure). Radley, (1974 p.325) considers it "unlikely that the degree of functional independence of constructs is a sufficiently comprehensive measure to encompass such disparate modes of thinking."

<u>Integration</u>

Adams-Webber (1970) argues that it is not differentiation alone which determines the level of functioning of a construct system but the progressive differentiation and re-integration of subsystems. Similarly Schroder, Driver and Streufert (1967, p. 14) suggest that it is not the number of dimensions alone which is necessarily related to the level of information processing, but, "given complex combinatory rules" the potential for generating new constructs is higher.

The expansion of the concept of cognitive complexity to include of differentiation and integration is satisfying notions but introduces complicating elements. Are the processes parallel working in tandem (cf. Adams-Webber, 1979)? Are they entirely independent? Is it possible to have differentiation without integration? It seems Is one consequent to the other or subsequent to the other? so. Lewin (1951) who introduced the label differentiation for a trait, considered it as the degree to which the life space is subdivided into many distinct regions and integration as the degree to which previously distinct regions are merged. Lewin in fact saw one process as diametrically the opposite of the other. Smith and Leach (1972) distinguished between differentiation and integration in measurement terms. Adams-Webber and Mirc (1976) showed that the degree of integration is reflected by the extent constructs are related in use.

Integration needs to be more sharply defined if it is to be linked to cognitive complexity by more than the idea of high correlation and multiple implications. Very simple systems have

inflexible rules of integration and are tightly integrated. Radlev (1974) says that normals have a system of closely integrated (correlated) constructs but within the system there is high variability of the extent to which constructs relate to each other. Makhlouf-Norris, Jones, and Norris (1970) have provided evidence of this with the measure they have developed of integration based on inter-construct correlation. Their method identifies systems as nonarticulated (monolithic and segmented) and articulated. Makhlouf-Norris and Norris (1973) extended the conception and more tightly defined the criteria for articulation. The more tightly integrated Millar (1980) the system, the more monolithic is the structure. suggests that the underlying continuum from articulated to nonarticulated is some aspect of cognitive complexity. Lemon's (1975) work in Africa with constructs in native language and English has shown that experience tends to increase construct intercorrelations in the relevant realm. So it appears that the more that is known in a certain sphere, the more similarities, implications, and patterns are appreciated so that 'knowing more', having learned something, a person produces a grid relatively more cognitively simple i n structure.

It is possible that a simple grid structure is at times the result of complex cognitive activity, that is, having considered many possible alternatives, a simple solution is reached.

The Construction of Cognitive Structure

The whole conception of cognitive complexity - cognitive simplicity, when considered in terms of grid structure is difficult to reconcile with aspects of differentiation. The tightly integrated, undifferentiated system is a condition of a tight system in Kelly's terms. Such systems consist of several relatively independent subsystems and therefore have a high degree of functional

specialization of separate subsystems. It seems clear that increased differentiation need not be accompanied by increased integration and increased integration may be opposed to increased differentiation and perhaps the whole issue would be better conceptualized as integrative complexity or integrative flexibility. As Scott et al (1979, p. 49) say "If integration develops apace with differentiation, it serves to maintain flexible interrelations among various ideas; if it does not, the distinct ideas may be disconnected or become interrelated in rather stereotyped and inflexible ways."

What seems to be evolving is a conception of undifferentiated, integrated structure versus differentiated integrated structure to equate the cognitive simplicity versus cognitive complexity distinction, where the variable is differentiation and yet this does not appear to be what is intended. The cognitive simplicity complexity construct has been equated with Kelly's tight versus loose However excessively loose construing in Bannister's construction. sense lacks integration; yet cognitive complexity does not. So it seems possible that the construct itself is basically in error and it should be not simplicity versus complexity, but tight versus chaos or disorganization (see Adams-Webber, 1979; Slater, 1976). This would provide the limiting extremes of undifferentiated - differentiated on one dimension and highly integrated to highly unintegrated on another. Kelly's tight versus loose construction as an extreme case, would be equivalent to undifferentaited integrated and highly differentiated unintegrated, both of which are inhibiting conditions for cognitive flexibility. As Slater (1976, p.143) points out, where complexity belongs on the continuum, if at all, is problematical.

Because a construct embodies simultaneous perception of similarity and difference, a construct itself is fundamentally an integrating and differentiating process (Kelly, 1969, pp. 102-103).

So perhaps the matrix of a grid could be considered as evidence of these processes in action. When differentiation is seen as the number of discriminations (constructs) used it appears incompatible with Kelly's perception. The use of integration in the sense of a distance measure seems more compatible with Kelly's idea of integration, that is how alike are two events.

That the terms cognitively complex and cognitively simple have become to be used in the sense of a trait with pejorative associations has been noted earlier in this chapter. Scott (1963) prefers to use the term 'dimensionality'. So, at this stage it may be well to submit that relationships between such measures and IQ have not been substantiated. Although in early personal construct theory studies, Vannoy (1965) found cognitive complexity and IQ directly related, no significant relationship was found in studies by Lo Guidice (1963, cited by Chetwynd, 1977), Rosenkrantz (1961, cited by Crockett, 1965), Sechrest and Jackson (1961) and Warren (1966). None was anticipated by Kelly (1955, p. 233). Nor were Intensity and relationship Consistency scores found to correlate significantly with IQs of any of Bannister and Fransella's (1966) groups. A consistent finding of the lack of significant relationship between intelligence and grid measures has been reported by Bannister (1962), Bannister and Fransella (1966); Crockett (1965); Smith and Leach (1972), and Warren (1964).

More recently and working outside personal construct theory, Clark and Halford (1983) found psychometric intelligence tests to be more powerful predictors of the effects of culture and location on school achievment scales among Aboriginal Australians than cognitive style. The whole conception of grids and intelligence tests is at variance. Intelligence tests tend to be used for normative purposes and a principal advantage is that the distribution of intelligence in

the population is known. Because of the flexibility of the grid technique and unique tailoring for the individual and the focus on flux and change as new events are encountered, it is in direct opposition to conceptions of intelligence where stability of the variable is a cardinal principle.

Clearly there is uncertainty as to what the various measures measure. Bieri's measure is claimed to be measuring something not as yet clearly defined (Fransella & Bannister, 1977). Makhlouf-Norris et al's (1970) indices are regarded as measuring some aspect of cognitive complexity. Metcalfe (1974) and Smith and Leach (1972) conclude that cognitive complexity and cognitive differentiation approaches are measuring different aspects of a person's construct system. The more commonly used structural measures are measures of differentiation (cognitive complexity), integration and hierarchical organization but others have been operationally defined. It makes sense that a measure designed to measure one defined variable should not correlate highly with a measure designed to measure a variable defined as separate from the first.

It is not surprising, therefore, that measures of correlation between measures have been the focus of studies seeking to resolve or lessen the ambiguity which has arisen. Early studies to investigate the relationship between various measures suggest there is little in common (e.q. Sechrest & Jackson, 1961; Vannoy, 1965). Later investigations tend to support this. Kuuisenen and Hystedt (1975, cited by Bannister & Fransella, 1977) assessed the convergent validity of four measures of cognitive complexity including Bieri's They reported that inter-measure measure and found it low. correlations were affected by the variable of elicited versus provided constructs which adds another dimension for confusion. Metcalfe (1974) found both cognitive complexity and cognitive

differentiation scores calculated using elicited and provided constructs were significantly correlated over treatments but the indices were independent of each other.

Adams-Nebber (1970a) systematically compared grid measures used to assess different variables and reported that grid indices of cognitive simplicity, identification and the use of constellatory constructs were functionally similar. Bannister's measure of Intensity is usually considered a more sophisticated version of Bieri's cognitive complexity measure (Lawlor & Cochran, 1981) but in other studies no relationship is seen between the two measures. For example Honess (1976) reported finding no relationship between Bannister's Intensity measure and Bieri's cognitive complexity measure and said that measures only corresponded when there was similarity of computation. Leitner, Landfield, and Barr (1976) suggest Crockett's measure is contaminated by artifacts of verbal fluency and writing speed, but there is now considerable evidence in support of the construct validity of Crockett's measure. In the few studies where scores on Crockett's and Bieri et al.'s (1966) test are directly compared no significant relationship has been found (e.g. Epting and Williams, 1974; Irwin et al, 1967; Miller, 1969). There are reasons for regarding Bieri's reptest technique as a measure of cognitive differentiation rather than cognitive complexity (Bannister & Mair, 1968; Crockett, 1965). Smith and Leach's (1972) technique for measuring cognitive complexity shows a correlation with Harvey's 'This I Believe" test (Harvey, 1967). They distinguished between integration and differentiation in measurement terms and introduced an hierarchical measure unrelated to Bieri's and concluded that cognitive differentiation is a measure only of how much an individual's constructs distinguish between elements while cognitive complexity reflects as well the hierarchical arrangement of

constructs. They see Bieri's measure as one of differentiation despite his conception of it as one of cognitive complexity. Vannoy (1965) appears to have been correct in suggesting that cognitive differentiation is a very complex area and it was unclear as to precisely what measures were measuring. Time has scarcely clarified the position and the most provocative finding of all is that of Zimring (1971) who presented evidence that cognitive complexity and cognitive simplicity are qualitatively different processes and not aspects of one dimension.

Relation of Construct Characteristics to Structure

Cognitive complexity has proved an awkward construct and it could well be helpful to consider how constructs are used under the terms specified by Kelly (1955,1963) of permeability, propositionality and constellatoriness.

Unfortunately this is a neglected area in personal construct studies. Leitner et al. (1976) say that the individual who uses propositional constructs will tend to construe events in a more complex manner than will those who use constructs in a constellatory Efforts to measure the use of constructs have been made by manner. 1965) Flynn (1959, cited by Bonarius, sho considered constellatoriness was indicated by the explanation power of the first factor and Levy (1954,1956) who saw the constructs most significantly loaded on the first factor as constellatory and those residual constructs not significantly loaded on the firt three factors as propositional. One significant aspect of Levy's work is that it showed that type of construct use cannot be identified from verbal labels.

Constellatoriness, according to Kelly (1963, p. 155) is at one end of a dimension of which propositionality is the other. While the propositional use of constructs appears to be preferable to that of a

constellatory use, the exclusive use of propositional constructs would result in decision-making being impossible. Kelly (1963, p.155) includes stereotypes in the category of constellatory construction and elsewhere (1963, p.118) identifies stereotypes as those constructs which collapse into one because of rigid linkages. Several issues are implicated here, the issue of how construct systems develop, the issue of how systems change and the related issue of inflexibility, which can be regarded as resistance to change.

The Development of Construct Systems

Kelly (1955, p.17) has noted that "If we are to see a person's psychological processes operating within a system which he constructs, we need also to account for the evolution of the system itself in a similarly lawful manner." Workers with personal construct theory have been influenced by the developmental models of Werner (1957), for example Crockett (1965) or of Piaget, for example Adams-Webber. Adams-Webber (1970a, 1979); Salmon (1970) and Shotter (1970), suggest that the normal course of development involves the progressive differentiation of structure into independently organized subsystems and the increasing integration of operations of these subsystems within a system as a whole.

Kelly (1963, p.72) makes it clear that a system is a system for something. He uses the word 'system' in that construction is systematic and features regularity. For him "construing is a kind of refinement process involving abstraction and generalization." (Kelly, 1963, p.72). In the sense that Piaget shows that each stage of development is dependent on the previous one there is a discrepancy with Kelly's attitude of insisting the present must be considered independently of the past. However, Kelly sees any new system as evolving from the old with such evolution being in the hands of the

individual. "Progressive variation must itself take place within a system ...one's personal constructs can only be changed within subsystems of constructs and subsystems only within more comprehensive systems." (Kelly, 1955, p.79). Neither consider the evolution of the system as depending on maturation alone. Crockett (1965) believes that development is progressive but considers that in domains rarely encountered, an individual's cognitive system may remain loosely organized.

Kelly prefers to talk in terms of elaboration, definition and extension. The Organization Corollary shows that a construct system does not stand still but that it is relatively more stable than the individual constructs. It is continually taking on new shape. Kelly uses words like 'evolment' and 're-adjustment' which are not the same as evolution. Elaboration, definition and extension are separate processes. Kelly makes it clear (1963, p. 66) elaboration can be in the direction of extension or of definition or of both and that extension includes making more comprehensive, increasing the range more and more of life's experiences meaningful. and making Definition (1963, p.67) makes events more explicit and clear - cut and may involve construction. One way is to try to become more and more certain about fewer and fewer things or one may try to become vaguely aware of more and more things on the horizon. The Experience Corollary invites people to place new construction on successive revelations of events. Otherwise anticipations become less and less realistic and the individual goes through the process of validation. As things are successively revised the "construction system undergoes a progressive evolution" (Kelly, 1963, p.72). People reconstrue. What particular action they may take has been referred to in the previous chapter and earlier in this one.

However, in relation to links with the usual developmental

models, changes in the construct system do not necessarily comply with the model. Applebee (1975) tested a hypothesis of increasing consensus in construing across age spans showed that consensus was substantially higher for the pattern of interrelationships between constructs (structure) than for ratings of specific elements. Barratt (1977) hypothesized that the average correlation between constructs repertory grids of children would decrease in (increased differentiation) between 8-14 and made similar predictions for significant correlations between constructs and the explanatory power of the first three components extracted by Slater's (1969) principal component analysis. Although he found no significant difference between ages 8,10,11,12 in terms of one of his indices, all observed trends were in the opposite direction, that is a higher degree of construct relationship in the grids of older children. Adams-Webber (1979) suggests this may be explained by an increase in the level of integration. Hunt (1962, cited by Chetwynd, 1977) working with adolescent boys showed that cognitive complexity increased with age; Crockett (1965) says that differentiation increases with experience.

Tight Versus Loose Construction

Kelly's two limiting extremes of tight versus loose construction have encouraged two lines of research which, as Adams-Webber (1979) points out, will ultimately converge. Interest in loose structure has been largely confined to clinical thought disorder and as Haynes and Phillips (1973) argue, loose construing has acquired two distinct interpretations. Kelly (1955, p. 533) says that "a loose construct is one which leads to varying predictons but retains its identity." This is lack of consistency in Kelly's use of the term and lack of intensisty in Bannister's. Loosening of conceptual organization is Lawlor and Cochran (1981) found involved in change. that invalidation resulted in loosening only for those persons who

initially had a tight system. Those persons with weaker construct relationships were not significantly affected by feedback (Cochran, 1973, cited by Lawlor & Cochran, 1981; 1976).

There have been several re-appraisals of the issue of the functional value of loose or tight forms of construct organization (Bannister & Fransella, 1971; Bonarius, 1965; Coleman, 1975; Kelly, 1962; Metcalfe, 1974; Radley, 1974). The general consensus appears to be that the rigid, monolithic type system is prototypical of Bieri's (1955) cognitively simple structure. With such a system, Crockett and Meisel (1974), Cochran (1977) and Lawlor and Cochran (1981), have shown that change is difficult in response to invalidating feedback as even minor revision threatens impending chaos. As Cochran (1977) suggests the more monolithic the organization, the more likely the individual will be forced to loosen the system in order to deal with events which appear inconsistent.

Notions of rigidity (Lewin, 1951; Zajonc, 1960) could be represented as resistance to change and maintenance of fixed anticipations regarding events. Kelly, as has been seen, has linked tight construction to stereotypic thinking; Bannister and Fransella (1971) have linked it to prejudice which can lead to Kellian hostility.

Stereotypic Thinking

There are many different approaches to stereotyping which is a separate field in itself. The larger percentage of the work appears to be concerned with content, such as racial, ethnic and sexist stereotypes. Stereotypes have been clearly articulated as bad and these links were furthered by Allport (1954). Some workers have argued differently, for example Vinnacke (1957) who saw stereotypes as cognitive structures no different from others. Tajfel (1969, 1970) further influenced a change in research towards intergroup

discrimination but ethnic stereotype work still dominates (e.g. Ashmore, 1981; Wilder, 1981). Evidence suggests the traditional view is unjustifiably simple. The research emphasizing content has little relevance to cognitive structure, however Hamilton (1976, 1981) sees stereotyping as an issue of processes for reducing and editing input into manageable units. Kelly's approach is broader. For him. stereotypic thinking is not just simplification and identification but construction which is identifiable by a tight structure. Any use or overuse of constellatory constructs is stereotypic thinking. While most traditional studies identify it by content, Kellv identifies it by a process. There appears to be some evidence from personal construct related studies that stereotyping is a focal or central process in the perception of others (e.g. Cronbach, 1955; Sechrest & Jackson, 1961). This issue is confounded by current thinking of cognitive complexity. Views expressed elsewhere in this chapter suggest that if many categories are used in person perception (e.g. Bieri's (1955) measure of cognitive complexity) and if the element (person) being sorted on constructs is a member of more than one category, respondents may appear flexible when this is not necessarily the case. Further, they may be flexible in determining the context and once this is determined, be rigid. Rosenberg (1977) has the idea that impression formation can be thought of as fitting a target to a person cluster. He has shown that target persons as well as traits are clustered. Consistent groupings of known individuals he calls 'person clusters'. The person cluster is what Ashmore (1981) sees as a gender sub-category or type of man or woman.

Frith and Lillie (1972) argue that there are two phases in stereotyping - recognition, and judgment or evaluation - and that failure to recognize this leads to confusion as it might be as Frith (1971, 1974a, 1974b) says that a person may be flexible or adaptable

the process of person recognition. Ashmore (1981) in sees stereotypes as serving two functions at the individual level. They summarize and guide behaviour. Both Ashmore (1981) and White (1980) provide support for a general two-dimensional structure which White, in cross-cultural work, sees as solidarity - conflict and dominance submission where dominance is seen as a) one actor having the ability to influence directly or control the actions of another; b) is likely to attain his or her goals by magic power, and c) will have the greater chance of success in goal conflict. These components are similar to the evaluation and potency components of Osgood, May and Miron (1975) which they claim have significant cross-cultural validity. However, according to White (1980), the conceptual significance of his orthogonal dimensions goes well beyond 'goodness' and 'strength'. There should be here the usual reservations about what difference, if any, would relate to results if constructs had not been supplied and the semantic differential not used.

White suggests how cognitive structure might be related to impression formation and interpersonal behaviour. If his two dimensions reflect experiences of how others will act and expectations regarding interpersonal relations, then, categorizing a new person into a social category associated with one of these dimensions should lead to a consistent set of implications and anticipations.

Perhaps the word 'stereotype' is already too compromised and 'inflexibility' could be preferred, especially as there is little actual evidence regarding the rigidity of stereotypes, that is rigid in the sense of persistence over time or rigid in the sense of persistent in the face of actual changes. Rigidity, as a psychological quality of the individual, implies undifferentiated attitudes and hence rigidity may be seen not as characteristic of

stereotypes (content) as much as a cognitive approach of the person who holds them (Ashmore & Del Boca 1981 p.18). Hamilton (1979, p.80) sees one of the primary characteristics of stereotypes as rigidity, persistence over time and resistance to change. Gardner (1972) argues that prejudice is the outcome of simple cognitive structures. As Landfield (1977, p.145) says " the rigid impulsive behaviour of the highly constellatory person may be traced to the simplicity of his system within which significance is but two-leveled, that is all or none. The confused behaviour of the highly propositional person may be linked to the cluttered nature of his system. In his case, a hierarchy of significance has little meaning."

A Cognitive Structure Approach to Socio-Cultural Systems

Anthropology uses assumptions about cognitive processes when discussing the foundation of culture theory and has always had a conceptualization of differentiation where cultures are seen as becoming more differentiated as they develop. There are problems with this concept of differentiation if it is automatically applied, without testing, to all systems. Rational calculation is seen in adaptive behaviour, psycholinguistic relativism, and symbolling. Also assumptions have been made that a certain degree of cognitive complexity is necessary for the development and maintenance of complex cultural systems.

Berry (1976 p.218) expresses the view that behaviour is adaptive to culture and culture in turn is adaptive to its ecological setting and (p.222) suggests that gathering groups such as Aboriginal Australians are high in psychological differentiation.

The psychological concepts of differentiation, integration, cognitive complexity, articulation and rigidity based on Kelly's personal construct theory and studies which have evolved from the model have been discussed. The same structural terms, when related

to socio-cultural systems, generally have acquired a different meaning and it is difficult to see how they may be reconciled or the concepts understood in relation to Kelly's useage.

The concept of differentiation is, for example, familiar in anthropology where it is especially useful for cultural evolutionist and diversity through adaptive modification approaches. Such approaches presume a progression towards greater differentiation. It is generally assumed such progression is inevitable and advantageous. Kelly would not accept that all change is unidirectional nor that greater differentiation is necessarily in itself an advantage.

Cultural complexity (differentiation) is most generally related to the degree of specialization of functions and to the number of cultural elements (Tatje & Naroll, 1970; Witkin, Dyk, Faterson, Goodenough & Karp, 1962). This is reflected in the thinking of Pelto (1968) who defines as 'tight' those cultures which have many roles in an elaborately structured hierarchy of stratified positions such as peasant, slave, landowner. In such societies people remain in a fixed role at a certain level and conformity processes are strong. Loose societies are the oppositie. There are few rigidly arranged roles, less pressure towards conformity and vertical and horizontal mobiliiy is possible. Socialization processes discourage independence in the tight society, encourage it in the loose society. This is the concept followed by Okonji (1980) who sees the rigidly hierarchical society as one where everybody knows their place, tensions are minimized, conformity to social norms and obedience to authority is observed. This criterion of conforming behaviour has been supported by cross-cultural studies (e.g. Witkin, Price-Williams, Bertini, Christiansen, Oltman, Ramirez, and Van Meel, 1974). Witkin et al. (1962) considered the field dependent - field independent cognitive style to be a differentiation dimension. Berry

(1976), following Witkin's usage, with a progressive research programme, considers, in broad terms, that field independence - field dependence are related to the extremes of a cultural dimension represented by hunter/gatherers versus agriculturalist/pastoralists, the former being a nomadic group, the latter a sedentary group.

Hunter gatherers are characterized as being low in population density; having a low level of social stratification; encouraging assertion; being low food accumulators and displaying high levels of psychological differentiation on a field independent scale. Sedentary agricultural societies are characterized as being high in population density; high in the number of social stratification levels; of having socialization processes towards conformity; high food accumulation levels and displaying low levels of psychological differentiation on a field dependent range. The general rule that Berry (1976) suggests is that when socio-cultural systems are complex, differentiation is low; when socio-cultural systems are undifferentiated cognitive systems apply. Culturally, simple, Aboriginal Australians have been referred to as complex in ritual life and social organization (e.g. Berndt & Berndt, 1977). However the traditional nomadic life of the Australian hunter/gatherers would imply the high differentiation characteristic on Berry's (1976) criteria and low differentiation on the same criteria if Berndt & Berndt's (1977) evaluation is accepted. How such conflicting appraisals may be reconciled under the heading of differentiation is difficult to see.

No attempt has been made here to evaluate the collaborating population on any scale of cultural complexity. After all, in high contact times, they are a vastly different population from their hunter/gatherer forebears and, unless characteristics associated with traditional hunter/gatherer lifestyles are to be postulated as

genetically transmissable, it is difficult to justify how a late 20th. century population may be analayzed as pre-contact hunter/gatherers where that is the central criterion for derivation of linkages to a cognitive structure dimension.

Bieri's (1966) use of differentiation refers to the accumulation and elaboration of constructs, not of elements as such to be construed. With Bieri's approach and on which much of the work on differentiation in Kelly's model is based, mere elaboration of cultural elements is not necessarily indicative of cognitive complexity despite the proliferation of cultural systems. Kelly also considered differentiation as construct related as he wrote "the more independent axes upon which we project an event the greater the psychological depth in which we see it, and the more meaningful it becomes to us" (Kelly, 1969, p. 27).

It has been argued previously that differentiation and integration are two separate but not necessarily parallel processes. Greater differentiation without corresponding integration leads to fragmentation (see Kelly's Fragmentation Corollary). The important point arising from work on differentiation is that it is the distinctiveness or independence of units which is critical (Scott, 1963). This is not the case where a great number of constructs are so tightly linked that the whole system is reducible to one or a few independent constructs.

Hierarchical stratification of roles may also not be as dependable a criterion as envisaged. Hierarchies develop in groups even if they are not formalized. Someone treats some other with respect for ability, sex, or age. Someone defers to another in culturally sanctionned ways because of kin, marriage, descent or group obligations. Families have a distinct role structure with culturally prescribed relations between members. There is always

some differentiation of role (Argyle, 1978). Slater (1955) first noted that in a discussion group there is always one who becomes a leader. The bigger the group it seems, the more formalized are the social stratifications and role hierarchies likely to become. For Kelly, specialization means a degree of separation of psychological areas while in Witkin's conceptualization it means specifity of functioning within an area; that is, specific responses are apt to occur in response to specific situations.

From Kelly's standpoint, a tight system is one where linkages are tight and there is little distance between individual constructs; a looser system is one where linkages are not so fixed and distances between constructs are greater.

Following Kelly's thinking, a tight socio-cultural system is one where knowledge and belief systems are irrevocably held and certain behaviours are obligatory with prescribed and inevitable punishments for various types of infringement. If an event may be interpreted according to many distinct criteria the more differentiated the culture would be. If interpretation of events are so culturally constrained that alternatives are not considered, the culture might be thought of as being less differentiated. As with cognitive structure of individuals, the emphasis in cultural structure is not on any specific content as such (cf. Meggit, 1962) but how the cultural systems and processes operate on individuals' opportunity to appeal other systems for interpretations, to disagree or entertain innovative ideas.

What is needed is a knowledge of conformity processes; the degree of flexibiltiy in every system, not only in the traditionally sanctioned sense but in the actuality of living. There is a need to know how new knowledge is incorporated.

For grid completion in a cross-cultural situation there is

probably more onus than usual on the investigator to be accepting of the respondents, to have the ability to anticipate events in the way they do, to employ their vocabulary in speaking about events and to give words the meaning they do rather than to use dictionary meanings. The encounter between the investigator and the respondent is a very personal, complex social interaction where communication must be open and trusting to be productive. This requires at least a useful working knowledge of the operant cultural systems. A brief overview of cultural systems and effects of contact as perceived by collaborators in the field work will be presented in the next chapter.

This is in harmony with the frequently stipulated requirement to have an understanding of the cultural background against which the psychological processes under review have developed (e.g. Berry, 1976, 1980; Brislin et al., 1975; Ciborowski, 1980; Cole, 1975; Cole & Bruner, 1971; Cole & Scribner, 1974, 1977; Dasen, 1972; Davidson & Klich, 1984; Hallowell, 1958; Neisser, 1976; Scribner, 1977; Segall, 1979; Wober, 1974). Kelly (1963) acknowledges this requirement as the need to understand the cultural expectancies under which people have validated their constructions.

CHAPTER 4

Traditional Culture Component

In traditional groups it is the subjective culture which is principally still honoured and against which contemporary constructions are monitored. Therefore this chapter is intended as an indication only of the ecological environment, traditional subjective cultural themes, systems and constructions as a background for present construction which is still in many ways within the the context of cultural constraints and pressure. Also briefly outlined is the background of white contact, which, wherever possible, is from the aspect of Aboriginals together with, when available, current Aboriginal perceptions of the effects of contact on their cultural systems. The constructions reported are handed on, learned cultural systems in a culture whose mechanisms were geared to maintenance of systems and the discouragement of radicalism. Such mechanisms are not such as to foster learning and so of themselves cannot lead to understanding of elaboration and extension of individuals' construct Conceptually, the distinction between the ability to systems. reproduce learned cultural material and the ability to manipulate and reason must be maintained.

The first stage of the fieldwork was completed before any attempt was made to introduce Kelly's grid methodology. Ethnographic data reflect the ethnographic present and refer to Gulnay unless otherwise stated. Dialect words are also Gulnay unless otherwise stated and are phonetically transcribed. Indications from patchy but important observations in historical source material and Roth's ethnology (1900,1901-1910) support what is presently held and what have survived as still functioning systems contain details and knowledge which extend far beyond Roth's material and, in addition, supply corrections of Roth. For example Roth (1900) reports that



Figure 1. Map of Study Area.

miscarriages are caused by cloudy weather when they are actually caused by the rainbow snake (yamini) who is always associated with rain and water.

The forebears of the Aboriginals of this investigation were of the Gulnay, Dyirbal, Djiru, Giramay and Bandyin language groups whose traditional territory was contained within latitudes 17' 45"S and 18' 20"S and to the east of longitude 145'30" (See Figure 1). The above terms are for languages spoken but as they are used in everyday conversation as a tribal identification they are also used here in the same way. More pedantically the words for speakers of such languages are Dyirbaldyi, Dyirubagala and Giramaygan.

Natural discontinuities in this terrain did not follow the tendency noted elsewhere by Tindale (1974) and function as territorial boundaries . Gulnay and Giramay owned country on the Tableland, Djiru country crossed the Hull river and the sea to islands, Bandyin occupied Hinchinbrook Island and the mainland across the channel while Dyribal, a Tableland group had a minor presence on the eastern face of the Cardwell range from the south bank of the Davidson to the Murray in the mountain reaches (see also Birtles, 1979; Harris, 1978; Parry-Okeden, 1897; Tindale, 1974.) It is to be regretted that Dixon's (1972) use of Dyirbal for the whole language group is now being used, in a manner he did not intend, as identification of the Giramay and Gulnay (e.g. Scheffler, 1978). Giramay are presently re-asserting their identity by erecting signs at Jumbun on which, incidentally, they spell Giramay as Giddamay.

The climate of the area is tropical maritime with its most distinguishing feature being the extremely high rainfall of the Tully river area where, the town of Tully has averaged 4,239mm of rain annually since records have been kept with 7,897mm being recorded in 1950 (Tully Sugar Mill Rainfall Records). Exceptional downpours of

600mm in 24 hours can occur. Heaviest falls are recorded from January to April under a monsoonal influence in the 'wet season' but as significant rains falls each month of the year there is no corresponding 'dry season'. Cyclones and floods are annual possibilities but from the Murray river south the country is technically in the dry tropics and annually faces water shortages.

Tropical rainforest coincides with the high rainfall of the Tully and Hull river area and on the lower slopes of some ranges. Narrow pockets of some rainforest and what is locally called 'bastard scrub' are found on some of the other watercourses where the predominant floral types are wattle, eucalypts and the grass tree and broad-leafed ti-tree indicative of highly infertile soils. So references to Giramay people as predominantly rainforest dwellers cannot be justified and the label is one they themselves repudiate (see also Harris, 1978). Population density in the rainforest areas has been assumed to have been high with speculative figures based on the presumed carrying capacity of the country.

Although rainforest provides abundant water and material for technologies, an assumption of a perennial abundance of food is deceptive. Vegetable foods are seasonal with many being available at the same time and the diversity of flora in a complex rainforest ecosystem meant isolated rather than groves of food trees. While there was no compulsion to nomadism to seek food and water, large animals such as the kangaroo are not found and many of the vegetable foods are poisonous requiring lengthy processing. Much of the small mammalian fauna was prohibited entirely or by age related taboos so that the plausible early contact explanation for cannibalism was a deficiency of protein and fat in the diet (Dalrymple, 1874; Johnstone, 1874; Palmerston, 1883). Meston (1889) and Palmerston (1883) have reported high dependence on vegetable foods for high

country rainforest dwellers. The lowland rainforest people of the Tully river principally depended on food taken from the river and developed technologies to this end. However cyclones and floods brought periods of deprivation for human and animal foragers.

The rainforest environment is not the most healthy. Insect life is prolific and the vectors for tropical diseases flourish including the paralysis tick, leeches, the malaria and dengue mosquitoes and carriers of leptospirosis and the many endemic fevers (Derrick, 1957). Tromicula deliensis, the mite which carries the once inevitably fatal scrub typhus, is responsible also for scrub itch so where it is prevalent it is not prudent to sit on the ground or logs. Horms burrow into feet and parasites are present internally and on the skin of birds, animals, reptiles, fish and insects. Hookworm has been known to kill a full grown male in the district.

Composition of the Aboriginal Community

The composition of the Aboriginal community may be described in diverse ways. The following categories are those of Aboriginals themselves. Three divisions have been nominated.

<u>Group A</u>

This group consists of initiated males and those females and males who were born and raised within a traditional culture. They are preliterate, have received traditional instruction only and use an Aboriginal language as first and preferred language among themselves. Two females spoke no English at all. They are tribally affiliated and fully incorporated in the totemic and land ownership systems. Observance of cultural beliefs is highest in this group.

<u>Group</u> B

Group A classifiy Group B as imbadu (nothing) or as 'unbranded' and 'cleanskins'. When some tribal connection is needed reference is made to the affiliation of a parent.

Group B refer to themselves as 'nothing'. Characteristics of this group are preliteracy, limited cultural knowledge, the use of Aboriginal language amongst themselves, the observation of correct terms of address. They are incorporated in the kin system.

An ungeneralizable exception in Group B is the ambivalent attitude to people of part Aboriginal descent. Acceptance appears dependent on the individual's degree of self-identification with cultural beliefs and codes. If accepted, filiation is attributed through a grandparent. While Group B appear tolerant of behaviour that traditionally would be regarded as unacceptable, Group A are not. Most tension is generated by ignoring marriage rules with the result that Group A are unable to incorporate offenders and their offspring in the kin system and use the appropriate form of address. They address such people by their English Christian name only (see also yon Sturmer, 1981). In such cases of rejection the individual has one set of relatives only, that of the matriline in a paternal society. Therefore none of the privileges associated with membership of a landholding group are available. Otherwise, with acceptance, the mother's Aboriginal husband assumes the paternal role.

<u>Group C</u>

Group C identify themselves by race or colour. They have State School education with literacy and numeracy levels commensurate with attendance, not grade attained. English is used as a first language with some knowledge of Aboriginal voacabulary and a modicum of grammar. Aboriginal words are used for privacy from and ridicule of whites. They are impatient with traditional prohibitions, disregard precautions, are a cause of concern to their elders for trespass in 'strange places' and have rationalized some beliefs when they complain they experience ill effects. One experience of leg weakness in a 'strange place' was attributed to 'some mineral, probably

uranium in the soil'. Even though discrediting beliefs they avoid known guyngun (female spirit) places after dark and tend to use guyngun as a gloss for all spirits.

Group A classify Group C as 'the same as white fellows' and use the word guda (dog) as a slang term to indicate their observation that dogs, white people and Group C tend to mate indiscriminately without a proper marriage code.

Group B are more tolerant and classify Group C as 'new generation'. "Leave them alone" they say to Group A insisting on proper marriages, "new generation now".

New generation is a construction of change not confined to people. "The bible is new generation" is also heard. Another unusual construction among the traditional people is 'punishment'. It is geographically construed so that a person is sent to punishment which is synonymous with Palm Island rather than any penal establishment.

The Aboriginal population of the area is increasing with a higher proportion of the total Aboriginal population being in the pre-adult census age groups than comparative proportions for the Euro-Australian population. This puts increasing stress on available housing. Three Aboriginal housing associations have existed since the mid-seventies, Midja-Moud, Islander dominated, in Tully, Jumbun at Murray Upper, and Camu for Kennedy and Cardwell. Jumbun is also a farming enterprise with limited availability for employment. Many Aboriginals prefer to live away from the community settlements.

While technically education has always been accessible to Aboriginals and Aboriginal pupils feature in 19th. century school photographs, it was not until school attendance was made compulsory in the 1950's that any true education began. Presently children attend Primary schools in the nearest locality and are bussed to secondary school in Tully where as a social policy they are

encouraged to remain until completion of Grade 12 unless employment opportunities intervene.

Employment is generally as farm labourers and some otherwise employed under a subsidized wage scheme tend to be retained only so long as the subsidy lasts. Absenteeism, not all due to alcohol, strains employers' tolerance and most depend on some form of social security benefit for most of the time. Much absenteeism is due to the unavailability of housing near where work is available. Especially if domiciled at Jumbun, where most move to live with relatives if unable to obtain rental accomodation or keep up rent payments, distance and lack of transport make accepting work outside the community very difficult.

The mature Aboriginals during their working life lived in substandard housing on the property of their employer and moved at weekends to stay in places established by convention only as Aboriginal community camps. This system was encouraged by some landowners as a source of casual cheap labour but could be abruptly terminiated when the landowner needed the land.

SOME BASIC CONSTRUCTIONS

Animateism and the Class Person

Conventionally animateism is associated with the quality of life and the class person is equated with human being. Informants consider some things usually considered inanimate as animate, such as stones and some artefacts, and the class person includes other entities in addition to human beings. In the myths such things as fruit, stones, vines, birds eggs, trees, animals, reptiles, the moon, the sun and the stars, cyclones and other natural phenomena are persons who are animate and primarily human in form and personality 'when they come as themselves'. They are grammatically animate, male or female, and are subject to the same cultural definition and

construction as other persons in the self-nonself dimension. In their present form they are still classed as transformed animate humans. Cyclones for example have personal names, live underground in known places and can be 'called up'. They are readily identified by their characteristics, the same cyclones returning when called.

Most such entities have the power of metamorphosis to a nonhuman form but retain their human capabilities and personality. AS Hallowell (1958) points out, from emic viewpoint an 'personnification' is a wrong concept for this phenomenon as it presupposes the entities were once inanimate. Still today this construction is put to the test by say removing a rock or a pigeon's egg and sleepng with it under the pillow only to find it has returned to its allotted place by morning.

One explanation for the huge ground edged slabs is that they are simply very old axes grown with age. Possibly the Gulnay practice of throwing certain possessions on the funeral pyre and now putting possessions in the grave is associated with this construct of animateness.

<u>Construction of Land - holding Groups and Boundaries - An Us-Them</u> <u>Distinction</u>

The relevance of the term 'tribe' for Australian data is debatable (e.g. Berndt, 1959; Maddock, 1978) but, lacking consensus on an alternative, the term tribe is retained here for a distinction which does exist at a superordinate level. This distinction appears based on land rights and perceived cultural differences. While language is a principal distinguishing feature, the language spoken is no reliable guide to tribal affiliation. Construction of boundaries encompassing a tribal area as such appears a contact phenomenon as Aboriginals point out no one ever thought in terms of major boundaries with subdivisional boundaries and it was only white

people asking questions about tribal boundaries which forced them to think of land ownership limits in such terms. Operating at edges of contiguous tribal territory was a construct'halfway'. This does not mean a jointly owned or shared area, nor an unclaimed vacant area (see Elkin, 1976 for desert data) but a mingling area of open access and social and economic interaction. Such interaction between border dwellers was more intense than with remote members of their own culture. People intermarried, either spoke one language at the expense of their own or more frequently mixed languages. Whether intended or not the halfway construct was a useful convention for avoiding contention over shared boundary lines.

The direction of the territory of different tribes was designated by the Dudaba who left suitable flat-faced rocks in two localities and handed on the infrastructure of cultural systems as a charter to be implemented by the naduli.

<u>The Dudaba</u>

The land and the people in some form pre-existed the Qudaba which construction does not include creation. Rather they organized and set the plan for the future. They were human in appearance and behaviour when they appeared as themselves but had the power of bodily transformation into whatever other entity they also were.

Aboriginals tested the historicity of the archival myths empirically by the identification of evidence of activities of the Dudaba who then became substantial rather than just ideas. It is explained the country was always so - guynban - and if white people see a man made mark they say 'Captain Cook left that mark'. When Aboriginals see a non-natural mark or formation they know the Dudaba left it.

They came from Dindagal (east), an unknown place in the sea, and from landfall at the northern tip of Hinchinbrook Island travelled

through the country, frequently underground, to emerge in situ at the locality of their exploits.

Subsequently each Dudaba was associated with that part of the country where certain exploits were performed and the particular terrain became his or her land. From each Dudaba, say the mud cod Dudaba, came two distinct lines of descent, mud cod and mud cod people, the latter by direct genetic inheritance had inalienable domiciliary rights to mud cod land. This also meant that everyone living on mud cod land belonged to the same descent group except for wives. The land was further subdivided into hunting ranges for each male on initiation and appears not to have been taxed. Each such group was economically autonomous. While the whole clan could be referred to by the clan totem or individuals addressed as such, the smaller groups or mobs identified themselves frequently by an habitual camping place extended by the suffix 'bara'.

<u>Suffix -Bara</u>

The suffix -bara has proved a source of confusion. Meaning 'associated with' it is most frequently but not exclusively attached to a locality name where people habitually camp and is therefore in this case of relative permanance as a description of such people. Τt. has no true tribal or racial connotation and may be best understoood by considering Greek, Chinese and Australian families living in They may be called Brisbanebara. Should one Chinese Brisbane. family move to Perth that family becomes Perthbara. Townbara, Londonbara, Mountainbara are presently in vogue. Where it has caused confusion is with malanbara. Gulnay, Dyirbal and some Dyiru habitually camped on the extensive river sand beaches of the Tully river which may be up to 10 acres in extent in the dry season. Such beaches are called malan - hence malanbara. Its use as a tribal name is indefensible (cf. Roth 1900, see also Tindale, 1974). A Gulnay

speaker can say "I am Gulnay and malanbara and he is Gulnay but he is not malanbara." It is also a convention to use it with a compass direction as a gloss for people living in that direction relative to the speaker.

Ultimately all social structures were established by the Qudaba and Aboriginals re-affirming spiritual links with the land construe such structures not as social organization but as the hereditary rights through genetic inheritance. The Qudaba assigned the land their human descendents could occupy. Not all Qudaba left. Some, such as the rainbow snake, remain highly visible or as a rock (diban), or a tree, with their power and personality still effectual.

Construction of Totemism

No such construction exists per se for respondent Aboriginals although various totems and symbols do exist with some instances referred to as skins. No attempt is made here to discuss the vast literature which exists on the origins and functions of totemism.

Totems in this study are construed by Aboriginals as genetic bloodlines. Land totems are parochial, others are the result of proper marriage.

Small Group Land Boundaries

It is believed the same system of land totems holds for all of Australia and that every possible available entity has a country somewhere. The knowledge of land totems up to a hundred miles or so distant, across several tribal lands, is indication of the centrality of this construction. Precision in describing land ownership is at this level of the totem and family with either identification interchangeable. Spiritual links to the land are continually reinforced by a return to the land and union with it after death. The Naduli

The Dudaba left the charter, the naduli, roughly translated as

old people, impelemented it and developed the rules. Gulnay and pyirbal either burned or dessicated a corpse by smoking. Final disposal of ashes and bones was on clan country. Nadul is the verb to burn and the naduli, therefore, the ancient deceased. When Aboriginals talk to their country their construction is not that they are talking to inert soil but to the naduli who are now one with the land for all time (see also Berndt & Berndt, 1977 for merging with the land).

The naduli are a regulating body, having set up the rules for implementing the charter left by the Dudaba.

The person has three components (terms used here are for males), the body, the guyi and the nunin.

<u>Guyi</u>

When a guyi is seen it is certain the person is dead. The guyi may, however, leave a sleeping person to wander. When a person has been strangled by the gubi's invisible rope and a semblance of life restored by breathing in smoke, the gubi must fight his victim at the next buya and break the skin to allow the guyi to escape. The victim inevitably dies. The guyi, not feared at this stage, remains for the funerary rites and then departs for Qindagal. Guyi who inhabit the land of the living are terrifying and dangerous. The only explanation offered by Aboriginals as speculation, is that being too bad they were expelled from Qindagal.

<u>Nunin</u>

Nunin, 'shade' or 'shadow' in Aboriginal English, is usually only visible to a gubi. If everyone sees one person approach and the gubi sees two, the second is the nunin of the person killed by the first. The nunin may warn of impending danger and at times appears to be like a gubi's familiar. At complex inquests rites, the nunin of the guilty person is obligated to reveal himself to a gubi
Spirits

Other spirits existed, some being parochial. To regard spirits as social regulators is insensitive to Aboriginal beliefs. They are certainly more than bogeymen to frighten wayward children and continue to the present to be seen, guarded against and feared. It is considered that keeping many dogs at least gives warning of the approach of some spirits.

<u>Gubi</u>

Gubi (clever man) was the institutionalized role specification. Partly hereditary with allowance for the recruitment of youths showing potential, a qubi underwent a period of instruction. A qubi conducted inquests, eliminated persistent sources of conflict at the will of the group, administered punishment but was not the Judge, diagnosed, retrospectively, ailments for breaking taboos, removed foreign entities from the body but was not a purveyor of general medicine. He had powers of metamorphosis, parapsychological ways of knowing, could travel underground and fly. His existence depended on the daily consumption of human flesh and blood which he was able to acquire without the victim's knowledge. There was always the concern for greediness when eventually a gubi might accumulatively take too much meat from one person and cause death. A gubi killed with an invisible rope. Instruction is in the hands of older gubis. Death, misfortune, accident, illness, sorcery, were all understood within the framework of the gubi. The exception was murder which could be committed by anyone including a gubi. Such instances of a gubi overtly killing were 'not gubi business'.

A gubi's position brought power, influence and vulnerability, so a gubi should not be entirely interpreted according to a role. He was an individual and as such was capable of abusing his powers or becoming a parasitic bully. He was inevitably held responsible if too

many liked people died. When a group's tolerance was exhausted, clandestine negotiations could be made, at a buya, with another tribe for the service of killing a particular gubi for them. Countrymen of a gubi could not kill him. He would only disappear underground and return to exact vengeance.

Construction of Taboo

No construction of a superordinate concept of taboo exists. No single domain exists. At least three named classes exist which are not construed as related. They are the discretely named and bound classes covered by giri (forbidden food from water), galma (forbidden food from land) and waymin (a forbidden kin class). Waymin is not the word for mother-in-law (cf. Dixon 1972) but a class of kin which includes mother-in-law among others and requires different avoidance behaviours such as the use of Dyalnuy speech. A mother-in-law cannot be spoken to at all or called anything.

Other examples of forbidden behaviour do exist and are usually subsumed under 'the law'. Taboos could be analysed as of two kinds, those where infraction results in automatic harm to the individual and when infraction brings automatic harm to all humanity. The first kind is frequently proved in retrospect from particular symptoms and the second never tested by Aboriginals.

<u>Buya</u>

The construction of a buya was pivotal to social life. Translated into Aborginal English as a fight it was a regular, probably fortnightly, assembly of intertribal mobs of initiated males and sexually mature females. It consisted of two days of serious fighting with the intervening night one of 'making friends', of song, dance, political decisions, business, trade, gossip, news and sexual licence (see Money, Cawte, Bianchi & Nurcombe, 1973 for sexual licence at Kunappi). The construct 'making friends' is still

important and amounts to obligatory reconciliation after a quarrel.

Weapons at a buya were wooden swords, shields and spears. Women fought duels, daburu, (cf. Roth, 1900) with fighting yamsticks. The buya regulated conflict and institutionalised the violent settlement of disputes and provided an outlet for aggression, a venue for a punitive spearing in the leg, and contained the divisive effect of a series of feuds arising from revenge after a death. With many tribes in a small area arguments could be sharply focussed and blame for death attributed safely elsewhere. Whatever the outcome of a buya, honour was seen to be served and no resurgence of the matter tolerated. Privileges of initiation included the attendance at a buya and sexual activity preferably through immediate marriage.

A buya was the occasion of the largest assembly, lesser assemblies being in flood time and at funerary rites. Attendance at buyas from one tribal area to another overlapped so that each Aboriginal enjoyed a large circle of acquaintances from very many tribes and was in no way quarantimed from different beliefs and ideas. There was extraordinay tolerance for the beliefs of others as being the 'right way for them'.

Travel from one buya ground to the next without returning to base camp shows that the idea of relative sedentism claimed by Aboriginals was illusory. All travel was strictly controlled. Major highways traversed the country with junctions and stipulated river fords. To deviate from such highways was a hostile act. Camping places for each group at a buya ground were permamently allotted and each group approached by their specified tracks which radiated from a buya ground. Permament huts existed around the buya grounds and explain the reports of relatively large towns in some early source material.

Constructions of the Environment

Kelly's thesis is that people cope with their environment by interpretation rather than by responding or adapting. Such interpretations are reality based with as many possibilities as the human mind can devise. The ones selected are not necessarily the best or most useful. There is also a selective concern with reality and people do not take into their construct systems things which they regard as irrelevant or beyond the range of their constructions. The environment is seen as providing the elements for construction. It neither provides the constructs nor the domains.

Constructs about the physical environment are important to people who face the consequences of wrong construction. Therefore, it is safer for the individual to accept the culture's validated constructions and for the culture to discourage innovative thinking. In this way a culture's prescriptions are negatively validated by not being put to the test. Adjustment to environment at the individual level is under the influence of the culture and so it is a social phenomenon.

Socialization processes and punitive systems supported the will of the culture against the will of the individual so that any adjustment at the individual level to the environment was under the influence of the culture and is justifiably described as a social phenomenon. However innovation was possible and was usually introduced by way of dreams whereby the individual was relieved of responsibility. Dreams were held to originate outside the dreamer.

The environment was construed on many subsytems from habitat to evidence of archival history. It was peopled by ordinary people, natural species, animate beings in a transformed state, spirits and ghosts. Construction of the environment was a form of control over the physical environment, natural species and natural phenomena.

Control of any of the entities occupying the same environment was by respecting avoidance codes which were the infrastructure of preservation of all life. However some entities were given to wandering and could be encountered anywhere unexpectedly or approach the camps of humans.

The Construction of Women

Respondents reported ambivalent attitudes to women in traditional times. Women are reported as being not highly valued and yet powerful love song cycles were used, love marriages existed and all fights were claimed to be over women (see also Mjoberg, 1918 translated by Clark). The sexuality of a woman was in the control of and at the disposal of her husband. The primary sexual law was to ensure the virginity of the male before initiation with the result women, not men, were strictly supervised to prevent any chance sexual encounters.

The most significant difference between rainforest Aboriginals and others was the division of labour. Men were responsible for the principal activities of livelihood, women were responsible for some of the sedentary camp located tasks such as grinding and scraping vegetable foods and supervising young children. Men gathered and trapped, prepared the food, jointed the meat, made the fire, did all the cooking, made the huts, procured fibres and made the twine, did all the weaving and knotting and basket making. A woman could go nowhere unless accompanied by others for fear she would encounter and seduce an uninitiated male. As a group they collected shrimp and mussels while the men swam closeby (cf. Berndt & Berndt, 1977; Betty Hiatt, 1970; Kaberry, 1939; Petersen, 1978).

A woman could be killed with impunity for a trivial matter by a cranky husband unless a relative wished to make an issue of it and fight at a buya. However women were not devoid of choices and

influence. They used ridicule, nagging, and innuendo in a group and more gentle persuasions. A group decision has been known to be taken to kill a woman for her continual taunting and disruptive behaviour. At a buya a woman could decide to leave her husband and return with another man to his country. The only recourse the deserted husband had was an obligatory fight at the next buya, where, whatever the outcome, the woman still returned to the male of her choice.

The position of women influenced some of the effects of contact after white settlement.

Knowledge of systems does not indicate how they were held. An indication that the systems were held rigidly is the inevitability of outcomes and the inability to reverse a prescribed outcome. Much was covered by negative validation both in the sense of never being put to the test and in the sense that if something did not eventuate, such as punsihment rain when sung, the belief and system was not wrong, some more powerful other had called the rain elsewhere.

Institutionalized pressures to observe food taboos, people avoidance rules, marriage rules, sharing norms were endemic. There were codes to respect territorality, to make friends, to be compliant, not to be disruptive. Pressures were restrictive with perhaps the most powerful influence towards conformity being that group membership and domiciliary arrangements were not elective. There were no avenues for abdication or for expulsion.

On the whole, people saw themselves in control of their lives and of their environment by strict adherence to 'the law' which was the ultimate criterion for everything.

INFLUENCES OF WHITE SETTLEMENT

Kelly's view is that the past can affect the present only through present constructions. Aboriginal and white present constructions of the past are not essentially historically reliable.

Historical source material supports this. However it is precisely those historically unsupported constructions which influence contemporary construction.

Oral history of events with which Aboriginals were personally involved is accurate but filtered through their constructions at the time. Nevertheless they provide valuable if at times guileless descriptions of important historical events where they may have been present as horseboy. Aboriginals and whites provide differing accounts of the same incident from their separate constructions as interpretations. Some whites taking a reversed racist approach report the killing of Aboriginals which never happened through confusion of the Aboriginal English word 'kill' with the English meaning and ignore horrific massacres which did occur. There is also a tendency for white pioneer descendents to whitewash the family tree at the expense of others or to take revenge for previous slights with tales of scandal, alcoholism, incest, surreptitious murder of Aboriginals with no one left to repudiate it.

Aboriginals are not immune from propoganda and, having been persuaded somebody's forebear was a true friend to their people, explain away their highly detailed accounts of atrocity and cruelty by saying something must have gone wrong with his head.

Anachronisms abound in accounts reported second hand. Captain Cook, who passed in the night, features in stories told by those part Aboriginals of Group B who have little knowledge of cultural systems. Such stories incorporate Aboriginal kings, princes, Gods and are apocryphical. However Captain Cook stories are not the prerogative of unincorporated Group B members. Gulnay men have usurped a Dyiru song telling of women slipping on rocks as they unsuccessfully tied to escape from Captain Cook and his men intent on rape. In fairness this may be historically accurate and refer to the crew of the small

ship Captain Cook which was based in Cardwell last century. First hand accounts of the 1918 cyclone which destroyed the Mission hold it was sung by a Dyiru gubi in revenge for the Superintendent confiscating his cyclone stones. It is believed that no Aboriginal was killed because, pre-warned, they obtained leave passes and walked home to their country which in secondhand accounts was by following along a railway line in 1918 which did not exist until 1925. Many Aboriginals were in fact killed.

A well held white story reports mass murder of Aboriginal women by a settler with bodies lying everywhere on the track from his hut to the river. Aboriginals confirm the story but, when asked for details as to how the women were poisoned, explain that it became known the settler had put his fingernail parings in the river. This is a deadly poison. The women had drunk water and lay writhing in agony on the track till self-induced vomiting rid them of the poison and they went home. Aboriginals also claim responsibility by sorcery for the death of some white people of poor reputation in their dealings with them.

The time span of Aboriginal oral history is short. No accounts of the terrible early massacres exist but imposed on them by white people are some demonstrably incorrect accounts of the route taken by the explorer Kennedy in 1848.

Temporal Span of White Settlement and Contact

Cardwell was settled in 1864 as a port for interior pastoralists. Previous recorded well spaced contact had been made by British Admiralty maritime surveyors. British Admiralty ships were approached by canoes as soon as they anchored, Aboriginals climbed aboard with confidence and traded. Friendly daily contact was established although the seamen were urged out of confined mainland waters and the Channel. The reaction to the first settlement at

Cardwell was therefore inexplicably hostile with violence escalating for at least 16 years. Cardwellites were reluctant to leave the security of the township to take up land and were well justified in fearing an attack on the town itself.

Cardwell, almost immediately eclipsed by Townsville, never prospered. By 1868 it had a population of 27 and Eden (1872) claims to have made the seventh male adult. Expansion beyond the township was patchy and gradual. By the mid- eighties, encouraged by a sugar boom, there was a handful of settlers occupying property on the Murray and Tully rivers with one family at Bingil Bay.

The first major land clearing and concentrated close contact was with Chinese banana growers on the lower reaches of the Tully river. The Chinese arrived at the turn of the century and their industry prospered until the withdrawal of coastal shipping at the commencement of World War I. The Chinese paid for Aboriginal labour and sexual services with opium charcoal. The Government saw the only way to help addicted Aboriginals was to isolate and contain them. A mission was built at South Mission Beach in 1914, was destroyed by the 1918 cyclone, and re-established at Palm Island.

The major white population explosion was in 1925 when the building of the Tully Sugar Mill, the establishment of the town of Tully, the selection of cane land and the completion of the railway from Brisbane to Cairns coincided in the Tully area. The railway had been built from both ends to finally join at Cardwell.

Aboriginal Response to White Contact

Aboriginal response to settlement was escalating violence until literally no life was safe on the coast. Several things are inescapable. White settlers were minute in numbers and mainly women and children with men seeking work elsewhere; the initiation and continuation of violence was Aboriginal; reprisal was in the hands of

the Native Police; the reprisal ratio was high; friendship and kindness to Aboriginals was no protection and the whites lived in continual fear.

The approach taken here is that these events are social phenomena, the fact that they happened is history. The usual pseudoanthropological reasons given for this response remain culturally and historically unconvincing. Reasons for behaviour should be sought in the constructions of the behaving individuals not in outside constructions about Aboriginals which, for settlers, were reported as cunning, treachery, liars, animal-like, untrustworthy. In early Cardwell women were not purloined, game was not scattered, food supplies were not destroyed and Aboriginal revenge, if even misdirected, was never random. Settlers did not kill Aboriginals. That was the role of the Native Mounted Police for whom there are few The Native Police were a para-military force of apologists. minimally trained Aboriginals under a white Sub-Inspector. Native troopers always served in a district remote from their recruitment area. Their role was subjugation of Aboriginals and they acted as a buffer between Aboriginals and settlers in newly opened areas. Thev had no authority to deal with criminal white settlers. Troops were small, six to nine men, and were always barracked many miles from white settlement. They patrolled, 'dispersed' Aboriginals, organized search and rescue operations, and accompanied exploration parties. They hijacked or seduced local Aboriginal women as sexual partners and were encouraged to do so for the access to local knowledge. Native Police brought surviving children, after a raid, into Cardwell and gave them to Cardwell women to be trained as servants. The Native Police accompanying the Cardwell pioneering group had left the district by 1872. By the mid-eighties civilian type police, with perhaps a black tracker, operated in the area.

Whatever the reasons, and there was no lack of reasons, Aboriginals clearly enacted a construction that white people deserved killing. Whatever the reason some cultural systems are a more likely source than others. The land alienated was only a few acres but Aboriginal construction of land embodies deep spiritual links with no reference to extent. Other Aboriginal groups usurping land would have been treated as harshly. Beyond that constructs have a way of being self-validating. Construe a person as enemy and throw a spear at him and he retaliates by shooting back, the construction can be deemed as validated.

An Aboriginal explanation is as plausible as any. This suggests that whites were first seen as returned dead but when they were observed to behave in dangerous ways according to the culture it was decided to kill them and send them back to the land of the dead. Later it was realized they were a white race. Failure to behave as anticipated is devastating.

Some advantages were Aboriginal, some cultural systems were a disadvantage. Aboriginals were numerically superior, were superior in knowledge of the terrain and in skills of guerilla type attacks. But, the many tribes in a small area and the many groups within a tribe lacked the political cohesion to raise, command, arm, and supply an army and had no political leaders to treat with. There were many points of irresolution between the cultures should compromise ever have been attempted. Reasons for aggression should be sought in personal constructions of the period which are now inaccessible. However the type of impact on existing constructions may be appreciated through a variety of constructs which Kelly introduced to structure various aspects of psychological change. It is believed there can be no cultural change without psychological change. Kelly's constructions are : -

Threat - Awareness of an immiment comprehensive change in one's core constructs

Fear - Awareness of imminment incidental change in core constructs

Anxiety - Awareness events one is confronted with lie mostly outside the range of convenience of the construct system Aggression - Act of elaboration of one's perceptual field. Hostility - Continued effort to extort validational evidence in favour of a type of social prediction which has already been recognized as a failure.

It makes sense within Kelly's approach that white people would at first have been construed as returning dead or that Aboriginals encountering Leichhardt's expedition should at first have construed the horses as wives.

Spread of settlement was so gradual and widely spaced that different tribes encountered a white presence in their territory much later than the first settlement date of 1864 and, by the time of occupation of selections, Aboriginals in full vigour of manhood, had been born into a world radically different from that of their parents and in which a white presence was an established environmental factor.

From the eighties contact was different in nature because it was more direct and was with landholders deep in traditional territory. Attacks changed from the person to property. The economic damage caused appears not to have been appreciated by Aboriginals. Whites became the aggressor and this is the period of surreptitious murder of Aboriginals by whites. Whites had access to the police ear and either had Aboriginals hunted away or encouraged them to congregate around properties, with meagre food handouts, alcohol and opium, as a cheap labour source. The phenomenon of 'coming in' was led by women

was much earlier than circumstances dictated, and seems difficult to understand within the context of a determination to preserve culture. Food was altered, hunting ranges came under stress because of some being excluded, sedentism and the adoption of clothing led to disease. The composition of domicilary groups changed

The inculcation of the work ethic insidiously worked against the perseverance of cultural systems. Men sent some distance to work left women to fend for themselves and their children in a way the culture had never taught them. Food left was not rationed and eaten within davs. Men meanwhile had to be given secrets of other groups should they inadvertently bring harm to all by entering strange Some women left to manage on their own with all those places. traditionally responsible for helping them sent away, eventually in desperation tended to resort to sexual trade-offs for food for themselves and children which recourse also tended to disappear when a white wife was introduced to the property. The paternal filiation system became confused, women became less available for traditional marriages, marriage rules became manipulable or were ignored and breaches traditional codes by women were $\mathbf{O}\mathbf{f}$ accepted with untraditional tolerance. Punishment systems, initiation and education systems broke down.

By the 1890's Aboriginals were starving and diseased, generally collecting around the meatworks or a property for handouts. Government food stations were insufficient. Meston (1896) blamed degraded whites for venereal disease, whites blamed the Protection Act which Meston had helped formulate for the degredation of the Aboriginals and Roth for his administration of it. The Act gave the Protector the power to remove Aboriginals from their district. This had not been previously available. Miscegenated children were removed to Yarrabah under Roth's stipulated policy to breed back to

black, thus ignoring the pleas of mothers, and Aboriginals freed of a crime by the Courts could still be removed to a Mission by the Protector. This removal to a Mission was feared because people could die without being able to reunite with their country after death.

Palm Island policy assisted in the degredation of women. Sexuality was controlled by compulsory marriage. Men with an existing family on the mainland were married (legally) again at Palm Island. When sent to work on the mainland they contracted associations with new 'wives', again thus deserting their two previous families. Palm Island also compelled the women to learn to prepare food and cook, to weave and make the baskets so that women returning from Palm Island had assumed the male role in livelihood. This had a reverberating affect through the whole system. Men encouraged sexual interaction with white males to obtain access to white goods and gave their wives a hiding should they return without a 'present'. Camps of prostitutes grew up (see also Mjoberg, 1918).

Aboriginals consider the key feature in the destruction of their culture was the breakdown in the marriage system. They construe the land as inalienable regardless of white occupation. They however get very upset if they construe the Government as giving ownership of the land, such as Jumbun, to the wrong Aboriginal groups and not to the correct clans.

Systems other than marriage failed them initially as all eventually must because of the inflexible characteristics of their culture. Their system of the buya limited quarrels, maintained internal control and regulated external relations with other tribes. They had no system for regulating relations with whites and later, when they assumed obligations existed through sexual relations construed as marriage, the regulations failed. Their system of

traditional instruction by the father and uncle-father disappeared as these important people were frequently sent to Palm Island. Initiation dwindled and payment of a handkerchief or a shilling was required. The last initiate had to be run down. Initiated men would not hand on knowledge to the uninitiated.

The impression gained is of a fragile balance between cultural systems which rigid adherence to the law maintained. A breakdown in one part of the system had a reverberating effect throughout. There is a further impression of no pre-existing construction of change and no strategies developed for coping except the one of rigid adherence to the law which was probably reaffirmed with diminishing success among successive generations.

CHAPTER 5

Special Influences to be Considered in the Development of a Grid Design Using the Reprtory Grid Test with a non-standard

Aboriginal Australian Group

Kelly's theory led to the development of a methodology using the repertory grid test (RGT). This is not a formal test in the traditional sense but rather a technique for determining personal constructs and recording how individuals use them to organize their lives. The matrix of the grid allows statistical analytic methods to determine the structural relationships between constructs. Although the repertory grid is a method, not a standard test its use involves the same type of problems encountered in any experimental design. Potential problems have been discussed by others such as Easterby-Smith (1980), and Harri-Augstein (1978). Additional problems may be anticipated with a non-standard population. While all do not necessarily eventuate and unanticipated problems may arise, attention needs to be given to them for reasons of reliability.

Kelly's approach to cognitive structure relies on meaningful and pre-existing content, therefore, in a cross-cultural context, determining what are not only pre-existing emic systems and domains but what are individually perceived domains is the first concern. To be able to generalize to some extent across domains requires testing several domains. There is a further need for construction to be of elements in their psychological aspect. Therefore special, rather than usual, consideration needed to be given to suitable domains because of the non-standard nature of the population participating in this study.

The exotic in Aboriginal Australian cognitive content is seductive but as Piaget (1971) has argued in response to Levi-Strauss, inferences about contemporary cognitive behaviour are not

legitimately taken from finished cultural systems. What is needed is not a matrix of tick-blank data reflecting the presence or absence of a cultural behaviour or belief but rather a matrix of sortings of elements in their psychological aspect. It is not impossible to conceive of an Aboriginal Australian responding with this type of construct to some traditional procedures such as inquest, funerary, and initiation rites or buya ceremonies but such events are not all necessarily relevant to contemporary life. It is more difficult to conceive of any group unsophisticated in grid and test procedures, providing constructs of say the counting system in its psychological aspect. As Kelly's criteria further require that pre-existing systems relevant to everyday life are to be assessed, the problem arises of identifying pre-existing emic domains which can be evaluated in their psychological aspect and are relevant to contemporary life, and also of ensuring that elements are not being sorted on the anticipations of various subsystems.

Emic and Individually Perceived Domains

Anthropological domains as intellectual domains of etic origin, devised for the economical recording, retrieving, and comparing of data, are not necessarily relevant or useful. Categorization appears to be an universal phenomenon (Rosch, 1975) but a distinction needs to be maintained between cultural domains, the individual's perception of cultural domains and the individual's personal construct system and subjectively determined categories. Perceived or assumed complexity of a culture in the sense of the number of strata in its social system or in the sense of its organizational complexity of systems within a more unidimensional culture, does not imply a corresponding cognitive complexity in its individual members.

The simplest way to establish emic domains is to ask. This was unproductive in this study possibly because of lack of generic terms

for domains and difficulty in communicating what was required. Tn collecting ethnographic material, lists started were never spontaneously furthered while clearly the required information was available and readily given in response to specific guestions. Tn fact the only 'sets' encountered and which were recited like a litany in strict sequence, were place names along traditional tracks, the names of river sand beaches in order from the mouth, and the named peaks in the Cardwell Range. These also appeared not to be general domains but rather showing off memory. Dixon (1976) reported difficulty in obtaining section and corresponding totem names on which marriage rules depend and solved the matter by quoting Roth's (1900) list for the Dyiru speakers. The same difficulty was encountered in the present study with the Dyirbal and Gulnay. The information was eventually assembled from concrete instances but, when asked how they themselves 'sorted out' so effortlessly right and wrong way marriages when clearly the sections and totems were illknown, a different system entirely, linked to land totems, was produced.

In addition to personal others, this group has two pre-existing apparent domains which provide the potential for construction in the psychological aspect in the previously described construction of animateness and bodily transformation from human appearance to animal appearance while retaining human type characteristics. These are also central to contemporary culture as evaluated by the amount of time spent daily discussing them. These are the Dudaba and the spirits. Dudaba is a discretely bound and labelled realm. Whether the spirits are seen as comprising one domain is open to question. Previously encountered difficulties with establishing native categories were overcome during fieldwork. 'Belonging to' is frequently used and has produced useful information on bound

associations or traditional proprietorship such as: - The flying fox belongs to the rainbow snake; the firefly belongs to guyi; the butcher bird belongs to the python; scrub hen are the proper food of crocodiles but their eggs properly belong to the dambun spirit as they make him fly. However, any category of 'belonging to' in this sense does not appear to exist. Eventually in a discussion of a topic, a patently related issue was raised for further elucidation. The reply to this was "leave that for now, that does not belong to this talk." So, 'belonging to this talk' became the method for successfully establishing individually perceived and cultural domains.

The Availability of Suitable Types of Constructs

In the evaluation of cognitive structure, while the object attribute formulation yields objective methods for characterising cognitive structure, as pointed out, not any sortings will serve. Nor will any elements. Bannister and Fransella (1966) have shown that all groups tested have no difficulty in sorting objects according to physical properties such as curved, sharp, and members of all groups demonstrated idiosyncratic sortings when the elements This finding supports Kelly (1955, 1963) who stressed were people. that personal constructs are a source of unique interpretations for everyone. Kelly (1963) distinguished useful constructs from those of fixed characteristics about which there is general consensus. However, the most exhaustive attempt to classify construct types is that of Landfield (1971). Kelly's distinction is between 'evaluative' constructs such as intelligent versus stupid and 'descriptive' constructs such as light versus dark.

For testing purposes, a prerequisite, at a very basic level, is that a construct must be capable of being verbalized and thus communicable. This becomes a matter for particular consideration in

a non-standard population. The usual assumption that word labels mean much the same to the investigator as to the respondent is untenable. While mutual understanding is less crucial with measures of cognitive structure because theoretically the structure is in the relationships between sortings and is analysed as distinct from whatever the content of elements and constructs may be, mutual understanding is relevant at the grid completion stage. So the question must be addressed as to whether it may be anticipated that the group collaborating in this investigation have readily available construct labels to identify and communicate Kelly's elaborative type constructs.

A construct is most usefully conceived of as a binary distinction. Most frequently, constructs are expressed as adjectives. So the matter may be approached by enquiring whether dialects of proto-Dyirbal contain this type of adjective or is it like Chinese where the adjective class is absent. From Kelly (1955) and from the results of subsequent work it is known that personal constructs characteristically used by individuals as discriminations and anticipations in interpersonal relations are limited despite the availability of a large vocabulary of potential construct labels. Dixon (1982) has reported that, while it is not necessarily a condition of all Aboriginal Australian languages, the Dyirbal language group has a large open class of adjectives. He lists seven semantic types which comprise the word class Adjective, namely Dimension, Physical Property, Colour, Human Propensity, Age, Value, These are reducible to Kelly's elaborative and descriptive Speed. types with Human Propensity (e.g. jealous, happy, kind, clever, rude, wicked) being synonymous with evaluative type constructs; but not exclusively so. Such examples as 'He drives a red sports car' or 'He is an old woman' only need to be considered to appreciate that an

evaluative set of implications may underly surface-like descriptive constructs. Dixon (1982, p.47) reports that all human propensity concepts are expressed through adjectives and that Dyirbal has no verb or noun roots expressing any of the concepts under his seven semantic types and, further, that Dyirbal demands that the opposite of each adjective must itself be an adjective. Here it is important to retain the distinction that a concept is not a construct and also to retain the significant fact that an adjective remains an adjective whether it refers to a concept or is used to label a construct.

The literature on personal construct theory indicates that in interpersonal events, the constructs principally elicited are typically identified by human propensity type verbal labels. Dixon (1982) makes the point which is interesting when other domains are considered for this study, that human propensity adjectives can be applied also to higher animals, particularly domestic pets. Dixon made a further point that human propensity adjectives do not appear to have clear monomorphic complements. "It is as if these adjectives specified an antonym dimension of which only one pole is named" (1982, pp.19-20) and others appear to be in almost an antonymous relation for example happy/sad; generous/mean. Even so, Dixon reports that speakers agree far less when asked to give the opposite of one of these terms than they do in cases of Dimension and other terms. While a facile explanation could suggest the difficulty is embedded in adjectives being used as individualistic binary discriminations in the sense of a construct, investigation would be needed to identify what is happening.

Hiatt (1978) in his classification of the concepts of emotion in Aboriginal languages, takes the view that to qualify as a concept a word need not be a noun. Having inspected a small number of lexicons, he predicted that all Aboriginal languages possess words

for anger, fear, sorrow, jealousy, shame and while words for affection and contentment may also be widespread, he suspects among Aboriginal Australians the tranquil emotions have not attained the same degree of verbal representation. Kelly's conception is that, whether verbalized or not, a construct is a dimension to which the simultaneous perception of similarity and difference is crucial. So, the construct of an anger dimension would include an uniquely conceived contrast which is not necessarily the lack of anger. A point not to be overlooked is what is considered desirable behaviour in one culture does not necessarily hold for others, so that Hiatt's dramatic emotions may be encouraged in some cultures as appropriate behaviour. This consideration opens the door for the potentiality of the introduction of an etic bias with both grid administration and interpretation considering that the order of presentation of constructs has been reported as affecting results. Some workers have prejudged construct poles as desirable versus undesirable such as Bieri et al. (1966) who were careful to place all positive constructs (subjectively determined by themselves) on the same side of the contrast dimension. Epting (1972) placed the more socially desirable poles (again subjectively determined) on the one end of the contrast and reported (1975) that order of presentation of poles made a difference to the eventual structure disclosed. Gibson (1976) has shown that identical grids rated from different ends of the contrast will give different cognitive complexity scores on Bieri's measure.

Construct Elicitation Methods

Kelly's method of triadic elicitation has generally proved too difficult for populations outside the usual captive, testsophisticated undergraduate groups (Fransella, 1972). Specifically, Salmon (1976) has found the method too complex for children aged 10 -12; Barton, Walton, and Rowe (1976) have found it too complex for

mental retardates and Fransella (1972) for those who do not have command of the investigator's language. As a result elicitation methods have become more relaxed and the pre-eminient requirement for eliciting personally meaningful constructs relevant to an individual's life more acknowledged. Alternative methods of eliciting constructs have been discussed by Bannister and Mair (1968), Bonarius (1970a, cited by Adams-Nebber, 1979), Epting, Suchman, and Nickeson (1971). More recently, as the populations tested have expanded beyond the laboratory, elicitation methods have been tailored to accomodate the respondent group's style. Recent methods include the exploratory methods of Barton et al. (1976), and of Salmon (1976), the computer elicitation of Gaines and Sham (1980), the laddering technique of Hinkle (1965 cited by Fransella & Bannister, 1977), the dyads of Keen and Bell (1980), and Ryle and Lunghi (1970), the pyramid procedures of Landfield (1971), conversation techniques (Mair 1970a, 1970b; Noolfson 1979). Thomas, Shaw and their colleagues are convinced that because in an experimental situation one set of behaviour is appropriate and another in real life, meaning is best elicited by the conversation model (Shaw, 1980; Shaw & McKnight, 1980; Shaw & Thomas, 1978).

Supply of Constructs

For special purposes, for comparison, for greater statistical control, for handling large groups, the practice is prevalent of the investigator supplying constructs usually culled from appropriate sources and considered to have a degree of universal acceptance. Pretest interviewing of a group in relation to the system to be tested can further yield information about commonly accepted construct labels. Theoretically, the supply of constructs is a departure from the criteria of Kelly's model; has become widespread; is far from always justifiable and has crucial disadvantages for the whole

of personal construct psychology. Inevitably, concept the disadvantages become magnified when working with a cross-cultural There are problems of justifying personal meaningfulness if group. an individual's personal repertoire is forfeited; there is also the dangerous assumption that the investigator knows what is important to respondents and what is not. Procedures for eliciting constructs do not necessarily require verbal labels be produced and sorts may be made on the basis of 'go together' (Scott, 1962, 1963). However with supply of constructs, only one pole is provided the and. significantly, Bannister (1965) refers to the constructs he has supplied as adjectives. If the contrast pole remains submerged, the investigator has lost control of exactly what the dimension is. At least ambiguity is lessened when both poles are provided. While Kelly (1969) says that, regardless of the words used, individuals do their own construing, the supplied verbal label may be acceptable to respondents but of lesser importance to their systems than others not included in the supplied set. To supply constructs is in fact to impose the criteria on which elements are to be sorted and so to use the grid as a semantic differential (Osgood, Suci & Tannenbaum, 1957).

The provision of constructs has so far outdistanced elicitation procedures that it has occasioned investigations as to whether the practice affects the outcome of the grid results. Research comparing the use of supplied constructs with the use of elicited constructs has been reviewed by Adams-Webber (1970b); Bonarius (1965, 1970, cited by Adamas-Webber, 1979); Landfield (1968); Metcalfe (1974). While Jaspers (1963, cited by Bonarius, 1965) concluded the practice makes less difference to normals than to neurotics as it "forces neurotics into normality", in general, research on ratings in rated grids indicates that ratings are significantly more extreme on

personally elicited constructs (Adams-Webber & Benjafield, 1973; Bonarius, 1970a; Cromwell & Caldwell, 1962). Extremity of ratings is considered to be an indication of the more important constructs in a system ; an indication of personal meaningfulness (Bender, 1969, cited by Bonarious, 1977, 1974; Landfield, 1965, 1968; Mitsos, 1961) and an indication of relative superordinacy (Landfield & Barr, Bender (1974) quotes 21 experiments of which the greater 1976). percentage reported that personal constructs are rated more extremely and took exception to Marr and Coffman's anomalous (1970) finding. That elicited constructs are not only more salient but are preferred has been reported among others by Adams-Webber (1970b); Adams-Webber and Benjafield (1976); Bonarius (1965); Cromwell and Caldwell (1962); Easterby-Smith (1980); Keen and Bell (1980); Lemon and Warren (1974); McFayden and Foulds (1972); Metcalfe (1974). Further, there is evidence that less personally relevant constructs give higher relationship scores (Caine & Smail, 1967); that people differentiate between themselves and others to a greater extent on the basis of elicited constructs (Adams-Webber & Benjafield, 1976; Lemon & Warren, 1974) and that elicited constructs carry more implications at least in interpersonal judgments (Adams-Webber, 1970b; Delia, Gonyea & Crockett, 1970; Isaacson & Landfield, 1965; Lemon, 1975; Lemon & Nhile Bieri et al. (1966) claim that for research Narren, 1974). purposes, provided constructs are equivalent to elicited - which opinion is challenged by Leitner, Landfield and Barr (1976, cited by 1979) - Metcalfe (1974) suggests that Adams-Nebber, although supplied constructs are adequate, preference should be for those individually elicited. Rosenberg (1977) approaches the heart of the matter when he points out that responses to supplied constructs are unnecessarily constrained and fragmentary representation is possible in situations in which the investigator selects the role figures,

verbalizes a construct and in the selection of role triads creates a constraining effect of the particular constructs elicited being specific to that triad.

In addition to the uncertainty of the dimension when the contrast pole remains submerged, different degrees of confidence in the reliability of the contrast pole relate to the method of its elicitation. Kelly's traditional triadic method is to ask how two events are alike and different from a third. While this method may result in a contrast specific to a particular triad, Epting et al. (1971) tested eventualities of asking for the opposite and using the difference method. It was found that asking for the opposite, a method used by workers such as Levy (1956) and Levy and Dugan (1956) precedence. Some workers in the field should take have advantageously incorporated both methods.

Provision of Elements

The provision of elements is scarcely less problematic than the provision of constructs and for much the same reasons. Apart from the use of the grid in other disciplines (e.g. Honikman, 1976 with architecture), in psychological approaches, elements from various domains, such as previously listed, have been used. However, the most extensive use of elements not elicited from the individual is of photographs of strangers (e.g. Bannister, 1962, 1963, 1965; Bannister & Fransella, 1966; Bannister & Salmon, 1966; Haynes & Phillips, 1973; Mair, 1966).

There is convincing evidence that the nature of elements makes a difference to sortings in grids based on interpersonal relations. The use of known people as elements has been shown to provide higher Intensity and Consistency scores (Bannister's measures) by thought disordered schizophrenics, non-thought disordered schizophrenics and normals by among others Draffan (1973); McFayden and Foulds (1972);

McPherson and Buckley (1970); and Williams (1971). The use of actually contra-indicated by Kelly's photographs is criteria Corollary) which refer to people appreciating (Sociality the constructs of others, not how well thay can judge a person's characteristics from a photograph. It is possible, considering the evidence that more extreme ratings are an index of personal relevance, that, when uncertainty or unfamiliarity with people elements exists, judgments may be made closer to the midpoint of a rating scale. Stringer and Mulley (1978) have shown that when individuals are construed independently of roles, results are produced which are different from those when individuals and their roles are construed in unison or when roles only are construed. The construction of roles is less differentiated and constructs are nsed in a more differentiated manner when individuals alone are construed. Such findings emphasise all the more the necessity for specifying elements, the aspects on which elements are construed and paying particular attention to the limitations of range of convenience which is an unambiguous criterion of Kelly's model but which Bannister and Mair (1968) warn is a 'snare and delusion' in its apparent simplicity as range is subjectively determined. The most cogent reason for not supplying elements with this group is that the empirical bias is operative.

<u>Reticence</u>

It was possible that a basic problem could arise because of the personal nature of constructs. While no reticence was encountered in discussing ethnographic material, when it was felt a belief or behaviour may be repugnant to white people, refuge could be and was sought in prefacing such data with 'the old people believed...' despite the immediate endorsement of the belief and describing personal current experience of it. The elicitation of personal

constructs would not allow this subterfuge.

Discussing Others

It is considered a severe fault to express opinions about other people. Even when discussing a recent event which caused great anger and upset, it is handled in an objective manner without expressions of personal judgment. This had the potential for making the completion of a grid with acquintances as elements unacceptable. This problem did not eventuate.

<u>Gammon</u>

Avoidance of the truth is not necessarily always a fault and there are circumstances where it is considered a correct response and at times a virtue. Referred to as gammon it is used to mislead, to conceal, for politeness when some response is needed, or to 'play safe' when there is uncertainty as to the reason for the question.

A related problem, sometimes in evidence, is the 'sucker bias' encountered by others including Keesing and Keesing (1956) with Samoans and discussed by Brislin et al (1973, p. 70). The particular form of this response style feared was the confusion which can occur when, rather than refuse to respond because it is a matter it is preferred not to discuss, a deliberate set of false information is given to hide this. It is also considered polite to give some response whether it is a deliberate lie or not.

Refusal to Use the Name of a Dead Person

As found with other Aboriginal populations (e.g. Berndt & Berndt, 1977, p.456; Elkin, 1976, p.343; Turner, 1974; and supported by Dixon, 1972) the Gulnay, Dyirbal and Giramay honour the proscription against using the name of the dead to some extent. Not everyone follows it stringently in the present and some ignore it with special reservations. Reference to the dead is made so skilfully by circumlocution that the device is not obvious. It has the

potential for making grid completion difficult if elements relevant to the life of the respondent are now deceased and could bias responses if only the living were permitted as most of the living are the generally disapproved Group C. This did not emerge as a problem.

Language Used

Language has been considered a major problem in cross-cultural testing (e.g. Berry, 1980; Brislin et al, 1973; Poortinga, 1977) and there is evidence of translation affecting reliability and validity when no English is known. It was considered not to be a problem in this investigation. All who completed grids speak Aboriginal English and the investigator was sufficiently conversant with Aboriginal dialect for no translator to be needed. The most important criterion is to establish clear, unequivocal communication and understanding whatever the language used. All communication was conducted in Aboriginal language, Aboriginal English or more usually a combination of both. This form of communication has worked well over the years but it does require a workable knowledge of language. If something is not understood with confidence on either side, understanding may be negotiated using both languages. Eventually grids were completed principally using language construct labels with some using a mixture.

Literacy Levels

Preliteracy was not anticipated as a problem in itself. The Gulnay, Dyirbal and Giramay have developed attention and memory skills with lack of precision being considered a severe fault. They are dependent on the spoken word and verbal administration of grids was no problem.

The Novelty of the Task

Until attempted there was the possibility that Aboriginals would refuse to participate in something they had never tried before. For

this reason the person known to have most influence in matters of 'properly-ness' was approached first. A potential slight was avoided, influence was forthcoming and the bush telegraph worked to advantage. Subsequent people approached knew what was involved and had already taken the decision to help. 'Help' or 'help out' was always the approach.

Extraneous Variability

Five extraneous variables which could possibly affect performance on tests involving verbal judgments were considered. These were age, sex, intelligence, the extent of influence of Euro-Australian culture and religious influences.

<u>Age</u>

While not being stipulated in the criteria for the population under investigation, the age range was partially determined by the other criteria.

Birth years were in some instances produced but they had been provided by paternalistic whites for aged pension purposes. On the whole they appeared to be 10 years premature. It is possible to estimate age with some degree of accuracy using place in the family, size and development at the time of dateable events, the knowledge of people who have known them all their lives and can estimate in relation to their own age. Extreme ages for some, ranging from 112 to 132 years, have been published in northern newspapers. One man who claimed to be well over 90 in 1972 had been christened soon after birth and all then Murray Upper school children attended. This date could be firmly fixed as 1925 by one family who attended the christening and who only attended Murray Upper school for a few months in 1925. His mother who was 16 at the time clearly was not born before the 1900 she claimed.

The group has a naturally occurring unequal sex distribution. Sex was considered in analysis of grids.

Intelligence

Sex

measures to establish intelligence Nere used. The No aboriginals' evaluation of each person involved having normal intelligence was accepted. One of the most consistent findings of research using the grid method is the lack of a significant relation between intelligence and grid measures. Bannister and Fransella (1966) and Warren (1964) have suggested variables of age and IQ are not significantly related to basic scores of the repertory grid providing the respondent's IQ is above 80 and the age below 60. Some respondents in this study were estimated to be over 60. One other of the group over 60 was rejected by Aboriginals for senility and the respondents over 60 were accepted as of normal intelligence with one of superior intelligence.

Self as an Element

It is recommended (e.g. Slater, 1976) that where possible and especially for clinical assessment that self be included as an element. When self was added to the first respondent's grid, despite all elements including self being verbally realistically assessed, the element self when presented was consistently assessed on the undesirable pole of the construct and followed by a leading question of the type, "I have just indicated that I am far more stupid than everyone else, what do you think of my intelligence?" As the interest was cognitive structure, not clinical assessment, self was not again supplied as an element. Chetwynd (1977, p. 178) lists this extreme response style.

Religious Influences

It was necessary to be aware of the influence of outside

Christianizing fervour. The religion favoured locally varies periodically but is always of a charismatic, pentecostal type. At least three Pastors were involved at the time of grid completion, a Torres Strait Islander Pastor of the Assembly of God Church ministering to the Gulnay, a travelling Pastor from Townsville ministering to the Murray Upper community also of the Assembly of God and an immigrant Aboriginal from Cairns ministering in Cardwell and Kennedy. The latter religion which appears to have affiliations similar to the Universal World Church, involves a type of pyramid selling, the sale of deaconates on tithing.

Pressures to be saved are strong, pressures against backsliding are stronger. Preservation of traditional beliefs is actively discouraged. Strong, persistent pressure is exerted on traditionally orientated people by younger devout family members who, intolerant of 'old blackfellow stuff' for preventing being saved, actively discourage old friends talking together of old times in an Aboriginal language. People become especially vulnerable when the old friends die and mutual support against such pressure ceases. It is not unusual for several old people to plan to move away and camp on a sandbank for a few weeks for relief.

Religious pressure affected the second grids of one such person. He denied the truth of the content of his original grids using Dudaba and spirit elements and decided to do repeat grids. This provided a fortuitous opportunity to observe the effect of compulsory change.

GRID FORMAT AND RESPONSE STYLE

Grids have changed little in format since Kelly (1955) introduced the methodology. The major revisions have been the introduction of ranked and rated grids, which provide a more sensitive sorting procedure, Hinkle's Implication and Resistance to

Change grids and Fransella's (1972) Bi-polar Impgrid.

Two trial grids using Implication and Resistance to Change formats were administered to one person with a view to establishing if the format could be used to identify superordinate and core beliefs. The trial was unsuccessful and is reported briefly as an indication of what can occur with a non-standard population.

Despite the aversion to hypothetical thinking (the empirical bias) and the requiremnt for speculative thinking with such grids, it was felt problems could be overcome. Tolerance for the beliefs of others is strong and therefore it is possible to put proposals in the realm of fact for someone, somewhere, by using the device "someone said some people...."

Constructions of important beliefs and verbal labels as identifiers were elicited. The approach was as follows: -

"Someone said some people do not think that Girgur brought eels" "Who said that?"

"I do not know, someone told me someone told them...." "Must be Cooktown way" (a gloss for any remote group). "Might be. But if they did not think Girgur brought eels could they think...."

A grid was completed without apparent difficulty. Crude inspection showed the construct labelled 'taboo' for convenience had most implications and was therefore superordinate and most resistant to change. A rough plot indicated other constructs clustered around an axis but this construction was totally unrelated to the cultural systems.

The respondent's stated opinion and ethnographic data suggested the grid was wrong. Discussion with the respondent to try and identify the cause for the result indicated that no construct of taboo existed and forbidden categories were in separate subsytems.

The superordinate construct was 'the law' under which everything was subsumed and justified and the law for them did not permit speculation just as the law for others did not permit speculation on his part.

Numeracy Problems

Aboriginals manage counting well but imprecision can creep in. The Gulnay, Dyirbal and Giramay count to three. The next number is a gloss for more than 3 but may be 4 or sometimes 5. Higher numbers may be specified precisely by using positions on the hand but it is not an everyday practice (see also Dixon, 1972; Roth,1900). Words for mob, qualified by big, small, very big and so on are used. An experience of a 'really big mob' of cattle having broken through a fence and which sounded like at least 100 but eventuated as seven showed the imprecision in this system. A week is called mala (hand) and five fingers displayed to indicate seven days. The most common device is to repeat numbers to indicate double count but over six this too is uncertain. Preference is for counting in a linear fashion such as when asked how long it took to travel to a buya the reply was one day walk, camp at night, one day walk, camp, one day walk, camp, one day walk to buya, one day fight, one day fight, one day rest, one day walk back

A ranking format seemed impossible. Rating was considered and rejected. A trial using the language devise of repetition to express a greater degree of a quality was used. However this device with some words changes meaning. The confused respondent kept changing ratings. This form of rating has been used successfully in several studies. The use of ordinal numbers for rating was rejected. However a format which permitted the derivation of a ranked grid was used successfully and is described in the next chapter.

CHAPTER 6

Method

The non-standard characteristics of the respondent group require some modification of the usual approach and special attention being given to description of individuals and the application of method. Methods used however are similar to methods, such ลร the conversational method discussed previously, which have been introduced by other workers using Kelly's model where the emphasis has been on eliciting constructs and elements meaningful for respondents' daily lives. It is principally the background of preliteracy which has occasioned modification for which a minimum requirement was that all element and construct presentation and grid completion be done verbally.

Respondent Group

Respondents were chosen from amongst the Aboriginal population of the area according to the criteria previously nominated viz: -1. Preliteracy, traditional instruction only.

2. Those who regarded themselves as traditionally orientated and different from other Aboriginals in the community whom they consider of Aboriginal descent only without any traditional affiliations.

Random, statistical or any other sampling was not appropriate. The whole population of Giramay, Gulnay and Dyirbal descent who filled the criteria was used with the exception of one completely deaf lady and another judged by Aboriginals to be senile. A Waraŋu man was also included at the instigation of respondents who considered him the same as them because he had lived since childhood among the Gulnay and later Giramay and was proficient in Gulnay language. Participants set up the appointment and sent an escort as an introduction.

No rating for level of contact was attempted as those available

seemed inappropriate for the circumstances of a mature group who may never, for example, have had a meal in an Euro-Australian home but who had daily and intensive contact with some Euro-Australians, particularly male employers and co-workers, during their working life. The criteria for the respondent group tend to equalize the type and level of contact. As an indication of traditionality, excerpts from individual's conversations, held during breaks in grid administration and after completion of grids, are used. A11 participants have taken part in traditional activities, including the buya and funerary ceremonies. One male is initiated. They all still fear and encounter dangerous spirits, avoid strange places unless in the company of the appropriate person to talk to the All were associated in varying degrees with the last known powers. act of cannibalism. This reference to a well published event is used to indicate the closeness of the sample to traditional type behaviour in preference to less publicly known events. To preserve anonymity of the respondents and elements all names have been changed. Surnames are ignored unless the person is usually referred to by a surname and the substitute names correspond in type to the original names. One male, who can sign his name, claims adequate reading ability. He has had no formal education and his claim was not supported by surreptitious checking even to the recognition of all letters of the alphabet. Elements read aloud to him in a different order from that written were identified by him on the written list in the order read aloud.

A brief description of the individual respondents is informative and is included with excerpts from conversations.

<u>George</u>

Male, can sign his name, recognizes some words, no formal education, born in the bush; estimated age at grid completion 58;
retired; worked as cook's offsider on a cattle property, later as a labourer on fruit and cane farms. Located at Jumbun, George is an example of the exception to the general rule applying to Group B which was discussed in Chapter 4.

Conversation

"The Dudaba are the first people. They are like the prophets, like Moses and Daniel.... All of the Dudaba were gubis because they were clever. The Lord is a gubi. The Dudaba are the same as the Lord but there were a lot of them and only one Lord The Dudaba went away or turned to stone like Lot's wife turned to a pillar of salt. Warigal was the first to die....Nhen we study the bible we see the first man, Adam and Eve....God drove them away with a flaming sword and said you'll now die. The bible is new generation. Warigal is not like Adam, perhaps he is Adam. We have to work it out. The mother kept his head, it is round and the apple is round and Warigal said now you will die. Jesus rose in three days and Warigal went away for three days. We don't know about angels. We had no angels in the tribe.... The sun belongs to the Bingil Bay tribe. The sun came to Murray Upper travelling underground. There is a gari dagun."

"Do you mean the cyclone stone, dagun?"

"No, this is part of the sun and was before the cyclone. Bindibindi saw her and Willie Brown. This stone is on a flat rock, you can sneak up on her and catch her. If you come roughly she is ready and jumps into the water. She is alive. You have to put her in a bag, take her home, sleep with your head on it and in the morning she is not there."

"Why did you take it?"

"Just testing to see if it is true. She goes even if the bag

is tied. You go and sneak back on her and she is back in her place."

"Are you frightened of it?"

"No, but I am very frightened of the gulmaru and another tree. When it changes leaves you can't go near it or you get sick. Yamini looks after both trees...."

<u>Kate</u>

Female, preliterate, born in the bush, estimated age when completing grids 50-55. She reared her older children, who were not born in a hospital, with Aboriginal language as their first language.

<u>Conversation</u>

"There's a stone up the road in the creek, it's still there, still works. Floods shift it, you go back and look and it's back in the same place. It's alive. I'll take you there you know that creek....We used to run from the police, run and run. They wanted to run us down to send us to Palm Island. We'd run up through that gap and come out at Bilyana and stay there for a long time. We'd listen for horse bells and horse shoes on rock and then run. We were very frightened of the police. People died at Palm Island and never came back to their country."

<u>Micky</u>

Male, preliterate but can sign his name, estimated age at grid completion 60, born on a station; no formal education.

<u>Conversation</u>

"The gubis were very good people. They were bad people first but they became good."

"Ном?"

"They'd been sent to prison for killing people and that got the wild nature out of them. Every gubi has been sent to Court and so he tells the truth"

"Nhy?"

"Because they've been changed and they've been like naturalized and got out of the gubi business. I knew two people that gubi Ball Cobra killed. They killed from hate in their jealousness." <u>Toby</u>

Male, tribally educated by uncle-father, preliterate, born in the bush. Estimated age at grid completion 55 -60. Located at Jumbun.

<u>Conversation</u>

"I have never seen the Murray Falls (a tourist attraction a few miles up the road from his house). It is a strange place and we were taught not to go especially up to the top. Something is there. The young ones go now and we worry all the time. Ĩ will go across the road end of Barretts Lagoon in daylight and pass quickly but I would never spend a night even in the house there. You can't fish in the Lagoon. It's alright to fish in the creek further up. The yamini will make the bank sink under a person....Dambun are still here. He's especially dangerous when you take a kid in the bush. You have to be careful as they get blood out of the little ones and they die. When we had the two girls up Riversdale way they came around every night. The old man (white employer) got wild when I told him and fired his shotgun. He must have hit them as they never came back. We hear them We were watching the other day and around here every night. saw two people coming in red dresses. Next time we looked it was someone else and then no one showed up. They were dambun.... The one I'm most frightened of is gangaliga. He is up top (over the range). He's like a dambun but lives in a spring at the Seven Mile yards. They took a child when I was on Kirrama. We were out ringbarking and camped on the main water. You might know Wilyun? Her father was half qubi and might be his nunin woke him up. Пe

stamped his foot on the ground and stamped the hole up and saved her.... I do not know if the Lord is true. They are trying to make it out the way he is Warigal but I don't know. I can't read to see if it is true for myself."

<u>Nindi</u>

Male, preliterate, age when completing grids 53-55. Lives apart from the community settlements.

<u>Conversation</u>

"The pills will take two weeks to fix my foot. First they have to start checking the brain, the ears, the throat, the lungs, the heart... and it will take two weeks before the pill finds the place where it has to work is in the foot."

<u>Milidi</u>

Male, initiated, born in the bush of parents born in pre-contact time. His age at the time of completion of grids was estimated to be 75. He reported attempted invalidation of his beliefs by a relative and pressure to attend religious services. After hospitalization he reported further pressure, laying on of hands, praying over him and the reasoning by those pressuring him that his perseverance in his traditional beliefs prevented a cure. Milidi completed repeat grids with Dudaba and spirits as elements after this invalidating pressure. The apparent effect of these influences is described when his grids are considered.

Conversation

"The Lord came to see me last night. He was a white horse. I said "You come for me?" He said "No, you're not ready yet." (After a flood) "I was at the river talking to the old people from the time when all the people were trees. The flood washed away the sand where they were buried in the river and I can see those old people."

"Nhat do you talk about?" "Just ask if they are alright and that. Just tell them not to be frightened, I am their countryman. Just talk in my head. They say they are alright."

Francis

Male, preliterate, estimated age at completion of grids 50-55. Born in the bush, no formal education. He still works.

Conversation

"I don't know where gubis started from. We were not told that by the old people. He became a gubi I think from killing people for the meat. It's the only way I can see it. They starve with no meat. That's the tribal Muri way. The tribal Muri lived on others. It did not matter if he belonged to the same tribe, they'd still eat you when you were fat, cook you gabramuri. Skinny ones they don't take. Muris are different from whitefellows. Sometimes there are good or bad Muris. Whites are different. Muris catch you in the bush, whites won't do that. Or a Muri will pay a gubi to do it, give him meat or black bean, bura or wild flour, or he'll kill you straight out himself. A white man won't do that, a Muri is double-minded. If someone doesn't like you pay a gubi and he'll dp for you. My father was a gubi. You can stay in a mob for safety."

Possum

Male, estimated age 65; born in the bush; raised by traditional parents, tribal education only, preliterate, father a gubi.

<u>Rosie</u>

Female, born in the bush of traditional parents, preliterate. Age 50 plus. Little or no traditional instruction.

<u>Millie</u>

Female, preliterate, born in the bush, no tribal education.

Estimated age 48.

<u>Ernie</u>

Male, preliterate, born in the bush, little traditional instruction only, age when completing a grid 56.

Procedure

Elicitation of Constructs

Triadic elicitation methods were unsuccessful. When asked how two people were alike and different from a third, the replies were they were all the same, big, strong, men. Therefore elicitation methods were relaxed. Relaxation of elicitation methods is well documented and has been previously discussed.

A list of known possible psychological type construct labels was compiled as an encourager list if needed. This list consisted of some Dyirbal words provided by Dixon as being those he considered could be used to express abstracts, and Gulnay words collected in the fieldwork period. In the following list D indicates a Dyirbal dialect word and G a Gulnay word.

	Word		Meaning
D.	Girdidikdi	-	touchy about going to certain places
D.	Dunda	-	jealous
D.	Maldara	-	tricky
D.	Ģurđi n		fancy oneself
D.	Yayi	-	mischievous, playing up
D.	D unguy	-	jealous
D.	Mulgura	-	cheeky, spirited
D.	Mu ŋ a		frightened
D.	Nilwan		tempt someone to fight
D.	Birapyn		worry for someone
G.	Midu wargaybin	1 -	stupid

G. Bagandur - keeps to himself, a loner

- G. Burunga anxious, worried
- G. Hargay bad
- G. Gayga clever in gubi sense
- G. Dudanu frightened in the sense of running away
- G. Mundanu cross, cranky
- G. Dingunu cheeky, larrikan
- G. Dalmuru good
- G. Nugida generous

The participant known to have most influence was approached It was explained that now language had been taught it would first. helpful to know how to use the words properly and to know how he he himself thought about things such as people, the Dudaba, diban. There was a way that this could be done to show how he himself sorted out people. All people sorted out things differently. Nould he be willing to teach how he himself "sorted out" such things. Sorting out is common useage for giving information. Would he be willing to sort out about people in the way he himself sorted people. For instance a person could be different from another person, he himself might sort it differently from someone else. It was agreed to help by teaching how he himself sorted people.

As a test, knowing it would probably be rejected, the respondent was asked "Can I say so and so was dalmurubayi?" The reply was, "No, you can't say that. You've got to do it properly" "Why can't I say so and so was a good man?" "Because that fellow was a bit gayga, so you can't say it wrong. You've got to get it right. Now I'll teach you my way."

For the first respondent the word list was read one at a time with the explanation that these words were words which might be useful to use with people, were they words he himself would use, if not what words would he use to describe a person, for example Dilin. When a word was not understood, being a Dyirbal word, or rejected because it was not a distinction he himself would use, it was deleted. This conversation type elicitation produced construct labels different from those on the list. At all times the opposite was asked for in an understandable manner, for example, if a person is not... what would you say he was?

Asking for opposites is reported to produce better contrast poles than by trying to elicit the contrast from triads or laddering (Epting et al., 1971; Fransella, 1972, p. 82).

An example of how some constructs were arrived at is useful. When the Dyirbal word durdin was read, it was not understood. The meaning was provided to indicate conceit, for example a man might think he is better than other people, a better fisherman or he might think he is good looking.

"Do you mean good looking man or a good looking woman? Yara nayinday dalmurubayi is what you must say." "So, you use dalmuru (good) for good looking also?"

"Yes"

"What about a good looking woman?"

"Same, dalmuruban" (bayi and ban signify male and female noun markers)

The word implying conceit had been replaced with an apparently trivial construct.

"What do you say about a man who is not good looking?"

"Wargay bayi"

"But that means a bad man."

"It means bad looking too. A bad man also fights all the time over some woman. He's jealous too, all the time. That is a bad man also. A gubi is a bad man too but different. You can say wargaybin for a gubi, you must say wargaybin for a gubi. He might

not be jealous, he might be a good looking man but you have to say wargaybin."

A lengthy explanation ensued of uses of good, bad and jealous. Again using the device of a deliberate mistake, the respondent was asked if a person is not bad can he be called jealous.

"No, you can't say that. So and so is bad and he is jealous too. So and so is bad and he is not jealous. You have to sort it out my way. You just listen and I'll show you how to sort it out." Good - bad and jealous were listed as constructs. The coaxer construct label had been one of conceit.

This conversation, and others to be described later, as a method of eliciting constructs is an indication of possibly how processes of classification, elaboration and inference may determine the nature of the thinking of the respondent group. This will be discussed in the final chapter.

The following constructs were elicited by this method for the first respondent's grid. The verbal labels are adjective and verb forms.

Construct	Contrast end	
Dalmuru (good)	- waŗgay (bad)	
Dįngubay (larrikan)	- stays with wife	
Dunda (jealous)	- not jealous	
Bandarabin (stupid)	- head alright	
Mandalaņu (play up)	- doesn't play up	
Malŋgal (cranky)	- not cranky	
Mara <mark>nu (frightened</mark> of spi	pirits)	
Dudananu (frightened)	- sit still, let that man pass	
Cruel		

When completing the grid the respondent rejected maranu because it did not belong to this talk. It seems that whereas everyone was

frightened of spirits he restricted its use to concrete instances and lacked sufficient information to sort all elements. Cruel was similarly rejected for being limited to concrete instances of head blows with a sword at a buya. This was encouraging because the respondent appeared to appreciate these constructs were too circumscribed to specific instances to be used.

It cannot be assumed that standard English meanings are operative for the English translations elicited. All constructs are essentially Aboriginal and not necessarily equivalent to the elicited translation. For example dudanu, a verb, literally means run away. The contrast pole is 'sit quiet, don't make a noise, let that man go past.' Respondents all ran in fear from a gubi, police and round-up patrols. So to be frightened is a commendable quality, to be otherwise is to be a gubi, a policeman or a tracker.

The bush telegraph worked to advantage and subsequent respondents knew precisely what was required. A group of three males and one female, George, Toby, Possum and Kate, met at Jumbun to discuss the project and consider possible constructs. They were given no coaxer list. This group was particular to suggest and reject many contrast poles to provide the precise contrast intended. It is suggested this is a result of their working with Dixon on recording language. This precision had no effect on the elicitation personal constructs because when grids were administered of individually, different constructs and individual contrasting poles emerged. In some instances the two poles of a group-determined construct became poles of two separate constructs. The constructs elicited from this group were: -

Construct Gwinbunban (feel sad, sorry) - Yinubin (happy, content) Ganadaŋaŋu (worried type, morose) - Yinubin (carefree)

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Mundurandan (disappointed, morose)	- Yinubin
Walmbilnanu (trouble maker)	- Digil (good)
Digil (good)	- Wuygi (bad)
Bandar bandar (Silly, mad)	- Digil (good)
Guli (cheeky, aggressive)	- Ņigil (alright)
Wurabuyŋan (habitually lie)	- Nurdin (truth)
Others elicited when completing in	dividual grids were:-
randa randa (rough, aggressive)	- Digal (kind hearted)
Nurdin (truth)	- Nuduman (tell lies)
Banḍaŗin (cunning, tricky, smart)	- Gardabay (alright)
Walgamayn (get really angry)	- Garda
Gulu yargan (don't trust)	- Garda (alright)
Malŋgalmalŋgal (talks nonsense)	
Cunning	- people who don't talk behind your back
Trust	- Can't trust
Guranagan (quiet,doesn't fight, reliable)	- Walwal (troublemaker, touchy)
Yaruyaminay (really smart)	- Diliwalwal (stupid altogether,

Elicitation of Elements

Each respondent was asked to name people personally known well and part of their lives. No attempt was made to elicit elements specifically according to prescribed roles as the only institutionalized role was that of gubi and in a close society most people ended up kin of some sort. Many mothers died when respondents were babies and white contact resulted in the failure of many of the traditional obligations of kin such as uncle - father. However it was suggested they consider close relatives and a parent, siblings, spouses, children, uncles, aunts and cousins appear in each respondent's grid.

cranky)

Administration of Grids with Acquaintances as Elements

As a familiarization exercise, a trial grid was completed by the group George, Toby, Possum, and Kate. It is reproduced as part of 2. Grids were administered orally to each respondent Figure individually. Locations of administration varied according to the preference of individuals. George, Possum, Toby, and Kate preferred under the main house at Jumbun which was furnished with tables and benches and served as a community meeting place. Millie, Nindi, Rosie, Francis, Ernie, Micky, and Milidi, depending on if anyone else was around, preferred either their own home or makeshift seating in a shady place in its vicinity. Of the latter, Millie and Francis lived at Jumbun, Micky at Camu, Ernie and Milidi, Rosie, and Nindi lived in country housing not associated with any housing association. Regardless of location, respondents invariably turned to ordinary conversation whenever someone was seen in the vicinity and seemed likely to move into hearing range.

The procedure adopted was that the people (elements) they had listed were to be sorted out according to the way each respondent sorted out people by using the words each had selected for themselves as being their way. The grid methodology was described and a sample grid drawn illustrating how elements and constructs were listed and sortings recorded. They asked whether the grids would be sent away for others to distribute or would I be "the boss" of it; whether it would be read by others. They were given to understand I would write it down, not others; that it would be read by others; that the name of every element and respondent would be changed to a gammon one and that their own names would not appear. This was acceptable and has been done. To retain the Aboriginal characteristics of the grids, names have been altered to conform with the style of element name elicited. Similarly the original language of construct labels is

retained.

The purpose of the grid and the type of relationships to be investigated were explained. This met with approval because of their conviction that Aboriginals think differently from white fellows in ordinary ways in addition to holding different beliefs. This led to an atmosphere of collaboration, teaching and "helping out". One respondent only, Francis, showed an interest in the outcome from his own grid. A crude analysis was given of the implications appearing in his raw grid. He agreed that that was what he had said and how it seemed to him to sort out in his experience.

Preliteracy encourages the development of memory skills and respondents were no exception. They quickly learned the order of presentation of the first elements, became familiar with the tick/nought convention and so watched to make sure the correct symbol had been entered. They did not hesitate to query if they thought there had been an error. Oral responses were transcribed on to a grid matrix at the time and also recorded on a tape recorder and transcription checked that night. Language used for presentation of constructs was the language in which the construct label was given. No translator was needed because of the investigator's familiarity with respondents' Aboriginal dialects. Each construct was presented in turn for each element using both poles. For example, "Hould you yourself say that so and so was wuygi or digal?" Digil means good in Dyirbal, while Giramay say digal.

Dichotomous grids using acquaintances as elements were completed by each respondent and are shown in Figure 2. George, Toby, Milidi, Kate and Possum completed repeat grids after many months.

Dichotomous Grids with Dudaba Elements

Dichotomous grids were produced by the five respondents prepared to attempt a task different from anything they had done previously.

These respondents were Milidi, Possum, Kate, Toby, and George. Beliefs about the Dudaba are cultural givens. Personal constructs about the Dudaba are not. All were dubious about attempting something for which they did not have the support of information handed on by the old people.

Elicitation of constructs and Elements

Constructs and elements were elicited from respondent Milidi using a conversation type elicitation process. Others were elicited from the remainder as a group using the same method. Constructs thus elicited were: -

Construct Contrast end

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Gubi
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Dalmuru (good)	- Wargay (bad)
Nuŗģin (truth)	- Wurabuy (habitual liar)
Mulgura (game)	- Birabin (frightened)
Birabin (frightened)	- Gulu birabin (not frightened)
Important to us	- Important only in their own fancy
Selfish	- Not selfish
Ganandaŋaŋu (worried)	- Inubin (carefree)
Үалди (һарру)	- Guli (aggressive)
Trouble-maker	- Not a trouble-maker
Important (big shot)	- Not a big shot
Trust	- Don't trust
Bandarbin	- Good
Malŋgal	- Not cranky
Frightening	- Not frightening
Dingubay (larrikan)	- Stays with his wife
Likeable	- He don't like
Not all constructs	were eventually used.

Elements elicited were those of several groups. The list

given is for Gulnay and Dyirbal with the equivalent for Giramay in brackets.

Element	Description
Wadum (= Walguy)	- Snake who kept the fire
Balbamuri (= Bunday Bunday)	- If offended causes a tornado
Girgur	- Eel
Yamini (= Maingay)	- Rainbow snake
Warigal	- First person to die
Dudil (= Windan)	 Expressed first child from a boil in his leg
Naydirin (means two women)	- Black goanna people who brought crocodiles
Digirdigir	- Willy wagtail who fought the saltwater people
Baŋgara	- Blue tongue lizard, keeper of water
Malŋara (means grandfather)	 Rainbow snake who created the Tully gorge
Garaŋgal	- Cockatoo who stole crest from black cockatoo
Baçin baçin	 Hawk, drove back the sea and saltwater people, can be a sung for punishment cyclone, directs the wind
Badindila	- Spangled drongo; stole fire from snake
Gargara	- Moon, preserver of all life by bringing dew for Gulnay and Mamu
Gaŗlu	- Small brown rodent stole water from Bangara
Nulmabaŗi	- Mythical dingo
Gaŗi	 Sun; destroyer of all life for Gulnay, Mamu, Dyirbal by drying up moisture, preserver of all life for Dyiru by providing light.
Garam garam	- Seagull, a cyclone

An example of how Dudaba elements and constructs were elicited is informative. George, Toby, Kate, and Possum met at Jumbun to discuss elements and constructs. George dominated the discussion but

clearly had a vicarious knowledge of the myths. All had reservations about the outcome of sorting the Dudaba on constructs because the old people had not told them of the Dudaba in such terms. All except George were disinclined to attempt, as a trial, to sort the Dudaba by comparing elements by a lattice block design on the physical construct big - small. George agreed to attempt the task while the others listened and commented. With George as spokesman and some help from others the discussion was in the following style :-

"We've got wadum" (the snake who held the fire)

"What about badindila?" (the bird who stole the fire for the people)

"Yes wadum was selfish with fire therefore badindila is bigger" "How big was the moon?"

"What made him go up? How did he go up?" This brought gales of laughter because in a story told only by George, yamini (rainbow snake) swallowed the moon who eventually contrived to be expelled by flatus.

"What about that eel (girgur)?"

"That's a Tableland story (Dyirbal)"

"Yamini is the main boss. Yamini swallowed the moon, the moon beat him and therefore yamini is not the head (boss). The moon must come on top of yamini"

"Girgur (eel) came from Yaraman, he named all things. Warigal is more important than Girgur. All people came after Warigal, he was the first man and therefore it is like Adam and Eve and Cain and Abel."

Every element was compared with another once. George's sorting was seen as a joke and repudiated by the other three because the moon story belonged to the Tableland, the reasoning did not accord with 'their way' of sorting, and the outcome was incorrect. George had

sorted using big in the sense of 'big man around town, big shot'. It was privately suggested this respondent be no longer used as he had insufficient cultural knowledge, got everything wrong, and spoiled the project. Later he did complete a grid using Dudaba as elements but care was taken to be aware his version of the myths did not fluctuate. Selfish and important were used as constructs.

Independently, Miliqi had reservations about the outcome of sorting Dudaba elements on constructs for the same reason. To encourage confidence he too compaired Dudaba elements in pairs on the physical construct big - small.

This proved to be a poor choice because he attempted to compare the size of the Dudaba in their human form using as a guide the size and shape in a transformed state. This entailed trying to compare on size the yamini (snake) and the moon who was envisaged as a small, round, fat, man. He considered the results unreliable but that the task would be possible with constructs similar in style to those used with people as elements. Milidi, George, Toby, Kate, and Possum agreed to complete dichotomous grids with Dudaba as elements.

The grids they produced are shown in Figure 10.

Grids with Spirits as Elements

The following list of spirits was elicited. Element labels are for Dyirbal and Gulnay with Giramay equivalents in brackets. A different spirit may be named similarly in two cultures or the same spirit named differently in two cultures.

Spirit	Description
Guyngun	- Female returned dead
Guyi	- Male returned dead
Dambun	- Flies and seen as a light
Digubina	- Seen as a light and heard
Yurday	- Seizes people for sexual purposes and keeps in

	a cave for Gulnay. For Giramay he is the spirit which is a rock at the foot of the track to Kirrama. Travellers and animals failing to put a leaf in a crevice in the rock are permamently crippled.
Maŗay	 Giramay call the spirit who holds people captive in a cave for sexual purposes, Maray
Milbildi	- Slippery blue fig tree - to touch brings diarrhoea epidemic fatal to human race.
Diban burabay	 Rock which if touched brings an epidemic of boils to human race
Lord	
Angels	
Diban gambilguri	 Rock, once the hut of the Dudaba who turned into a rainbow bird and flew away when shrimps stole his parcel of banganu (cycad nuts)
Diban baŋga <mark>ņu</mark>	 Rock, once gambilguri's parcel of banganu stolen by shrimps, taken by girgur and split with girgur's wooden sword. The flat faces indicate the direction of each tribal country.
Diban yindaybi	- Rock to be struck for punishment storms
Dagun	 Rock. Possibly a Dyiru word for rock and used to refer to the cyclone stone of the events of the 1918 cyclone at the Mission.
Gubi	- Clever man
Gulmaru	- Flame tree, causes sickness if touched.
The resultant	grids are shown in Figure 8.

Ranked and Graded Grids

During completion of dichotomous grids it became apparent that some respondents, principally George and Micky, had difficulty with determining pole allocation of elements in gray areas with a dichotomous sorting and would prefer a more sensitive sorting possible only with ranked or graded grids. Orley (1976) used a pair comparison method with 6 elements, Barton and her colleagues (1976) used paired comparison with the mentally handicapped. Such procedures are only possible with few elements and constructs. A procedure used by Haynes and Phillips (1973) called a Pair

Comparison Grid offered a method for producing a ranked or graded grid within the limitations of respondents' counting system.

George, Micky, Francis, Milidi, and Toby agreed to complete grids using a procedure similar to that used by Haynes and Phillips (1973).

A prepared balanced lattice block format (Cochran & Cox, 1957) was drawn up for each construct. Sixteen was decided as being a manageable number. If more than 16 elements had been previously elicited from a respondent for dichotomous grids, 16 elements were randomly selected from this pool. If elements were elicited anew, the list was stopped at 16, for example Micky. However with both instances some negotiation was involved. Despite care being taken to ensure that all elements were accepted as suitable, once the task commenced, some elements were rejected because although sufficiently well known for use in a dichotomous grid they were considered not known well enough for this type of comparative sorting. Substitutes were elicited.

The 16 elements were randomly numbered and the elements written in lattice block format according to the numbered lattice block design. This provided 20 trials consisting of 4 elements each. Each element would be compared with every other element once only. Each element appeared 5 times in the design.

Elicitation of Constructs

Constructs previously elicited were considered as suitable by respondents for this type of sorting it out. However not all those constructs previously elicited were used. It appeared this was due neither to difficulty with the task nor to difficulty with sorting elements according to any particular construct but was due to the time involved. "We will just do one more then I will go fishing", "How many more did I say I would do?"; "That one is much the same as

the other one and would sort out the same way, better leave it out" were typical comments when the elicited construct list was shortened during administration. When some constructs were sorted they did not sort in a way identical to another construct although it had been thought they would.

Procedure

Each Trial involved reading to the respondent the appropriate 4 elements in order. The respondent was requested to sort out the four elements according to the most or least for each construct. Who is the most... out of these four people, who is the most out of these 3 people and so on. Once the task was understood elements were ranked without prompting.

Both poles of the construct were presented and the respondent selected at the outset which pole he preferred to use first. Each respondent used either pole or both poles in his sortings depending on how the four elements of each Trial were grouped. When both poles were used, the sortings were from the extremes to the middle. When one pole was used, the sortings were in rank order. For example, if 'game' were decided upon by the respondent for presentation in the construct game - frightened (say) and all 4 elements were considered game, elements were ranked 1-4 on game. If all elements were considered frightened, the response was "I can't sort them out that way" "Why?" "Because they are not game, they are all frightened." In such instances the elements were re-presented using the pole 'frightened'. They were actually ranked 1-4 on frightened and recorded 4-1 from the left hand pole if game were the left hand construct label.

If the elements were mixed, as was most often the case, rankings were made where appropriate on 'game' and once more it was explained the remaining elements could not be sorted that way. Once again the

contrast pole would be presented and the remaining elements ranked most to least on that pole. One of the dangers of ranking is that rankings may be made only on the emergent pole of a construct and the contrast pole ignored (Easterby-Smith, 1980). Such an eventuality has clearly not occurred.

To avoid learning bias, elements were randomly assigned numbers for each construct. It was noted that elements were nominated as one, two, three and then next or last. The gloss for more than three was never used for four.

Following the scoring procedure of Maynes and Phillips (1973), a Pair Comparison Grid was completed based on the implications of the rankings in each trial of 4 elements. The procedure is as follows: -If the first Trial of 4 elements - 1,2,3,4 - were ranked 2,3,4,1 the implication is that element 2 is considered to be more representaive of the construct than elements 3,4, and 1. A 16 x 16 matrix is set up and ticks are entered in the cells 3,4,1 of row 2 and corresponding O's in cells 3,4,1, of column 2. Similarly it is implied that element 3 is more representative of the construct than elements 4 and 1. The procedure is repeated for elements 3 and 4. Each subset of 4 rankings is entered in the matrix in this manner. A completed pair comparison table is illustrated in Figure 6 together with a lattice design, rankings and element allotments.

Implied Rank Grid

This method (Haynes & Phillips, 1973) allows the compilation of an implied ranked grid. The occurrence of equal ranks shown in the Pair Comparison Grid is doubtful because it may well be the result of inconsistencies due to method and not genuine equal ranking. Had their been sufficient confidence in the respondents' counting system providing an unequivocal ranking on a scale of 1 - 16 and this method used any equal rankings could be taken as reliable judgments. In

ranking to 16 no inconsistencies would have occurred. For comparison two grids were developed, one using equal ranks and one ranking elements according to the order of equal ranks which best fitted the established pattern in the Permuted Pair Comparison Table and which would he the order if no inconsistencies existed. The inconsistencies would then be regarded as an artefact of the method. It was decided to analyse these grids by the Ingrid Computer Program to compare differences. Ingrid treats grids with equal ranks as graded. There was little difference in the magnitude of the percentage of variance in the matrix accounted for by each component. No assumptions can be made that the rankings and 'gradings' were at equal intervals. The method is illustrated in Figure 4 and the grids in Figure 5.

Measures Used

Measures of cognitive structure evidenced in a repertory grid matrix generally refer to measures of differentiation which include the concept of cognitive complexity. Measures of hierarchical organizaton and of the identification of superordinate constructs are less well represented. The development of the various measures of differentiation and the uncertainty as to which aspect of the differentiation continuum is being reflected by any particular form of analysis has been discussed in a previous chapter. Therefore grids were analyzed by several methods to cover a broad spectrum of structural organization, to control for the possibility of an unknown artefact of the measure influencing results, to provide for the possibility of indications of influences emerging independently of analysis, and for comparison across results. Unless a grid is specifically designed to tap construction of a particular aspect of a subsystem, in a very real sense measures are equivalent to the form of statistical analysis it is reasoned will reveal the particular

relationships within the matrix which can be interpreted as indicative of one part or another of the differentiation continuum. Analysis does not add any information to that existing in the raw grid. Statistical data produced still have to be interpreted.

Clinical investigations have predominated in the development of analytic methods. However, because they have been developed in an attempt to distinguish the structure of the cognitive processes of clinical patients from those of normals, it is in reports of such investigations that some comparative values for normals are to be Some measures used here include such developments. Computer found. programs specifically developed for grid analysis are either based on cluster analysis (Shaw & Thomas, 1978) which relies on building up clusters based on association, or principal component analysis (Slater, 1977) which searches for the greatest variation and imposes hypothetical, orthogonal, reference axes on these. Constructs and elements can be directly related to these axes. Both principles are used here. Both have advantages and disadvantages discussed by Easterby-Smith (1980). Measures used are: -

1. Data Interaction

2. Cluster Analysis

3. Principal Component Analysis

4. A Measure of Articulation and Hierarchical Organization Data Interaction and Cluster Analysis

This form of grid analysis was developed by Leach (1980). The rationale is that cluster analysis describes inter-construct and inter-element relationships but neglects the interaction between constructs and elements displayed in the grid matrix.

The analysis developed by Leach (1980) produces three distinct trees or dendograms representing: -

1. Clusters of similar elements.

2. Clusters of similar constructs.

3. Clusters of similar data items.

Compilation of the Element Tree Data

The element distant used in dichotomous grids is the proportion of constructs - expressed as a decimal - on which two elements are sorted to different poles. Such distances necessarily lie between 0 and 1. Element distances between ranked data are based on Euclidian distances as suggested by Leach (1980). These are calculated as shown by Hartigan (1975). Leach advises that these be converted to the required 0 - 1 scale by dividing the resulting distance by its maximum possible value for the ranking scale used, here 1 to 16.

Compilation of the Construct Tree Data

A proportional measure is not appropriate for the distance between two constructs. For interaction analysis, the distance measure needs to be comparable to that of the element distance measure. Leach (1980) suggests a measure based on correlation. The distance measure for constructs is 1-abs.(phi) where abs.(phi)is the absolute value of the coefficient. As constructs are bipolar, the sign can be ignored.

The resultant triangular distance matrices were clustered by Hiclus, a computer program originated by S.C. Johnson (MDS (X) Series) and based on his Hierarchical Clustering analysis. Two methods were used for each grid, Connectedness and Diameter sometimes referred to as Minimum and Maximum methods (Johnson, 1967). The diameter method appears to display the raw grid data in a more readily perceivable format but has the disadvantage of more joins. The grids shown in Figures 2, 3, 4, and 7 are clustered using the Connectedness method.

Rearranging the Grids

This is much the same process as the focussing process described

by Shaw (1981). The original grid was rewritten with elements and constructs ordered in the sequence produced by the cluster analysis. Such ordering is not necessarily unique as evidenced by the Connectedness and Diameter clusters. To make the structure of the grid more evident, all correlations between constructs should be positive. This involves reversing the poles of some constructs. Poles were reversed as necessary by observation. Reversed constructs are indicated by an asterisk in the Figures of those grids reproduced as focussed grids.

The element and construct marginal trees were drawn on the rearranged grid according to the cluster indicated by the hierarchical cluster analysis.

Data Interaction Tree

The data interaction matrix was derived by the method used by Leach (1980). As the re-arranged matrix appeared to show grid structure more clearly the results of data interaction have not been shown in the grids and were not analysed in results. The typical tick/nought notation has been replaced with A's for the emergent pole and blanks for the contrast pole only for the sake of emphasis.

Principal Component Analysis

The raw grids were analysed by the Ingrid computer progam, a method developed by Patrick Slater (1972).

Articulation and Hierarchical Organization

The method used for the analysis of the organization of constructs in the cognitive structure of this sample is based on that developed by Makhlouf-Norris, Jones and Norris (1970). While Makhlouf-Norris and her colleagues reported that their method differentiated significantly an obsessional neurotic group from a normal control group, Millar (1980) failed to replicate the findings and considered the method was an unreliable indication of some aspect

of the cognitive complexity dimension which does not appear to be fully described by one measure.

The notion of superordinacy is based on Kelly's model. Kellv (1955) regarded superordinate constructs as occupying the top of the hierarchy; defining the relationship of other constructs; determining their position and hence governing the system. Superordinancy however is not an intrinsic characteristic of any construct. It is a matter of position occupied in the system relative to other constructs. As the whole system is open to review and reorganization to cope with novel events, relative positions may change in this process of review. The method of Makhlouf-Norris and her colleagues directly assesses the hierarchical level of constructs. The other method for assessing hierarchical structure, that of Hinkle (1965, cited by Bannister & Mair, 1968), assesses the hierarchical organization of the system.

Procedure

Triangular construct matrices were compiled from the correlation between constructs provided by the Ingrid computer program developed by Patrick Slater (1972). Makhlouf-Norris and her colleagues proposed that the organization of constructs is implied by the inter-construct correlation pattern as re-arranged by a simple form of hand clustering. To simplify the correlation matrix, it was arbitarily decided that only those correlations significant at the 5% level were used. This level is a matter of convenience because some level of significance is needed.

Makhlouf-Norris' (1970) alogrithm lacked precision. It was defined more clearly by Makhlouf-Norris and Norris (1972)) and more finitely defined by Millar (1980). Millar's distinctions are followed here to the extent they are applicable. As extra configurations are encountered further criteria are necessary and

were defined.

Three types of topographical organization are defined: -

- 1. Articulated
- 2. Monolithic
- 3. Segemented.

The order of the matrix of construct intercorrelations significant at the 5% level is re-arranged to form groups or clusters in which each construct is significantly related to all others in the cluster.

A Primary Cluster

A primary cluster is one which contains the maximum number of mutually significantly correlated constructs. Other primary clusters may exist which consist of significantly correlated constructs which are not significantly related to constructs in other primary clusters. These would by definition contain fewer constructs than the original primary cluster. This investigation produced some primary clusters with equal numbers of constructs. In that event it was decided that the principal primary cluster was the one with the higher correlations, or the one with more secondary clusters which is a condition of more implications.

Secondary Cluster

A construct significantly correlated with one or more, but not all constructs in a cluster was considered a related offshoot or secondary cluster.

Tertiary Cluster

A construct significantly related to a secondary cluster but not to any construct in the primary cluster was considered a tertiary cluster.

Linking Cluster

A construct or construct cluster significantly correlated with

one or more constructs, but not all, in two or more primary clusters was considered a joint offshoot or linkage construct.

<u>Isolates</u>

A construct not significantly correlated with any other construct was considered an isolate.

These cluster relationships distinguish the topographical organization of the system viz:-

Articulated System

This is distinguished by the presence of a linkage cluster.

Monolithic System

This is a distinction of non-articulated systems where the organization consists of one or more primary clusters, secondary clusters and perhaps isolates but lacks a linkage cluster.

Segmented System

This is the second distinction of a non-articulated system. If the pattern of grouping is of a primary cluster with mutually unrelated secondary constructs and more primary clusters with or without isolates and lacking an intergrating linkage cluster, the organization is segmented.

Superordinate Constructs

Makhlouf -Norris and her colleagues defined the superordinate constructs as those with the greatest number of significant correlations.

Topographical organization for each grid is shown in Figures 8,10, and 11.

Consistency

The pair comparison table grid (Haynes & Phillips, 1973) not only provides for a ranking of elements on each construct but provides for two measures of (in)consistency, namely Kendall and Babington Smelte's (Kendall, 1948, Kendall & Babington Smelte, 1939,

cited by Haynes & Phillips, 1973) statistic 'd' and Slater's (1960, 1961) statistic 'c'.

Kendall and Babington Smelte's statistic 'd' is the number of circular triads which are inconsistent in the manner of a > b > c >Slater's (1960,1961) statistic 'c' is the minimum number of а. corresponding pairs of cells it is necessary to change in the pair comparison table in order to make it completely consistent. The determination of Slater's 'c' is complicated and needs to be carried out by a computer. However, by using another device, inconsistencies are displayed in the matrix and produce by a simple count a measure similar to Slater's 'c'. Ranked rows are used to form a matrix which Haynes and Phillips (1973) call a permuted pair comparison table. It is simply the original matrix re-ordered according to rank. If the matrix is consistent all 0's are displayed on one side of the diagonal, all ticks on the other. Inconsistencies show as ticks in the 0 sector and 0's in the tick sector. Necessarily, both must correspond. The consistency score is a matter of counting the aberrant ticks or noughts. Care needs to be taken where rows of equal rank are involved because the order in which they are placed in the permuted pair comparison table does affect which side of the diagonal the inconsistency will fall. If more than two rows are of equal rank the process is tedious and most easily managed by working a miniature grid for the row number intersections involved.

The two measures of inconsistency for each respondent are the summation of 'd' over all constructs and the summation of 'c' over all constructs.

Interpretation

Normative values do not exist for grid analysis and because it is not a test it should not be anticipated that they should. Everything is relative and a matter of interpretation so nothing may

be judged in absolute terms. The construction of cognitive structure refers to how a person uses constructs to anticipate events. This has been determined by asking respondents to use them in an analyzable context. Therefore some conventions have been given tentative acknowledgment and provisional operational criteria generally adopted. These will be discussed in the next chapter before presenting results.

CHAPTER 7

<u>Results</u>

Although normative values do not exist for the interpretation of grids, some conventions provide guidelines for comparative a relative sense and are useful so purposes in long as interpretations are flexible. Differentiation is a continuum. There is nothing sacrosanct or fixed with interpretations of a grid matrix. The more sophisticated methods of simplifying and arraying the data matrix have involved the use of computer programs but many relationships may be observed in the raw grid. Whatever the source of the method of analysis used, cognitive structure in grids by convention remains a matter of relationships between constructs, between elements, and their interaction in the grid matrix. However such relationships are tied to the particular constructs and elements used in any particular grid. So while structure is held conceptually distinct from the content of the element or construct, both are inextricably involved with any particular grid structure. Even so it is how inferences, implicatons and categories operate in a grid which is the structure rather than what construct or construct pole any particular respondent applies to any particular element which is analyzed as cognitve structure. Content is not ignored and is discussed in the last chapter.

Operational criteria and their source follow: -

Cognitive Differentiation

The percentage of variance within a grid matrix accounted for by the first principal component or the first two components revealed by the Ingrid program is generally considered an indication of the extent of differentiation within a construct system. On average the first two components of grids produced by neurotics account for 65% of the variance compared with 59% for normals (Ryle & Breen, 1972). The percentage of variance accounted for by the first component in a study by Millar (1980) of obsessional patients was 49.5% for patients with 45.3% for normal controls and for the first two components was 70.2% for patients and 62.8% for normal controls. This compares with 41.9% of the variance accounted for by the first component in patients' grids; 39.4% for grids of normal controls in the Ryle and Breen investigation. The higher the percentage the relatively more undifferentiated is the system and the less cognitively complex the functioning.

Cognitive Complexity

In the Ingrid table of totals of sum of the squares of element deviations a large range from positive to negative totals indicates a simpler cognitive process where there is a tendency for constructs to give convergent results. However the opposite does not apply; a narrow range does not necessarily imply a more complex system (Slater, 1972).

The more constructs in the first factor the fewer differentiating factors and so the number of constructs in the first factor defines the degree of cognitive complexity. The fewer the constructs in the first factor, the higher the degree of cognitive complexity (Zimring, 1971).

According to Bieri (1966) sorting of elements in a near identical manner on several constructs is an indication of lack of cognitive complexity while Adams-Webber (1979) considers that the greater degree of functional similarity between constructs the greater the degree of cognitive simplicity of the system. Individuals with cognitively simple systems tend to sort on a good bad dichotomy (Crockett, 1965) and Scott (1963) considers the more balanced the structure, the more simple the structure. Slater (1972) points out that a few elements at one end of an axis may balance

considerably more elements on the other end in a simple cognitive structure. A much more complex structure displays elements spread along the axes.

Lawlor and Cochran (1981) argued that univalent impressions are displayed in grids of simple structure. Adams-Webber (1979) considers the rigid, monolithic type of structure to be prototypical of Bieri's (1966) definition of cognitive simplicity. The explanation power of the first component, expressed as a percentage of the total variation accounted for by the first component, is an inverse measure of cognitive complexity (Chetwynd, 1977).

<u>Rigidity</u>

The inflexible implications of the highly constellatory constructions are usually accounted for by the simplicity of the construct sub-system within which significance is of the all or none type. A tight system is one where relationships between constructs are strong (Lawlor & Cochran, 1981), construct relations are tightly organized and all lines of implication converge on a single construct, that is there is lack of functional differentiation. Systèms may consist of many constructs but if there are not enough linkage constructs to enable constructs to relate to each other, the system is undifferentiated and cognitively simple. The degree of intensity is the relative tightness or looseness of the construct system. This has been operationally defined by Bannister (1960) as the strength of the correlation between elements. The higher the correlation the greater the degree of tightness. However the concept of using a correlation matrix, whether of constructs or of elements as a measure of differentiation and of flexibility has proved an awkward one considering Bannister's work with thought disordered schizophrenics. Thought disordered schizophrenia appeared to be distinguished by loose construct systems which would make this group

the most cognitively complex in the world.

Superordinate Constructs

Superordinate constructs are those at the highest level of an individual's system. They integrate the different functions of various subsystems so that a system can be functionally differentiated at one level and integrated at a higher level. Without integration, complexity can be equivalent to confusion (Adams-Webber 1979). Kelly (1955) suggests that constructs defining major factors may be relatively superordinate. Makhlouf-Norris and her colleagues (1970) consider that the constructs with the greatest number of significant inter-correlations within a system are the superordinate constructs. In their diagramatic representation of articulation the superordinate constructs are usually to be found in the primary cluster, but not necessarily so.

Characteristics of Construct Dimensions

These have been described previously but are informative to bear in mind when interpreting results. A preemptive construct is of the type 'if this is a ball it is nothing but a ball'. A constellatory construct is stereotyped or typological thinking. It fixes the other realm membership of its elements. A propositional construct is an uncontaminated one (Kelly, 1955, p. 564). It carries no implications about the realm membership of elements. Tight constructs lead to unvarying predictions, loose constructs lead to varying predictions.

Results from Analysis

Not all relationships or information provided in any one grid will be considered. However because unexpected relationships may occur and need special explanation it seems appropriate to retain each grid as a separate data source before summarizing results.

Dichotomous Grid with Acquaintances as Elements

When considering the cognitive structure of all repertory grids in this study additional information important to interpreting the degree of functioning of the system, whether on the cognitive complexity or differentiation dimensions, must continually be borne in mind. The grids analyzed are not necessarily identical in all instances with the grid matrix completed by the respondent. Construct numbers may be fewer than those used to complete the grid because, at times, respondents used a construct in such a manner that it contributed nothing to the variation in the matrix, and does not function as a variable. For example all elements may be construed as honest by a particular respondent. Nhen faced with such assessments, if the construct has not been previously removed, the Ingrid program lists such constructs as excluded from further analysis. Neither can any array, such as cluster analysis based on correlation use All such instances are noted when analyzing the grids and may them. be regarded as an indication of lack of differentiation between the elements involved. Modification of interpretation of results is therefore sometimes necessary.

Α different phenomenon also of great significance for interpretations of levels of differentiation and cognitive complexity, is the tendency to use some constructs in relation to the elements in a particular matrix in a manner that results in several constructs becoming functionally equivalent. Similarly elements may be sorted in an identical way on all constructs. Instances of this type of sorting are obvious in cluster analysis because such elements and constructs cluster at the O level. However in the analysis for principal components and articulation, where elements and constructs are identified by number only, it can be deceptive when evaluating the level of differentiation of the system. Effectively the

functional dimensions of a grid may be considerably reduced while giving an impression of relatively higher differentiation.

In order to avoid repetition for results for every respondent, especially with results from the Ingrid program, some general results are stated at the outset. Results for all mature preliterate Aboriginal respondents show a wide range from negative to positive totals of the sums of the squares of element deviation. It may therefore be assumed that the indications from this particular Ingrid output are for a non-complex system for all respondents. The highest percentage on the element sums of squares output indicates the element which is most important in the matrix. It may be negatively or positively construed by the respondent and is best thought of as a trend setter. This will be reported only as the most important element in the principal component analysis results.

Results from the Bartlett test will be reported without comment when they are given. The Bartlett test refers to all components after the first has been extracted and is used to decide whether the remaining variation is scattered in a random way over the remaining dimensions. A negative result from the Bartlett test means the test fails to detect any significant difference among components after the first. It makes no comment on the first component. Sometimes the Ingrid program does not apply the test.

The first two components extracted by the Ingrid program are linked to the constructs and elements with the greatest variance and it is assumed they indicate the main dimensions for differentiating people. Only those highly related are shown. A large array of elements may indicate they are those which have been sorted in an identical manner.

Group Grid

This grid completed by George, Toby, Kate, and Possum was
intended only to familiarize respondents with the procedure. It is reproduced in Figure 2 (a). However it shows some persistent themes which are best discussed at the outset to avoid repetition.

Twenty two elements are effectively reduced to 17 bv equivalence. Constructs 1 and 2 are equivalent, that is qubi - non qubi and good - bad. Elements divide into two principal clusters and the division is strictly on the gubi - non gubi distinction. Constructs form one cluster with the remainder being added to that cluster in steps. The key element throughout all grids in appreciating the gubi-non gubi split is probably Ball Cobra, an infamous qubi and non- qubi business murderer, who is generally judged positively on every gubi related construct pole. It is the constructs implied by qubi-ness which tend to cluster although idiosyncratic use of constructs may appear and individuals may differ in who is a gubi.

In this grid all non-gubi elements cluster at the .12 level with the exception of element 11, Baroon, who appears to have been a source of confusion for many respondents. He was believed to be an hermaphrodite and some respondents' grids show he has been clustered in a cluster otherwise consisting entirely of women.

Gubi elements in this grid tend to form a lesser cluster before the strong gubi cluster. This may be accounted for in this grid and several others by the elements Brolga and Garam. Brolga is generally reported as a bad gubi. However he was Possum's father and the Pollyanna bias appears to be operative. Garam, a gubi by biological descent only, was considered a particularly inactive gubi. Another bad gubi who still lived has sometimes been assessed with circumspection.

Data interaction analysis results

Cluster analysis indicates an undifferentiated grid. The grid is

monolithic with constructs 1, 2, 3, and 8 being equally superordinate. These are gubi related constructs [see Figure 2(a)].

Principal component analysis results

Ingrid results show that element 16 is the most important for this repertory grid. The Bartlett test was negative. The percentage of variance attributed to the first component is 47.10%, to the second component 20.92% with a total of 68.02% for the two components. This indicates a lower level of cognitive complexity than means reported by Ryle and Breen (1972). The first component is represented by elements 2,3,8, 12, 16, 18, and constructs 1, 2, and 8. The second component is represented by elements 15 and 17 and constructs 5 and 4. Elements most representative of important constructs are:-

Construct	Element
1	2
4	5
5	10

Articulation analysis results

The construct system in this grid forms one primary cluster consisting of constructs 1,2,3, and 8 with constructs 7 and 4 as secondaries and constructs 5 and 6 isolate. It is monolithic (n = 22 r = .42 p < .05). The superordinate constructs are 1,2,3, and 8. The system is rigid. From a construct correlation matrix of 28 cells 10 correlations are significant with a range from .47 to 1.0. A diagramatic representation is shown in Figure 3(a).

<u>Milidi</u>

For this grid elements 3 and 14 are equivalent; elements 1,2,4,5,8,10, and 11 are equivalent; elements 7 and 21 are equivalent; elements 16 and 22 are equivalent; elements 13, and 17 are equivalent and elements 23 and 24 are equivalent thus effectively

reducing the elements perceived as different from 25 to 14. Construct 1 (good - bad) and construct 8 (gubi - non gubi) are used in an identical way in relation to the elements in this grid. However it is suggested they are actually identical within the construct system in most instances and are used interchangeably.

Milidi originally completed a dichotomous grid with 30 elements and 10 constructs. Despite all care being taken to be certain all elements were within the range of convenience of the constructs he responded to the construct 'jealous' that an element was jealous, was not jealous, or was 'imbadu' - nothing. The imbadu response indicated, it seemed, a non-jealous person. Eventually the response was 'imbadu, he is not married.' It eventuated that dunda is limited to a sexual context and only a married person can be jealous and then only during the lifetime of the spouse. The elements were amended to be certain every element was within the range of convenience of this construct. Subsequently every grid contained a supplied test-only construct of married - not married to monitor this convention. When jealous coincided with only married people, the element list was amended if discussion indicated this convention was operating. For language purists, of whom there were three, the convention still applies, others recognize it was once so but has now gone by default as sexual activity and marriage are no longer synonymous. Again others were unaware of the restricted meaning.

Five elements were consequently deleted from Milidi's grid format because they were beyond the range of convenience of all constructs for this respondent. He was also under religious pressure and later regretted his use of "rubbish words". These were dingubay (larrikan) and mandalanu (play up) which were limited to sexual activity. This sexual limitation was not apparent in the Aboriginal English equivalents.

Data interaction results

The focussed grid with marginal and data interaction trees is shown in Figure 2(b). After the grid was effectively reduced to 14 elements, at the next partition elements 6, 3, and 14 formed one cluster and the remainder of elements combined into a second cluster all at level .12. The division between the two element clusters is strong and clearly caused by the distinction between gubi and nongubi elements with three elements being sorted as gubis.

Constructs 8 (gubi-ness) and 1 (good - bad) are identical. Constructs also form two clusters with construct 7 (game frightened) joining the cluster of gubiness. To be frightened was commendable. The implication otherwise is that one is a gubi. Constructs dingubay and jealous have least relevance for the system. The data interaction clustering serves to emphasize this division.

The structure displayed indicates non-complex cognitive functioning and is undifferentiated. It is a rigid, simple two complementary cluster system where constructs virtually collapse into one construct except for the two constructs dingubay and jealous which are presumably seen as part of the human condition. Constructs are used in a preemptive, constellatory manner.

Principal component analysis results

Elements 3, 14, and 6 are most important and could be regarded as the trend setters. These are the gubis. No Bartlett test was performed. Results from Ingrid show 50.50% of the variance occurs along the axis of the first component and another 16.49% along the axis of the second component - 66.99% by the first 2 components. Indications are of a cognitive structure less differentiated than the normal control level of Ryle and Breen (1972). The first component is represented by the elements 3, 14, and 6 (the 3 gubis) and by the constructs 4,5,6, and 7. The second component is represented by

element 6 and constructs 6,8, and 1. Elements most representative of important constructs are: -

Const	truct	Elements
	1	1, б
	4	1, 2, 4, 5, 8, 10, 11 (equivalent)
	6	13,17
	8	6

Articulation analysis results

A topographical description of results is presented in Figure 3(b). The primary cluster consists of constructs 4,5, and 7. Secondary clusters accomodate constructs 1,8,3, and 6 with 1 and 8 and 3 and 6 being also significantly correlated. Construct 2 (larrikan) is isolate (n = 25, r = .40 p < .05). In a correlation matrix of 28 cells, nine cells are significant at the 5 % level with a range from 0.44 to 1.0. The system is unarticulated and monolithic. This is an indication of a simple cognitive process.

Using Makhlouf-Norris' criteria constructs 4 and 5 with four significant correlations each at the 0.05% level of significance appear to be superordinate constructs. These are stupid in the head and frightened.

<u>Possum</u>

Data interaction analysis results

A grid of 22 elements was effectively reduced to 17 elements by equivalence. Of the 8 constructs, the gubi dimension was equivalent to the good - bad dimension. Elements are clustered into two main clusters with the division being between the gubi and non gubi elements. Possum places his father, Brolga, and Garam in a sub cluster of the main gubi cluster. The differentiation within the system is in the gubi cluster primarily because of the tempered assessment of Brolga and Garam because all the non gubi elements form

one cluster immediately without any differentiation. The system appears undifferentiated with constructs used in a preemptive, constellatory way. The construct troublemaker appears unrelated to the remainder of the construct system. The grid is shown in Figure 2(c).

Principal component analysis results

Elements 2 and 18 are most important for this respondent. The results of the Bartlett test were negative. The first component accounts for 49.53% of the variance with 15.76% being accounted for by the 2nd component. This is similar to that of patient means (Ryle & Breen, 1972). Component 1 is most represented by elements 18,2, and 16 and constructs 1,2, and 3. Component 2 is most represented by elements 5 and 9 and constructs 6,7, and 1. Elements most representative of important constructs are :-

Construct	Element
1	14
б	б

Articulation analysis results

The construct system in this grid comprises one primary cluster of constructs 1,2,3 and 7 with construct 4 and 5 secondaries, construct 6 tertiary and construct 8 isolate. The system is monolithic and rigid. Superordinate constructs are constructs 1 and 2 (gubi and good - bad). Of a construct correlation matrix of 28 cells 12 are significant (n = 22 r = .42 p < .05). Significant correlation ranges from .42 to 1.0. Results are shown in Figure 3(c).

<u>Toby</u>

Data interaction analysis results

Toby completed a grid of 16 elements and 9 constructs. Elements were effectively reduced to 7 by equivalence. In relation to the

elements in this grid constructs were functionally reduced to 7 by equivalence. Elements form two distinct clusters along the gubi non gubi dimension with the still living gubi being sorted with some circumspection and being held remote from other elements in either cluster. Constructs form one strong cluster with constructs 5,1,6, and 2 being added to the cluster successively. The separation on a good bad dimension is obvious in the grid shown in Figure 2(d). Principal component analysis results

Results from Ingrid show that elements 10,11, and 12 are most important for this respondent. No Bartlett test was performed. Component 1 accounts for 78.39% of the variance in the grid and component 2 for 8.28%. The indications are of a non-complex undifferentiated system. Elements 4,7,10,11,12 and constructs 1,5,7,8,9 (the gubi constructs are most representative of component 1 with elements 13,4 and 16 and constructs 2,3, and 4 being most representative of component 2. Elements representative of important constructs are :-

Construct	Element
1	123689
2	4 10 12
9	1 2 3 8 9 14 15

Articulation analysis results

This is diagramatically shown in Figure 3(d) [n= 16, p < .05, r=.50]. The system is monolithic having all constructs forming a primary cluster except for construct 2 which is secondary to the primary cluster. Constructs 1,3,4,5,8, and 9 are equally superordinate on Makhlouf-Norris' measure. It is a very tight system with all constructs except construct 2 highly correlated. Constructs are preemptive and constellatory. Of 38 inter-construct correlations 36 are significant at the 5% level. The two not significantly

correlated are construct 2 with constructs 6 and 7. Twenty-five of the 34 significant correlations are higher than .70.

<u>Ernie</u>

Data interaction analysis results

Ernie's original grid consisted of 16 elements and 8 constructs. He judged that all elements told the truth and that no elements carried yarns but were all straight, so these two constructs were excluded from analysis. He reduced 16 elements to 6 effectively by equivalence.

All but 5 elements were considered gubis. There is no evidence of anything but the most elementary structure in this grid. Constructs troublemaker and aggressive are equivalent with the construct frightened - game being unrelated to the construct system. The structure is undifferentiated and cognitively simple. The grid is shown in Figure 2(e).

Ernie used the meaning for tells the truth encountered in several other grids. This is the meaning that should a gubi threaten death he will surely kill that person.

Principal component analysis results

The most important element in the system is element 8. Results from the Bartlett test are negative.

Results show that 53.02% of the variation occurs along the axis of the first component and 23.09% along the axis of the second component with a total variation for the first two components of 76.11%. Elements typical of component 1 are elements 8 and 12; elements typical of component 2 are elements 8 and 3. Constructs typical of component 1 are constructs 1 and 2 and of component 2, the typical construct is construct 6. Elements most representative of important constructs are :-

Construct	Element
1	5 6 11 15
б	3

Articulation analysis results

Ernie's grid is segmented (n = 16, r = .50 p < .05). It consists of two primary clusters of constructs 3,5,6 and constructs 1 and 2 with construct 4 isolate.

Out of 15 possible correlations four were significant. So the primary cluster of constructs 1 and 2 really represents a significant correlation between constructs 1 and 2. It is the minimum possible for a cluster. The correlation between constructs 3 and 5 is 1.0 so principal primary cluster is also at the minimum level. the Construct structure in relation to this particular group of elements is cognitively simple. The system lacks the rigid implications of a monolithic system which, however inflexible, is at least workable. The segmented system cannot use the system as a whole and needs an pigeonhole for all new information. additional There are no connecting paths. The articulated structure is shown in Figure 3(e).

Rosie

Rosie's original grid contained 16 elements and 8 constructs. The construct frightened - not frightened was excluded because Rosie allotted every element to the not frightened pole.

Data interaction analysis results

Rosie's elements were effectively reduced to 10 from 16 by equivalence. Four element clusters are formed at the .14 level before all clusters form one cluster at the .28 level. The sorting of elements 1, 11, and 15, all of whom are gubis appears to cause non-conformity in this grid with the familiar gubi - non gubi clustering. These are all relatives and while she has judged them more strictly than other gubis on the construct poles implied by gubi

status she has said they were not tricky people but alright.

The two constructs relating to trustworthiness appear unrelated to the remainder of the constructs and form a separate cluster. The grid is shown in Figure 2(f).

Principal component analysis results

Results indicate element 4 is the most significant in the grid. Results of the Barlett test are negative. Results from Ingrid show that the first component accounts for 49.05% of the variance and the second component for 21.03% with a total of 70.08% of the variance accounted for by the first two components. In comparison with Ryle and Breen's (1972) figures, this is an indication of a low cognitive complexity rating.

The first component is represented by elements 2, 3, and 12 and constructs 1, 6, 2, and 5. The second component is represented by element 9 and by constructs 2 and 4. Elements representative of the most important constructs are :-

Construct	Element
1	2 3 12
2	2 3 12
б	2 3 12
4	7 9 13

Articulation analysis results

The construct system forms one primary cluster of constructs 1,5, and 6 with construct 2 as secondary. There is a second primary cluster of constructs 3 and 7 with construct 4 as isolate (n = 16 r = .50 p (.05). The system is segmented. Of a construct correlation matrix of 21 cells five are significant at the 5% level. The range is r = .52 to r= .76. Articulated structure is shown in Figure 3(f).

<u>Millie</u>

Data interaction analysis results

Seventeen elements and eight constructs were elicited from Millie. The 17 elements were effectively reduced to five by equivalence. This in itself is sufficient indication of a cognitively non-complex structure. The eight constructs were effectively reduced to four by equivalence. All elements form one cluster with the exception of the construct referring to gameness which appears unrelated to the others in the system. The grid is shown in Figure 2(g).

Principal component analysis results

There was a negative result from the Bartlett test and one component only is described. It accounted for 90.75% of the variance within the grid. Elements most representative of this component are 5, 6, 7, and 15 and most representative constructs are 1, 3, 4, 5, and 8. Elements most typical of construct 1 are 3, 5, 6, 7, and 15. Articulation analysis results

Constructs form one primary cluster of all constructs (n = 17 r = .48 p < .05). Of a construct correlation matrix of 28 cells the lowest correlation is .70. There are 10 correlations of 1.0. The system is monolithic, undifferentiated tightly integrated with tight implications. All constructs are equally superordinate. Results are shown in Figure 3(g).

<u>Francis</u>

Data interaction analysis results

Twenty elements were elicited but effectively reduced to 14 by equivalence. This is prototypical of cognitive simplicity. The system functions as a two clustered system but has four unresolved elements 3, 11, 14, and 15 to which he appears indifferent. The grid is shown in Figure 2(h).

Principal component analysis results

Ingrid results show that elements 1, 2, and 3 are most important in this construct subsystem.

The Bartlett test showed six significant components after the first. Component 1 accounted for 58.66% of the variance, component 2 for 12.95% of the variance, the total for both components being 71.61%

Elements most closely associated with component 1 are 1, 2, 4, while the most closely associated constructs are 7,3,4, and 8. Elements most closely associated with component 2 are 5 and 6. The construct most closely associated with component 2 is 5. Elements most representative of important constructs are: -

Construct	Element
7	124
5	10 18 19
3	124
4	124
8	124

Articulation analysis results

The construct system forms one primary cluster of constructs 2,3,8,1,7, and 6 with construct 4 as a secondary and constructs 5 and 9 secondary to the primary cluster but also independently correlated with construct 4 (n = 20 r = .44 p < .05). The system is monolithic, tightly integrated, implications are tight. Eleven cells of the correlation matrix out of 28 are significant. It is undifferentiated. Superordinate constructs are 2, 3, and 8. The articulated structure is shown in Figure 3(h).

<u>George</u>

Data interaction analysis results

Twenty elements and 8 constructs were elicited from George. The

elements reduced effectively to 14 by equivalence. Constructs gubi and bad were equivalent in relation to these elements.

A small cluster of three extremely bad gubis is the main distinguishing feature of this grid. Otherwise two element clusters are joined at the same level by eight more elements making what is virtually one cluster which is then joined at the next level by the remaining elements in succession. The distinction here is not one of separate clusters but of separate levels. The separate level distinction is the gubi - non-gubi distinction but all elements are tightly integrated. It is undifferentiated in structure.

Constructs form three weak clusters . The strongest cluster of the three contains the construct of gubiness and implied constructs. The grid is shown in Figure 2(i).

Principal component analysis results

Element 2 (Ball Cobra) is the most important, either negatively or positively construed, in the matrix.

Component 1 accounts for 47.16% of the variance within the subsystem with component 2 accounting for a further 20.61% so that together these components account for 67.77% of the variance. This is higher than means reported by Ryle and Breen (1972).

Elements most characteristic of component 1 are 2, 6, and 16 and those of component 2 are 1, 19, and 16. Constructs most representative of component 1 are 1, 2, and 8. Those most representative of component 2 are constructs 3 and 7.

Elements exemplifying important constructs are :-

Construct	Element
1	8 10 12 14
3	8 10 12 14
2	8 10 12 14
7	3

Articulation analysis results

Constructs 1,2,6, and 8 form one primary cluster with constructs 4 and 5 as secondary. A second primary cluster is formed by constructs 3 and 7. The system is segmented. Of a construct correlation matrix of 28 cells, eleven correlations are significant at the 5 % level (n = 20 r = .44 p < .05). Significant correlations range from .50 to 1.0. The superordinate constructs are 1,2,6, and 8. The articulated structure is shown in Figure 3(i).

<u>Nindi</u>

Data interaction analysis results

Nindi's grid as elicited consisted of 19 elements and 9 constructs. The construct game contributed nothing to the variance and was excluded from further analysis. The 19 elements were effectively reduced to 7 by equivalence which indicates a cognitively simple undifferentiated system. Constructs 3 and 4 were equivalent in relation to these elements as were constructs 2,7, and 8. Functionally the construct system operated, therefore, on four constructs. It is an undifferentiated cognitively simple system with elements forming three initial clusters and element 5 being unrelated. By convention element 5 should be one to whom Nindi was indifferent. Discussion indicated otherwise. Element 5 was the one element towards which he had strong feelings and these feelings were negative. It would appear he handles the situation by refusing to even include him in considerations of ordinary people. The grid is shown in Figure 2(j).

Principal component analysis results

The sums of the squares of elements indicates elements 15, 17, 19, are most crucial to this subsystem.

Component 1 accounts for 59.25% of the variance in tha matrix with component 2 contributing another 20.62%. A total for the first

two components of 79.87% is well outside the range to be anticipated in usual grids. Elements 15, 16, 17, 18, and 19 are most characteristic of component 1. Elements 11, 12, 13, 14, are most characteristic of component 2. Constructs 6, 2, 7, and 8 are most characteristic of component 1 while construct 1 reflects the dimension of component 2.

Articulation analysis results

The construct system forms one primary cluster of constructs 5,6,2 7, and 8 and a second primary cluster of constructs 3 and 4. Construct 1 is isolate. Of a construct correlation matrix of 28 cells eleven are significant at the 5% level (n = 19 r = .46 p < 0.05). The range of significant correlations is .51 to 1.0. There are four of 1.0. The system is segmented. The superordinate constructs are 2,5,6,7, and 8 (digil/changeable; garda/guli; jealous/not jealous; good always/ change mind quick; talk good to face/ talk bad behind back). The articulation structure is shown in Figure 3(j).

<u>Micky</u>

Data interaction analysis results

Micky completed a dichotomous grid with 16 elements and 10 constructs. He had difficulty with a dichotomous sorting and because he reasoned aloud it was clear some allocations to either pole were with a mental flip of the coin. Elements were reduced to 15 by equivalence. Elements form two basic cluster with element Garam separate from the system for reasons described at the beginning. Garam was always an ambiguous element. All were considered gubis except for Baroom and an extremely mild tempered element 5. Constructs form a weak cluster of three constructs which others join in succession. It is a tight system. The grid is shown in Figure 2(k).

Principal component analysis results

A wide range of totals of element sums of squares indicates a non complex system. The most influential element is 14. The Bartlett test was negative. Component 1 accounted for 29.07% of the variance, component 2 contributed 18.03% and component 3 16.03%. Elements 5, 6, 12, and 14; constructs 10, 9, and 6 are most representative of component 1 while elements 7 and 16 and constructs 8 and 3 are most representative of component 2. Elements most representative of important constructs are: -

Construct	Element
10	6
8	1 3 11
9	4

Articulation analysis results

The construct system consists of one primary cluster of constructs 10 and 9 with constructs 4 and 6 as secondary and a second primary cluster of constructs 3 and 8. Constructs 1,2,5, and 7 are isolate. Of a construct correlation matrix of 45 cells four are significant at the 5% level (n = 16 r = .50 p < .05). The system is segmented. The superordinate construct is 10 (smart - stupid). The articulated structure is shown in Figure 3(k).

<u>Kate</u>

Data interaction analysis results

Kate completed a grid of 23 elements which were effectively reduced to 15 by equivalence. This indicates an undifferentiated, simple cognitive system. Elements form two main clusters with the division strictly along the gubi non-gubi dimension. Element Baroon, the assumed hermaphrodite has not been sorted into either cluster. Rather he is isolated from the sub-system.

Constructs form a strong cluster with two constructs relating to

frightened being unintegrated. Some confusion is attached to these constructs. For some respondents it is one construct and related to gubiness. For others it is two constructs, one related to gubiness and the other to frightened of spirits, strange places and such.

Data interaction indicates this is a cognitively simple, undifferentiated system. The grid is shown in Figure 2(1).

Principal component analysis results

Ingrid indicates the most important elements are 2, 6, and 16. No Bartlett test was applied. Component 1 accounted for 56.02% of the variance with component 2 contributing a further 16.67%. Elements most closely associated with the first component are elements 2, 16, and 18. Constructs most closely associated with this component are 1, 2, and 3. Elements characteristic of the second component are 15 and 5. Constructs reflecting the dimensions of this component 6 and 7. Elements most representative of important constructs are:-

Construct				Element				
	1	2	6	1	б	18		
	2	2	6	1	6	18		
	3	7	8	1	2			
	6	4	21		23	}		
	7	3	9					

Articulation analysis results

This grid consists of one primary cluster of constructs 1,2,3,4, and 6 with constructs 5, 7, and 8 as secondary. Construct 8 is also significantly related to construct 7 (n = 23 r = .41 p <.05). It is monolithic. Of 28 cells in the construct correlation matrix 19 are significant at the 5 % level. Significant correlations range from .45 to 1.0. The superordinate constructs are constructs 1 and 2 (gubi; good/bad). The articulated structure is shown in Figure 3(1).



Figure 2(a): Rearranged dichotomous grid with acquaintances es elements - Possum, George, Kate and Toby



Figure 2(2): Rearranged dichotomous grid with acquaintances as elements - Milidi



Figure 2(C): Rearranged dichotomous grid with acquaintances as elements - Possum



Figure 2(d): Rearranged dichotomous grid with acquaintances as elements - Toby



Figure 2(): Rearranged dichotomous grid with acquaintances as elements - Ernie.



Figure 2(¢): Rearranged dichotomous grid with acquaintances as elements - Rosie



Figure 2(c): Rearranged dichotomous grid with acquaintances eselements - Millie



Figure 2(h): Rearranged dichotomous grid with acquaintances aselements - Francis



Figure 2(i): Rearranged dichotomous grid with acquaintances as elements - George



Figure 2(1): Rearranged dichotomous grid with acquaintances as elements - Nindi -



Figure 2(K): Rearranged dichotomous grid with acquaintances as elements - Mickey



Figure 2(1): Rearranged dichotomous grid with acquaintances as elements - Kate





Figure 3(a). Articulated structure of a dichotomous grid with acquaintances as elements - Group.



Monolithic Structure

Figure 3(b). Articulated structure of a dichotomous grid with acquaintances as elements - Milidi.

Respondent:- Possum



Monolithic Structure





Dichotomous grid-elements people

Monolithic Structure







Segmented Structure Figure 3(e). Articulated structure of a dichotomous grid with acquaintances as elements - Ernie.



Segmented Structure



Respondent: Millie



Monolithic Structure Figure 3(g). Articulated structure of a dichotomous grid with acquaintances as elements - Millie.



Monolithic Structure

Figure 3(h). Articulated structure of a dichotomous grid with acquaintances as elements - Francis.





Dichotomous grid - elements people

Segmented Structure

Figure 3(j). Articulated structure of a dichotomous grid with acquaintances as elements - Nindi.

Respondent :- Micky



Dichotomous grid- Elements people

Segmented Structure

Figure 3(k). Articulated structure of a dichotomous grid with acquaintances as elements - Mickey

Respondent :- Kate



Dichotomous grid - elements people

Monolithic Structure

Figure 3(1). Articulated structure of a dichotomous grid with acquaintances as elements - Kate.

Figure 3(a-1). Articulated structure analysis of grids of preliterate Aboriginals. The same data are shown in two forms, the cognitive structure and the level of superordinacy of constructs. The superordinate constructs are indicated by the ordinate which shows the number of significant correlations of each construct.

Lat	tice	Вc	жk	1	Ranik	inçs	
1	2	З	4	1	2	з	4
5	6	7	8	5	6	7	8
9	10	11	12	9	17	:2	10
:3	14	15	15	16	15	13	14
1	Ş	9	13	5	t	9	13
2	5	10	14	5	2	10	14
з	7	11	15	7	з	11	15
4	8	12	16	8	16	12	4
1	6	11	16	6	1	16	11
5	2	15	12	5	2	12	15
9	14	3	8	8	з	9	14
13	10	7	4	7	13	10	4
1	14	7	12	7	1	12	14
13	2	11	8	8	2	11	13
5	10	3	16	5	3	16	10
9	6	15	4	6	9	15	4
1	10	15	8	1	ŝ	15	10
9	2	7	16	16	7	2	9
13	6	:3	12	5	з	12	13
- 5	14	11	4	5	11	4	54

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-		1	1	1	Ø	0	0	40	~	1	1	1	1	1	~	1	12	3.5
N	с		1	1	0	٥	0	0	1	1	1	/	1	1	1	ç	9	7.5
ఆ	0	0		1	0	0	0	0	1	1	1	1	1	1	~	1	9	7.5
<u>~</u>	c	0	o		c	٥	٥	0	c	0	0	0	0	~	0	0		15
c,	1	1	1	1		1	1	1	1	4	1	1	1	1	1	1	15	1
6	1	~	~	/	٥		1	1	1	1	1	1	1		1	1	14	2
7	1	1	1	1	0	0		7	₹	X	1	~	1	1	1	0	F 2	3.5
6	0	1	1	1	0	0	0		1	1	1	1	1	1	~	1	11	5
9	0	0	0	~	0	0	0	0		1	ł	1	1	1	1	¢	7	9
10	0	с	0	1	0	0	0	C	c		0	o	С		0	0	2	14
Ξ	0	0	0	1	c	0	0	c	c	1		1	1	-	1	c	6	10
12	0	0	0	1	c	ò	0	0	c	1	0		1	1	~	0	5	11
ü	0	٥	٥	1	c	0	o	c	٥	1	0	0		1	c	0	3	:3
-	0	o	o	0	c	c	0	c	c	0	0	c	0		c	0	0	16
5	c	o	0	1	o	0	0	0	0	1	0	0	1	/		o	4	12
16	0	1	c	1	0	0		0	1	1	1	1	1	1			ho	6

Elements

1 Yamıni

З Шаюрлу

2 Backnotta

4 Wumaban

5 Warigai 5 Mcon

7 Bançara

8 Garju

9 Windan

10 Gidila

14 Gari

16 Girgur

11 Nayd,Inr.

12 Bunday Bunday 13 Dulgirdugr

15 Garam Garam

1	Warıça!	ê	Windan
2	Moon	10	Nayd,inn
ε	Yamn	11	Bunday Bunday
4	Sançara	12	Garam Garam
5	Gane	13	D, igird, igir
6	Geçur	14	Gld,lia
7	Sacendia	15	Wumabari
ŝ	Warguy	16	Garl

Ranked Elements

PERMUTED PAIR COMPARISON TABLE 5 6 7 1 8 16 2 3 9 11 12 15 13 10 4 14

10

0 0

o Ó

d=4 i=2

0 0

C ٥ 0 0 0 0

0 C 0 С ٥

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0 0 0 0 0 0 01 oł C

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0 C 0 0 0 0

C

5

6

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2

3 0 0 0 ٥ 01-

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11 0

12 0

10 0 0 010 c 0 0 ٥ 0

4 0 0 0 1 <u>^</u> 0 ٥ 0 0 0 0 0

14 0 0

15 13 C

i c

10

Ċ.

8 0 0

PERMUTED PAIR COMPARISON TABLE OF RANKING OF DUDABA ELEMENTS FIGURE 4 BU CONSTRUCT BULGUN - MIDI (BIG SHOT) - GEORGE
Ranked Grids with Acquaintances as Elements

An example of the method is shown in Figure 4.

<u>George</u>

Data interaction analysis results

George had had difficulty with a dichotomous sorting, reverting at times to a more elementary cognitive process of using concrete instances. He produced a ranked grid with 16 elements and nine constructs. The margin element cluster dendogram shows several weak clusters which eventually all cluster at the .18 level which is a distance not much greater than where dichotomous grid clusters began. It is undifferentiated. Element Garam and element Bindibindi were last to be joined. However the clustering indicates a tightly integrated undifferentiated structure. Bindibindi was apparently an element who was construed under most constructs implied by gubiness without being a gubi. The grid is shown in Figure 5(a).

Principal component analysis results

Results from Ingrid show component 1 represented 90.42% of the variance in the matrix. This indicates an undifferentiated simple cognitive structure. However results of the Bartlett test found three components significant. Elements most characteristic of component 1 are 1 and 14. Constructs show no variation.

Articulation analysis results

The construct system forms one primary cluster of all constructs. It is monolithic and tightly integrated. Of the thirty six cells in the construct correlaton matrix all are significant at the 5 % level (n = 16 r = .50 p < .05). Correlations range from 0.82 to 0.98. All constructs are equally superordinate. Articulation structure is shown in Figure 6(a).

Toby

Data interaction analysis results

Toby completed a ranked grid of 16 elements and eight constructs. Two strong element clusters are formed which amalgamate at a level relatively higher than that of George's grid. The partitioning shows clusters are formed strictly along the gubi nongubi dimension except for Garam, technically but not effectively a gubi who, on the more sensitive sorting, forms a sub-cluster in the good cluster with a female gubi who was considered good, and, a rough non-gubi element. The two gubis not integrated with the remainder of the system are a reputedly bad gubi whom Toby personally found a decent fellow to him and the current living gubi where the tendency was to sort with circumspection.

The construct troublemaker is not integrated early with the remainder of the construct system. The grid is shown in Figure 5(b). Principal component analysis results

Element 10 is the most important in the grid. Results of the Bartlett test are negative. The first component contributed 82.51% of the matrix. Elements associated with this component are 10, 1, 13, and 6. All constructs are representative.

Articulation analysis results

The construct system forms one primary cluster of all constructs (n = 16 r = .50 p <.05). Correlation coefficients range from .56 to .95. All constructs are equally superordinate. The system is monolithic and tightly integrated with tight implications. The articulated structure is shown in Figure 6(b).

<u>Micky</u>

Data interaction analysis results

Micky had had particular difficulty with dichotomous sorting as

mentioned previously and approved the comparison method. His grid shows two strong clusters with several sub-clusters and two elements, 7 and 9, which he apparently does not see as typical. The division is along the good - bad dimension. Micky appears to have assessed people according to his own experience rather than along the local culturally sanctioned lines. He has idiosyncratic ways ٥f construing. A gubi is good because he has been converted by the Courts and the prison system, an Aboriginal policeman employed as a tracker is good although locally he is bad because he is a gubi. Telling the truth is also idiosyncratically construed to mean if a threat is made by a gubi to kill someone, the gubi is telling the truth as he will surely make good the threat. Hence all gubis are truthful. Even so, despite an almost consistent opposite pole allotment system functioning, the structure is similar to that of others, with apparently clear rigid lines of implication. The monolithic type additive process appears to be the integrating style of the construct system. The grid is shown in Figure 5(c).

Principal component analysis results

The results from Ingrid tend to support the proposition that the dichotomus grid had, to some extent, been sorted randomly. Elements 1,9, and 10 are most important. Results of the Bartlett test are negative. The first component accounts for 86.93% of the variance. Elements characteristic of this component are 10, 1, 9, 11, and 14. All constructs are equally representative of the component.

Articulation analysis results

The construct system forms one primary cluster of all constructs at the 5 % level (n = 16 r = .50 p < .05). It is monolithic, tightly integrated. Correlations range from .73 to .93. All constructs are equally superordinate. The articulation structure is shown in Figure 6(c).

Francis

Data interaction analysis results

Francis' ranked grid consisted of 16 elements and six constructs. Elements form one cluster in a relatively short distance but are divided into two strong clusters with the ambiguous element mentioned earlier, Baroon, and another not joining till the last connection. Constructs form two sub- clusters with the construct bandar being unintegrated. The grid is shown in Figure 5(d).

Principal component analysis results

Elements 1, 7, and 10 are most important for the matrix. Results of the Bartlett test were negative. Component 1 accounted for 77.9% of the variance in the matrix. Elements most closely associated with this component are 1, 7, and 10. All constructs are representative.

Articulation analysis results

The construct system forms one primary cluster of all elements significant at the 5% level (n = 16 r = .50 p < .05). It is monolithic and tightly integrated. Correlations range from .60 to 0.90. All constructs are equally superordinate. The articulation structure is shown in Figure 6(d).

<u>Milidi</u>

Data interaction analysis results

Milidi completed a ranked grid with 16 elements and seven constructs. Constructs form one cluster of four constructs with others joining in sequence. The more sensitive sorting made possible by comparison type ranking appeared to make implications more inflexible for other respondents but not so for Milidi who showed a tendency to discriminate more sensitively. He did not use the construct gubi but did use the construct good - bad. The construct gubi is clearly implicit. The matter was discussed with him. What

he has done in high contact times is reassert cultural values. Rather than use the finished gubi assessment he has used the criterion of the biological heritability of gubiness and assessed the children of gubis on the gubi rather than non-gubi pole. Comparison permitted this. It should be noted Milidi is the only respondent of the mature group to include self and to include among elements members of Group C. It should be remembered that this grid was completed during the period when he was actively resisting attempts at invalidation and strenuously reaffirming his Aboriginality. This grid is more complex than others and is shown in Figure 5(e).

Principal component analysis results

Elements most important to the matrix are 11, 13, and 1. The Bartlett test was negative. The first component accounted for 52.13% of the variance with component 2 accounting for a further 17.07%. This result shows that something other than an artefact of the method accounts for the tightly integrated construction of the other respondents who completed ranked grids.

Elements most representative of component 1 are 11, 13, 2, and 7. Constructs most representative of this component are 1, 2, and 5. Elements most representative of component 2 are 2, 10, and 14. The most typical construct of component 2 is 3.

Articulation analysis results

The construct system forms one primary cluster of constructs 5, 2, and 1 with constructs 7 and 4 as secondaries. Constructs 3 and 6 are isolate (n = 16 r = .50 p <.05). It is monolithic.

Of 21 cells in the construct correlation matrix five are significant at the 5 % level. Significant correlations range from .50 to .82. Superordinate constructs are constructs 5 and 2. The articulated structure is shown in Figure 6(e).

Dichotomous Grids with Spirits as Elements

Toby completed one dichotomous grid with Spirits as elements and Milidi completed two, one previous to medical problems and one after he was persuaded Dudaba were only animals or only people and spirits did not exist.

<u>Toby</u>

Data interaction analysis results

Toby completed a repertory grid with 16 elements and seven constructs. Elements effectively reduced to 11 with equivalence. Two clusters were formed at level .14 which consisted of elements 2 and 10 in one cluster and the remainder in the other. Both united to form one cluster. This is an undifferentiated form of clustering. Constructs formed one strong cluster with two constructs, frightened and trust, being irrelevant to the subsystem of spirits. The grid is shown in Figure 8(a).

Principal component analysis results

The most important element in the matrix is 2. Component 1 accounts for 42.34% of the variance with component 2 contributing a further 25.60%. Elements most closely associated with component 1 are 2, 14, and 1. Constructs most closely reflecting this component are 1, 2, and 4. Elements most representative of component 2 are 5, 8, and 9. The most representative construct of component 2 is 6. Construct 1 is defined by element 14 and construct 2 by element 6.

Articulation analysis results

Constructs formed one primary cluster of constructs 2,5, and 7 with a second primary cluster of constructs 1 and 4 (n = 16 r = .50p < .05). Constructs 3 and 6 are isolate. The system is segmented. Of the 21 correlations in the matrix four are significant at the 5% level. Superordinate constructs are 2,5, and 7. The articulated structure is shown in Figure 9(a).



elements - George.



Figure 5(b). Rearranged rank grid with acquaintances as elements - Toby.



Figure 5(c). Rearranged rank grid with acquaintances as elements - Mickey.



Figure 5(d). Rearranged rank grid with acquaintances as elements - Francis.



Figure 5(e). Rearranged rank grid with acquaintances as elements - Milidi.









Respondent:- Toby

Ranked grid; elements-people <u>n=16</u> <u>r</u>=·5 <u>p</u> < ·05 7 correlation 1 2 З 4 5 6 7 8 0 5 2 З 4 6 7 8 1



Figure 6(b). Articulated structure of a rank grid with acquaintances as elements - Toby

Respondent:- Micky



Ranked grid: elements-people

Monolithic Structure Figure 6(c). Articulated structure of a rank grid with acquaintances as elements - Hickey



Ranked grid: elements-people

Monolithic Structure Figure 6(d). Articulated structure of a rank grid with acquaintances as elements - Francis Respondent :- Milidi



Manolithic Structure Figure 6(e). Articulated structure of a rank grid with acquaintances as elements - malidi.

Figure 6(a-e). Analysis of articulated structure of grids of preliterate Aboriginals. The same data are presented in a different format to show the level of superordinancy of constructs. The superordinate constructs are indicated by the ordinate which shows the number of significant correlations of each construct.

	GUBI	GUWUY	GUMGUM	DIBANAUS NABIO	DAMBUN	YURDAY	- CHD	S TESNA	GULMURU	MILLBILDI	DIBAN BURUBAY	DIBAN BANGANU	DIBAN YINDAYBI	DIBAN GAMBILGURI	DAGUN	VAMINI
Validated		2	3	4	5	6	7	8	9	10) 11	12	13	14	15	16
Can Kill	1	1	1	1	0	0	<	<	1	1	1	0	\mathbf{X}	0	1	1
Can Talk	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1
. Can Hear	1	1	.1	1	1	1	1	~	1	1	1	0	1	0	1	1
Has Power		1	1	1	1	1	1	1	1	1	1	0	1	0	1	1
Invalidated													16			
Can Kill	0	1	0	0	1	D	<	0	1	1	1	0	0	0	0	0
Can Talk	1	0	0	0	~	0	1	0	0	0	0	0	0	0	0	0
Can Hear	1	0	0	o	1	0	1	0	0	0	0	0	1	0	1	0
Has Power		0	0	D	0	0	1	0	1			1	1	0	1	0

Figure:](a)Comparison of matrices capabilities of spirits and Didaba before and during

involidational period - Milidi

VALIDA] ED	- GRGLA	N YAMINI	6 BANGARA	MADUM	MARIGAL	9 DUDIL	, מופות מופות מופות	EALBAMURI	o NAYDIRIN	WUIMABARI	= MALNARA	R GARANGAL	E BARIN BARIN	EADINDILA	G GARGARA	11 1275 10	
Travel underground	1	1	0	O	0	1	1	0	1	U	1	U		U	0		1
Filos	0	0	0	0	1	0	1	/	0	0	0	1	1	1	1)
Can Talk	1	/ /	1	1	/	1	1	/	1	1	11	1	1	1	1		/
Still horo	0	1	/	1	/	1	<u>/</u>	/	1	U	/ /	/	/	1	1		/
Kills people	0	1	0	1	0	0	0,	/		1	/	0	/	0	0	0	1
Gubl	0	0	0	0	0	0	/	0	0	U	0	0	0	U	U	0	-
Working-work done	0	/	0	1	0	1	0	1	0	0	0	0	1	U	1	0	
Creature also	Ľ	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	
INVALIDATED					*	<u>*</u>				*						.	•
Travel underground	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Filos Can Talk	0	0	0	0	1	0	1	1	0	0	0	1	1	1	1	0	
Still here	1	/	1	/	1	1	/	1	1	1	1	1	1	1	1	<u>~</u>	
Kills poople	0	1	/	1	0	0	1	0	1	0	0	0	1	1	1	1	
Gubi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Working-work done	0	/	0	0	0	0	0	1	0	0	1	0	1	0	1	0	
Creature also	~	1	/	/	0	0	1	0	1	/	0	1	1	1	1	~	
Man turnod	0	0	0	0	ο	0	0	0	0	o	о	0	ο	0	0	0	

Figure $T(\mathbf{b})$ -Comparison of grid motrices of capabilities of Dudaba and spirits before and

during invalidational period - Milidi

Milidi

Both Milidi's grids, before and after pressure towards invalidation of his beliefs will be shown in order to take advantage of the unanticipated situation.

Data interaction analysis results

Grid before invalidation

Milidi completed a grid with 16 elements and eight constructs. Elements were reduced effectively to 8 by equivalence and constructs reduced to 6 because frightening, we don't like, and harmful functioned identically in relation to these elements. Two element clusters formed which eventually joined. The composition of the clusters is interesting. An inspection of the element margin dendrogram shows how basically undifferentiated the elements are. The criterion for distinguishing between the two clusters is still the basic good - bad dimension. On the good pole of the dimension are dambun, Lord, angels, diban gambilguri, and diban banganu with dambun being distinguished from the others. The Aboriginal elements of diban are connected with archival myths and specifically with Girgur who to Gulnay and Dyirbal was 'the boss man'. They are benign, inhabited by no power and are virtually historical monuments of the Dudaba period. For Gulnay dambun was a kind, caring, person ធ្លាក appeared as a light and came to check on the well-being of his countrymen even to the extent of flying to Palm Island. So, it is no vast speculative leap to suggest the Lord could be accomodated within the subsystem through construction of dambun.

The element clustering shows undifferentiated elements with a non - complex process.

Construct clustering shows a unidimensionality of the system with each construct joining in sequence. There is actually no clustering. It is an additive sequence rather than a cluster. These

rearranged repertory grids are shown in Figure 8 (b).

Principal component analysis results

Equally important in the matrix were elements 7, 8, 12, and 14. Results from the Bartlett test were negative. Component 1 accounted for 73.06% of the variance in the matrix and component 2 contributed a further 12.38%. Elements most closely associated with component 1 are 7, 8, 12, and 14. Constructs most nearly reflecting this component are 3, 6, 7, and 8 where elements 6, 7, and 8 are equivalent. Elements associated with important constructs are :-

Construct Element

Articulation analysis results

The structure of the construct system consists of one primary cluster of constructs 1,3,6,7, and 8 with construct 2 forming a secondary (n = 16 r = .50 p < .05). Constructs 4 and 5 are isolate. The system is monolithic. Of 28 correlations in the matrix 12 are significant at the 5% level with a range from .62 to 1.0. Superordinate constructs are 1 and 3. The articulated structure is shown in Figure 9(b).

Invalidational pressure consisted of denying the existence of these elements. Milidi withstood attempts at invalidation for years but was particularly vulnerable at this time after a succession of deaths of his supportive traditionally orientated friends combined with recalcitrant back problems. Eventually he asked to complete repeat grids using the Dudaba and spirits as elements because everything he had said was not true. Rocks were just rocks, the spirits did not exist and the Dudaba were either just people or just animals.

Grid after invalidation

Data interaction analysis results

This rearranged grid is shown in Figure 8(c). Sixteen elements have been effectively reduced to eight by equivalence. The construct selfish which was the last to join the system in the previous grid was excluded from further analysis because all were not selfish. Constructs 1,2, and 3 were clustered as equivalent. Previously constructs 6,7, and 8 had been equivalent.

The margin element dendrogram is virtually a mirror image of the previous one and equally simple and undifferentiated. The construct marginal dendrogram shows frightened and we don't like as irrelevant. This makes sense as these constructs would have no relevance for something which did not exist. It is content which has changed rather than structure. The structure remains approximately the same.

What appears to have happened is that he has tried to accomodate the denials of truth of his beliefs imposed on him and the elementthe clusters has changed but content of the two-cluster configuration remains, based strictly on the good - bad distinction. Accomodation has not been total and he retains a belief in the existence and general badness of the gubi, gulmaru and yamini. The rainbow snake (yamini) is thought to be the power in the gulmaru The result is confused sortings, and a slot rattle which is tree. prototypical of Kelly's (1955) description of rapid forced change under threat.

Principal component analysis results

The most important element is 16. No Bartlett test was applied. Component 1 accounted for 59.51% of the matrix with component 2 accounting for a further 16.71%. The elements most reflecting component 1 were 9 and 16 and constructs were 6, 1, 2, and 3. Elements most reflecting the component 2 were 2 and 5.

The first two components of the grid before invalidation pressure contributed 85.44% to the variance in the matrix. The first two components of the subsequent grid contributed 76.22% of the variance. This appears to support Kelly's (1955) hypothesis that there can be no change without first loosening the structure. The contents also of the grid have changed but the change has been internal. The overall structural outcome has been a change to a slightly less inflexible structure.

Articulation analysis results

The structure of the construct system consists of one primary cluster of constructs 6,1,2, and 3 with construct 5 as secondary (n =16 r = .50 p < .05). Constructs 4 and 7 are isolate. The system is monolithic. Of 21 correlations in the matrix 7 are significant at the 5% level ranging from .51 to 1.0. The superordinate construct is 6. The articulated structure is shown in Figure 9(c).

Dichotomous Grids with Dudaba as Elements

Possum

Data interaction analysis results

Possum's original grid had 18 elements and 11 constructs. Four constructs were excluded from analysis because they showed no variation. For Possum all the Dudaba told the truth, were game, were important and were good. The 18 elements were reduced effectively to 12 by equivalence. The elements form one cluster at the first division at the .14 level with elements Bangara, Wadum, and Digirdigir joining separately. Bangara kept the water for herself just as Wadum kept the fire to himself which is perhaps the criterion for separation. Digirdigir features in a Gulnay myth and may be known but not incorporated in the Giramay corpus of myths. Constructs frightened and worried are not important to the construct system. Elements are sorted in an undifferentiated way. The grid is

shown in Figure 10(a).

Principal component analysis results

Element 4 is the most important element in the matrix. Component 1 contributed 32.69% of the variance in the grid; component 2 furnished a further 23.25%. The element most representative of component 1 is 4 together with the constructs 3 and 6. The elements most characteristic of component 2 are 1 and 6 with the most characteristic constructs being 2 and 5.

Articulation analysis results

The construct system consists of one primary cluster of constructs 3 and 6 with constructs 2 and 4 as secondaries and

constructs 1,5, and 7 are isolate (n=18 r=.47 p < .05). The system is monolithic. Of 21 cells in the construct correlation matrix three are significant at the 5% level. These range from .48 to .79. Superordinate constructs are constructs 3 and 6. The articulated structure is shown in Figure 11(a).

George

Data interaction analysis results

Eight constructs were elicited from George. He considered every Dudaba element as a gubi, good, truthful, trustworthy, and game. ??
These 5 constructs were removed from analysis.

Of the 18 elements elicited 11 were sorted in an identical way and the elements effectively reduced to seven as far as differentiation is concerned. The resultant grid for analysis of 18 elements and three constructs exemplifies cognitively simple construction which is undifferentiated. No marginal construct clusters could be obtained. The grid is shown in Figure 10(b).

Principal component analysis results

Element 3 is the most important element in this grid. The results of the Bartlett test were negative. Component 1 contributed



Figure 8'a): Rearranged dichotomous grid with spirits as elements - Toby



Figure 8(b): Rearranged dichotomous grid with spirits as elements – Milidi



Figure 8(c): Rearranged dichotomous grid with spirits as elements - Miliqi



Figure 9(c). Articulated structure of a dichotomous grid with spirits as elements - Hilidi.

32.69% of the variance in the grid with component 2 contributing a further 22.13%. Component 1 is represented by construct 2 and component 2 by construct 1. This is a very simple structure.

Articulation analysis results

The construct system forms a primary cluster of constructs 1 and 2 with construct 3 isolate (n = 18 r = .47 p < .05). The system is monolithic. Constructs 1 and 2 are superordinate. The articulated structure is shown in Figure 11(b).

<u>Toby</u>

Data interaction analysis results

Toby completed a grid with 18 elements and 11 constructs. Three constructs, good, truthful, and game were excluded from further analysis because they contributed nothing to the variation within the matrix. Elements were reduced effectively to 12 by failure to differentiate between them. The marginal element dendogram shows one undifferentiated cluster of all elements except elements 4 and 13. This exemplifies a cognitively simple construction in this subsystem.

The construct tree displays three clusters consisting of two constructs each. The construct big - small (in the big shot sense) appears irrelevant to the construct system and was probably a new construct imposed by George during the group trial sorting reported previously. The grid is shown in Figure 10(c).

Principal component analysis results

Element 4 is the most important element in this grid. Results of the Bartlett test were negative. Component 1 accounted for 41.28% of the variance in the matrix with component 2 contributing a further 22.58%. Elements most characteristic of component 1 are elements 3 and 1 with construct 2 being the most characteristic construct. Elements 14 and 1 are most characteristic of component 2

with constructs 2 and 6.

Articulation analysis results

The construct system consists of one primary cluster of constructs 7 and 5 with constructs 3 and 4 as secondaries and constructs 1, 3, and 6 as isolates (n = 18 r = .47 p < .05). The system is monolithic. Of the 28 cells in the correlation matrix three are significant at the 5% level. Construct 7 is superordinate. The articulated structure is shown in Figure 11(c).

<u>Kate</u>

Data interaction analysis results

Kate's original grid consisted of 18 elements and 11 constructs. Constructs were reduced to seven for analysis because Kate saw all Dudaba as good, truthful, game and important. Elements were effectively reduced to 10 by equivalence. This indicates lack of differentiation among elements. Elements all cluster at the .14 level except for the moon which may have become confused because of George's telling of the Tableland story and his repudiated sorting of the moon as the boss of yamini. The whole structure is cognitively simple and undifferentiated. The grid is shown in Figure 10(d).

Constructs form two clusters with gubi being unintegrated. The only element nominated as a gubi was the moon and this was probably due to confusion from George's public sorting.

Principal component analysis results

Element 4 is the trend setting element of this grid. Results of the Bartlett test were negative. Component 1 contributed 42.95% of the variance in the grid with component 2 contributing an additional 23.46%. Elements most associated with component 1 are 3, 4, 12, and 14. Elements most associated with the second component are 1 and 6. Constructs which most reflect the dimensions of component 1 are 3, 5, and 6 where 3 and 5 are equivalent in relation to the elements

elicited. Construct 2 is most closely associated with component 2.

The construct system consists of one primary cluster of constructs 4 and 6 with 3 as secondary; a second primary cluster of constructs 5 and 2 with constructs 1 and 7 isolate (n = 16 r = .47p < .05). It is segmented. Of the 21 cells in the construct correlation matrix three are significant at the 5% level. Construct 6 is superordinate. The articulated structure is shown in Figure 11(d).

<u>Milidi</u>

The grids with Dudaba elements were completed under the same conditions as described for spirit elements. Both are reproduced and analyzed.

In order to check if there was consensus among respondents regarding the abilities of the spirits and the Judaba people, abilities attributed to Judaba entities by each respondent were recorded in a grid type format for convenience. The characteristics attributed by Milidi before and after invalidation are shown in Figure 7 for comparative purposes and as an indication of the repudiation of original beliefs. Invalidation was directed towards persuading him the Judaba did not exist and were only ordinary humans or birds and animals. Bodily transformation was not possible. This is clearly shown in the new list of abilities where those who were also birds could fly, the moon in the sky 'flies', snakes, and tornadoes may kill people.

Data interaction analysis results

Milidi's first grid consisted of 17 elements and 8 constructs. Elements were effectively reduced to 8 by equivalence. This is a very undifferentiated sorting. Two principal clusters which are separated by the gubi distinction are formed at the .12 level. Constructs are effectively reduced to five by equivalence. No

clusters are formed, constructs being added in an additive sequence. The last to be added is the construct of gubiness. The grid is shown in Figure 10(e).

Principal component analysis results

The most important elements in this grid are 4 and 17. Component 1 contributed 78.47% of the variance and component 2 a further 9.72 %. Elements most characteristic of component 1 are 17, 4, 8, and 10. Constructs most representative of this component are 7, 5, and 3. Elements most representative of component 2 are 3 and 11 while the most representative construct is 1.

Articulation analysis results

The construct system consists of one primary cluster of constructs 1,2,3,5,6, and 7 with constructs 4 and 8 as isolates (n =17 r = 0.48 p < .05). The construct correlation matrix of 28 cells has 15 correlations which are significant at the 5% level. It is monolithic. The superordinate constructs are 1,2,3,5,6, and 7. The articulated structure is shown in Figure 11(e)

<u>Milidi</u>

Data interaction analysis results

Changes in the new grid are informative with respect to Kelly's model for change. Seventeen elements are reduced to 10 by equivalence and the elements form one cluster with the exception of the mythical dingo and the sun both of which, his cultural beliefs told him, could destroy all life on earth. It is a simple undifferentiated structure. Nine constructs are effectively reduced to eight by equivalence. One very strong construct cluster is formed with frightened and larrikan not being integrated with this cluster until the end. The grid is shown in Figure 10(f).

What appears to have happened through invalidation and taking the changed abilities of the Dudaba into consideration is that he has



FigurelØ(a): Rearranged dichotomous grid with Dudaba as elements - Possum



Figure 10(b): Rearranged dichotomous grid with Dudaba as elements - George



Figure(D(c): Rearranged dichotomous grid with Dudaba as elements - Toby



Figure10(d): Rearranged dichotomous grid with Dudaba as elements - Kate



Figure (0(e): Rearranged dichotomous grid with Budaba as elements - Milidi (validated construction)



FigureIQ(F): Rearranged dichotomous grid with Dudaba as elements - Miligi (ofter invalidation)





Respondent :- George



Monolithic Structure - Number of constructs excluded 5.

Figure 11(b). Articulated structure of a dichotomous grid with Dudaba as elements - George

Respondent:- Toby

Dichotomous grid, elements - Dudaba



Figure 11(c). Articulated structure of a dichotomous grid with Dudaba as elements - Toby.

Respondent:- Kate

Dichotomous grid, elements - Dudaba



Segmented Structure

Figure 11(d). Articulated structure of a dichotomous grid with Dudaba as elements - Kate.




Respondent :- Milidi



Monolithic Structure - Number of constructs excluded 1.

Figure 11(f). Articulated structure of a dichotomous grid with Dudaba as elements - Hilidi.

Figure 11(a-f). Analysis of articulated structure of grids of preliterate Aboriginals with Dudaba as elements. The same data are presented in a different format to show the level of superordinancy of constructs. The superordinate constructs are indicated by the ordinate which shows the number of significant correlations of each construct. sorted elements as merely people or merely animals and to do so has used criteria in the myths as fact. He has also resurrected the repudiated construct of larrikan man. Content has changed but not structure. Girgur (eel), the most important of the Dudaba appears to have been construed as human rather than eel. The structure remains undifferentiated but less tightly integrated.

Principal component analysis results

It is clear that the construct system has been loosened due to invalidational efforts. The most important element is 17 which represents no content change. The first component accounts for 47.13% of the variance while the second component accounts for a further 19.93%. Elements most representative of component 1 are 17 and 10. The principal change is in component 2 where element 1 is most representative. Most representative constructs are 8, 6, and 7 for component 1 and construct 9 for component 2.

Articulation analysis results

The construct system consists of one primary cluster of constructs 1,2,3 and 7 with constructs 6,8, and 4 as secondaries and constructs 5 and 9 as isolates. Construct 6 is also significantly correlated with construct 8 (n = 17 r = .48 p < .05). It is monolithic. Of the 36 cells in the construct correlation matrix 13 are significant at the 5% level. Constructs 1,2,3, and 7 are superordinate. The articulated structure is shown in Figure 11(f).

Consistency Analysis Results

Only Toby, Milidi, George, Francis, and Micky completed rank order grids and therefore are the only respondents to whom this analysis applies. In order to be able to assess the relative magnitude of Consistency scores, the group construct means of the results obtained by Haynes and Phillips (1973) were calculated. Similarly the individual construct means of the Aboriginal

respondents were calculated. Actually the measure is a measure of Inconsistency. The lower the score the more consistent the respondent has been in completing the grid. Results are shown in Table 1. where T. D. S. refers to thought disordered schizophrenics, N. T. D. S. refers to schizophrenics who are not thought disordered and N. C. to normal controls. All of these comparative results are from Haynes and Phillips' (1973) study. The statistic i here refers to the minimum number of corresponding cells it would be necessry to change to produce a consistent result for all constructs.

Although there is a wide variation in individual's consistency score, all respondents are more consistent than T.D.S on the same sort of task and some respondents are more consistent than normal controls.

Respondents	i value
Toby	8.6
Milidi	2.5
George	4.2
Francis	7.1
Micky	11.0
T.D.S	17.7
N. T. D. S	7.54
N. C.	5.68
(Haynes & Phillips,	1973)

Validity and Reliability

Validity of the grids of the preliterate Aboriginal respondents is represented by repeat grids completed by three respondents at intervals of not less than five months. In all cases the repeat grids are almost identical. The demonstration of the existence of statistically significant relationships in all grids may be taken as an indication of validity. The constructs elicited and the interaction between constructs and elements in the grid matrix appear to be consistent with ethnographic data. Moreover the constructs themselves appear to be pre-existing.

SUMMARY OF RESULTS OF ANALYSIS OF PRELITERATE ABORIGINAL GRIDS

A11 results are shown in Table 2. Twelve preliterate Aboriginals completed dichotomous grids with acquaintances as elements. This group consisted of six individuals who had received traditional instruction by an uncle-father or substitute and five who had received no traditional instruction. The latter may be considered a transitional group because in their formative years traditional had failed. Four traditionally instructed systems and one transitional Aboriginal completed ranked grids with acquaintances as elements; two completed dichotomous grids with spirits as elements; five completed dichotomous grids with Dudaba as elements.

Data Interaction Analysis Summary

Differentiation and cognitive complexity

Differentiation can be considered from the extent elements are sorted by the constructs as similar or identical. Therefore, also bearing in mind the number of constructs excluded from analysis because they did not differentiate between elements, the number of constructs which functioned in an identical manner and the number of elements in any one grid sorted in an identical manner the cognitive structure within this subsystem is undifferentiated. Cognitive complexity emphasizes differentiation.

Integration and flexibility

Integration and flexibility can be assessed from the cluster analysis. In this instance inflexible rules appear to apply in as much as how a person is judged on the gubi - non gubi construct or on the good - bad construct determines how that person is assessed on other constructs in the system.

Construct dimensionality

It seems reasonable to assume that individuals who judge elements as similar or identical are assessing them using tightly

implicated constructs and thus using constructs in a constellatory, preemptive, stereotypic or typological manner. Following Landfield (1977), it is the tightness of relationships between constructs which indicates constellatory thinking. The structured sets of inferential relationships in these grids are typical of a constellatory, preemptive, stereotypic use of constructs.

Superordinate constructs

There are powerful indications from the data interaction analysis that the superordinate construct for differentiating between people is a gubi - non-gubi dimension or a dimension related to gubiness. Further it is shown that once the decision is taken regarding the status of gubiness the allocation of elements to construct poles has an air of inevitability. The construction of gubiness has inflexible implications throughout the system. Superordinate constructs treat others as constellatory. For example if a sphere includes a ball then to say something is a ball is to imply it is a sphere, or to say someone cannot be trusted is to say he is a gubi.

Summary of Principal Component Analysis Results

Principal component analysis shows that the percentage of variance within the individual repertory grids accounted for by the first two components is greater than mean percentage from a standard population and generally greater than all mean percentages in the studies of Ryle and Breen (1972) and Millar (1980). On the differentiation continuum this indicates non-differentiated processing with the grids of some respondents showing a particularly high degree of lack of differentiation. This is emphasized in the more sensitive sorting of the ranked grids where, except for Milidi, the percentage of variance accounted for by the first component is extremely high.

Except in the case of the segmented systems, the percentage of variance accounted for by the first component as extracted by the Ingrid program is an indication of simple cognitive structure. <u>Summary of Results from Articulation Analysis</u>.

Results from the analysis of articulation of grids in the three cognitive domains tested show 20 grids of monolithic structure and 6 grids which are segmented in structure. Further, the segmented grids with the exception of two grids, one with spirits as elements and one with the Dudaba as elements, are the grids of preliterate respondents who received no traditional instruction and are here referred to as transitional Aboriginals.

Results shown in Table 2 give as fractions the number of constructs in the primary cluster group; the number of elements in each grid sorted as identical to at least one other element; and the number of correlations in each grid significant at the 5% level. The latter are also shown as a percentage. For comparison purposes these are shown in Table 3 as average percentages for each group. The number of implications indicated by significant correlations and by use of constructs to sort elements as identical indicate on average a higher degree of integration and tighter construction by the traditionally instructed Aboriginals than by the transitional group.

Sex Differences

Results from grids produced by the females in the groups tend to be of the same pattern as those produced by male respondents with the exception of Millie. Millie's grid is cognitively non-complex, undifferentiated and rigidly implicated to an extreme degree.

The general results for the group of preliterate Aboriginals show construct systems which function in a non-complex, undifferentiated manner.

Although, with one exception, these Aboriginals are not aged in

the usual understanding of the term, they are deferred to on account of being the older generation. Because a possible alternative explanation for the non-complex, undifferentiated type of cognitive functioning could be age related it was decided to administer grids to a small sample each of younger literate and numerate Aboriginals who had been educated within the State education system and to aged Euro-Australians.

Grids from these two populations are analysed and summaries of all results shown in Table 2 and Table 3.

COMPARISON GROUP OF SCHOOLED ABORIGINALS

Respondent Group

The schooled Aboriginal sample consisted of three males and three females from within the general community. Four lived at Jumbun and two in Tully. The main criteria were, formal education within the State education system; descent from Gulnay, Dyirbal, or Giramay people; Aboriginals who had been reared by members of Groups A and B. Literacy and numeracy levels vary but all have some reading and writing ability and sufficient numerate ability to cope with the basics of living such as handling money and purchasing, sometimes operating a Savings bank account and accurate counting.

All speak English as their first and often sole language. Some can speak an unelaborated form of an Aboriginal dialect with a limited vocabulary and a modicum of grammar. Usually it is used for privacy and to exclude in the presence of non-Aboriginals. It is most frequently used for untoward comments in a white presence. If spoken to by older Aboriginals in dialect, they reply in English.

The active involvement of schooled Aboriginals in the planning of this phase of the investigation was encouraged. Harry and his friends were approached first and given an explanation of the study and the reasons for the need to examine the cognitive structure in

grids of aged Euro-Australians and schooled Aboriginal Australians. Harry explained his interest in assisting the investigation was based on a conviction that Aboriginal Australians processed information differently from Euro-Australians in addition to thinking about different topics. He volunteered to organize a respondent group and to schedule times for interviews. Although he provided cogent reasons, based on possible weekend consumption of alcohol, why all interviews should be scheduled for mid-week after work to achieve maximum response, his proposed pre-arranged respondent group did not eventuate because he himself took a long weekend off work. Those available and willing at the time at Jumbun completed grids. Harry completed a grid at a later date.

This group had no wish to be investigated as individuals but were happy to assist as anonymous members of a group and appreciated that substituted respondent and element names together with the tick/nought style of notation for analysis hid their identity. Although conversations were held during grid completion they are not reported here for reasons of personal content and confidentiality. Topics which were presumably engendered by grid completion are noted in some instances.

Procedure

Elicitation Methods

Elicitation methods used with schooled Aboriginals were adjusted to a style with which each respondent felt comfortable. On the whole the triadic method of eleicitaion of constructs was used or was adapted. The names of significant others in their lives were written on cards and the respondent selected three and produced constructs of how two were alike and differed from a third. Two completed grids using this method, one preferred a conversational method akin to that used with preliterate respondents and the remainder preferred verbal

administration of the triadic method. In all instances elements were used to generate constructs. Two respondents completed grids at the investigator's home, the remainder at their homes at Jumbun. Grids were completed and checked at the time. The language used was standard English.

The rearranged grids for this group are shown in Figure 12.

Dichotomous Grids by Schooled Aboriginals with Acquaintances

<u>as Elements</u>

Margaret

Margaret, aged 23, lives in Tully and was educated to Grade 10 level. She is employed in the local library under a wage subsidy scheme. However although not computer literate she has learned to add to lists already initiated on a computer which has been set at the appropriate place and uses a typewriter for elementary purposes. Her position is invariably in contact with the public involving the return and issuing of books. Margaret reads some novels and whenever she sorted an element to the undesirable pole she found extenuating circumstances in a broken home situation. Margaret completed a grid using the triadic elicitation method.

Data interaction analysis results

A grid of 13 elements and 10 constructs was elicited from Margaret. This was effectively reduced to a grid of 9 elements and 7 constructs by equivalence. Elements 1,7,6,11,5,8,9,10,4,12, form one cluster with element 13 joining it. Elements 2 and 3 remain isolate. Constructs form one cluster with constructs 6,9, and construct 7 being comparatively unrelated. The grid is undifferentiated and is shown in Figure 12(a).

Principal component analysis results

A wide range of element distances indicates a simple process. The first component accounts for 51.93% of the variance with a

further 22.53% being accounted for by the second component. The Bartlett test was not applied. Component 1 is most represented by element 2 in a negative way and constructs 2 and 5. Component 2 is most represented by elements 4 and 12 and construct 10. Elements most representative of important constructs are: -

Construct	Element
2	3
5	3
10	6 11

Articulation analysis results

The construct system consists of one primary cluster of constructs 1,4,3, and 8 with constructs 5, 2, and 10 as secondaries and constructs 6, 7, and 9 as isolates (n=13 r=.55 p < .05). It is monolithic. Of the forty-five cells in the construct correlation matrix thirteen are significant at the 5% level. Significant correlations range from .64 to 1.0. The superordinate construct is construct 1. The articulated structure is shown in Figure 13(a).

<u>Richard</u>

Richard aged 35 was educated until Grade 7 level. He is usually dependent on some form of Social Security payment. His literate and numerate skills are lower than a low level for the school grade attained. He completed a grid using a style of elicitation comparable to that used with preliterate respondents. He lives at Jumbun.

Data interaction analysis results

A grid of 15 elements and 5 constructs was elicited from Richard. The elements effectively reduce to 8 by equivalence and form two main clusters along a good - bad type of sorting. There is one reasonably strong construct cluster with constructs 0.K. - no good and excellent - awful being uncommitted to the system. Richard was confident that the similarity of his constructs was illusory and

that each element was sorted on a different construct. This grid is undifferentiated and cognitively simple according to conventions. The grid is shown in Figure 12 (b).

Principal component analysis results

There is a lesser range of element distances in this matrix than in others which cannot be interpreted as cognitive simplicity nor cognitive complexity. Component 1 accounts for 61.82% of the variance in the matrix and component 2 contributes a further 19.36%. Results of the Bartlett test were negative. Elements most representative of component 1 are 3 and 12 and of component 2 are 10, 8, and 15. Constructs most representative of component 1 are 3 and 1 and of component 2 are 2 and 5. Elements most representative of important constructs are: -

Constructs	Elements
3	2 4 11 13
1	3 12
2	10 3 12
5	5 11 13

Articulation analysis results

The construct system consists of one primary cluster of constructs 1 and 3 with constructs 2, 4, and 5 as secondaries (n =15 r = .51 p < .05). It is monolithic. Of the ten cells in the construct correlation matrix four correlations are significant at the 5% level. The range of significant correlations is from .53 to .76. The superordinate construct is construct 1. The articulated structure is shown in Figure 13(b).

<u>Kevin</u>

Kevin, aged 21 was educated to Grade 4 level and from then to the age of 16 was in a special remedial learning situation. He took great care to ensure he as an individual was not under scrutiny and

was particularly loquacious. The topic uppermost in his mind was his acceptance in social activities of his classmates during his school period and exclusion when education ceased.

Data interaction analysis results

A grid of 14 elements and 14 constructs was elicited from Kevin whose repertoire of constructs did not appear to be exhausted. Elements are reduced to 12 by equivalence and constructs to 13. Elements form an initial cluster to which others join in stages. Constructs form 2 distinct clusters. The grid is shown in Figure 12(c).

Principal component analysis results

The wide range of element distances suggests a non-complex structure. There were three components significant after the first component was excluded. Component 1 accounts for 35.80% of the variance in the matrix and component 2 for a further 18.94%. This is below previous percentages and indicates a more differentiated structure. Elements most representative of component 1 are 12, 7, and 9 and element 2 is most representative of component 2. Constructs most representative of component 1 are 1, 13, 5, 11 and of component 2 the most representative construct is construct 14. Elements most representative of important constructs are: -

Construct	Element
1	97
13	4 5 13 10 7
5	7
11	7
14	9

Articulation analysis results

The construct system consists of one primary cluster of

constructs 14,1, and 13 with constructs 4,9,11, and 5 as secondaries and a second primary cluster of constructs 3,8, and 2 with constructs 6 and 12 as secondaries (n = 14, r = .53 p < .05). Constructs 7 and 10 are isolates. The system is segmented. Of the 91 cells in the correlation matrix fifteen correlations are significant at the 5% level. Constructs 1 and 14 are superordinate. The articulated structure is shown in Figure 13(c).

<u>Mandy</u>

Mandy, aged 32, was educated to the level of Grade 8. She lives at Jumbun. It is probable she has never had a job.

Data interaction analysis results

Mandy completed a grid consisting of 12 elements and 7 constructs. Elements effectively reduce to 10 by equivalence and constructs to 6. Elements form 2 distinct clusters all at the same level without forming prior clusters except for element 6 to which, by convention, Mandy should be indifferent.

Constructs form a distinct basic cluster which constructs 11 and 12 join. However construct 7 is totally unrelated to the other constructs, possibly because it is not a crucial dimension within the sub-system. The grid is shown in Figure 12(d).

Principal component analysis results

Component 1 accounts for 58.63% of the variance in the matrix and component 2 for 13.31%. This is much higher than Ryle and Breen's (1972) results. Elements most representative of component 1 are 5 and 7, and of component 2 are 4 and 2. Constructs most representative of component 1 are 1 and 2 and of component 2 construct 7 is most representative. Elements representative of important constructs are: -

Construct	Element
1	11 12

2 11 12 7 2

Articulation analysis results

The construct system consists of a primary cluster of constructs 1,2,5, and 6 with constructs 3,4, and 7 as isolates (n = 12 r = 0.58 p < .05). It is monolithic. Of the 21 cells in the construct correlation matrix six correlations are significant at the 5% level. Significant correlations range from .58 to 1.0. Superordinate constructs are 1,2,5, and 6. The articulated structure is shown in Figure 13 (d).

Harry

Harry, aged 38, was educated to Grade 7 level. He lives apart from Jumbun, is highly mobile and finds employment in some Primary Industry throughout Queensland and N.S.W. Employment is invariably among white employees. He socializes with other Aboriginals and Euro-Australians and his conversation and use of constructs indicated he is particularly sensitive to any hint of a limit to his welcome. Indications in his conversation were that he is particularly individualistic and considers himself in limbo between both races although he is of full Aboriginal descent, his father being designated a gubi in grids of preliterate Aboriginals. He reads novels and newspapers and his literacy levels may be partially assumed from the fact he won an Anzac Day essay prize entry in which was compulsory for all school children in the district. He completed a grid using the triadic method of elicitation. While Harry stressed his interest as being group orientated he was the only person to return to enquire as to the outcome of computer analysis of his own grid.

Data interaction results

Harry compiled a grid of 19 elements and 12 constructs.

Elements are effectively reduced to 14 by equivalence. Constructs are not reduced. This is the only grid by an Aboriginal which included Euro-Australian elements among acquaintances. Elements form three strong sub-clusters which unite to form a stronger cluster. However elements 1, 2, and 7, all Aboriginals, appear to be constructs which the respondent is indifferent if to the conventional interpretation is used. Actually from discussion it is apparent that this is not evidence of indifference. These are the elements he feels most strongly about whether in a negative or positive way does not appear to matter. They are differentiated from the others because of strong feelings, not because of indifference. Constructs cluster into two strong clusters before forming one cluster. Constructs 1 and 12 appear not to be integrated into the system. It is as if the system would function well without them. This grid is more complex than others and does not appear to be undifferentiated to the same degree. The grid is shown in Figure 12(e).

Principal component analysis results

The wide range of element distances indicates a non-complex system. Component 1 accounts for 52.91% of the variance in the matrix while component 2 contributes a further 17.03%. Results from the Bartlett test were negative. Elements most representative of component 1 are 8, 9, 10, and 18 and of component 2 element 1 is most representative. Construct 10 is most representative of component 1 and construct 9 of component 2. Elements most representative of important constructs are: -

Construct	Element
10	3 15
9	8 9 1 8

Articulation analysis results

The construct system consists of one primary cluster of

constructs 5,6,7,8, and 10 with the remainder either secondary or tertiary constructs (n = 19 r = .46 p < .05). It is monolithic. Of the 66 correlations in the construct correlation matrix 25 are significant at the 5% level. Significant correlations range from .46 to .90. The superordinate construct is construct 10. The articulated structure is shown in Figure 13(e).

<u>Iris</u>

Iris, aged 31, was educated to Grade 8 level. She lives at Jumbun. Iris preferred a modified triadic method of elicitation.

Data interaction results

Iris completed a grid of 9 elements and 6 constructs. The 9 elements reduced effectively to 8 by equivalence. Acquaintances except for element 5 form one strong cluster. Element 5 is one towards whom, by convention, Iris is indifferent. At least it stands apart from the system. Constructs form two distinct clusters. This is a very undifferentiated grid. The grid is shown in Figure 12(f). <u>Principal component analysis results</u>

The range of element distances suggest a cognitively non-complex system. The first component contributes 42.57% to the variance in the matrix and the second component contributes a further 28.52%. This is higher than Ryle and Breen's (1972) means. The element most representative of component 1 is element 4 and the elements most representative of component 2 are elements 7 and 4. The construct most representative of component 1 is construct 2 and of component 2 is construct 6. Elements most representative of important constructs are:-

Construct	Element
2	8926
б	1

Articulation analysis results

The construct system consists of one primary cluster of constructs 2 and 5 with constructs 1,3,4, and 6 as isolates (n = 9r = .67 p < .05). The system is monolithic. There is in this system only one correlation significant at the 5% level. As very little structure exists the description is deceptive. The articulated structure is shown in Figure 13(f).

Results show 5 grids with monolithic structure and 1 with segmented structure. The grids are undifferentiated .

DICHOTOMOUS GRIDS OF MATURE EURO-AUSTRALIANS WITH ACQUAINTANCES AS ELEMENTS.

The Euro-Australian sample consisted of two males and two females. Three were associated with the aged person's Hostel at Cardwell but not residents and one was associated with the Senior Citizens Association in Tully. The main criteria for inclusion in the sample were, age and lack of evidence suggestive of mental deterioration due to aging. The rearranged grids for this sample are not shown. The articulated structure is shown in Figure 14.

<u>Emily</u>

Emily, aged 67, worked as a shop assistant and clerical worker.

Data interaction results

Emily completed a grid of 15 elements and nine constructs. Elements were effectively reduced to 12 by equivalence, constructs were reduced to eight because all elements were sorted as intelligent. They were further effectively reduced to seven by the equivalence of constructs 3 and 6. Elements form two distinct strong clusters. Constructs form an initial distinct cluster which other clusters join in succession. The appearance is of a monolithic construct system which is not differentiated.



FIGURE12(a) Rearranged dichotomous grid of literate Aboriginals with acquaintances as elements - Margaret



Figure 12b): Rearranged dichotomous grid of literate Aboriginals with acquaintances as elements - Richard





Figure12:(d): Rearranged dichotomous grid of literate Aboriginals with acquaintances as elements - Mandy



Figure 12 (c): Rearranged dichotomous grid of literate Aboriginals with acquaintances as elements - Harry



Figure 12 f): Rearranged dichotomous grid of literate Aboriginals with acquaintances as elements - Iris

Respondent:- Margaret



Dichotomous grid - elements people

Monolithic Structure

Figure 13(a). Articulated structure of a dichotomous grid with acquaintances as elements - Margaret



Dichotomous grid - elements people

Monolithic Structure

Figure 13(b). Articulated structure of a dichotomous grid with acquaintances as elements - Richard



Dichotomous grid - elements people

Segmented Structure

Figure 13(c). Articulated structure of a dichotomous grid with acquaintances as elements - Kevin



Dichotomous grid - elements people

Monolithic Structure

Figure 13(d). Articulated structure of a dichotomous grid with acquaintances as elements - Mandy

Respondent:- Harold





Figure 13(c). Articulated structure of a dichotomous grid with acquaintances as elements - Marry



Dichotomous arid - elements people

Monolithic Structure

Figure 13(f). Articulated structure of a dichotomous grid with acquaintances as elements - Iris

Figure 13(a-f). Diagramatic representation of the articulated structure of grids of the literate Aboriginal comparison group. The same data are shown in a different form to represent the level of superordinancy of constructs. The superordinate constructs are indicated by the ordinate which shows the number of significant correlations of each construct.

Respondent:- Emily



Monolithic - Number of constructs excluded -1.

Figure 14(a). Articulated structure of a dichotomous grid with acquaintances as elements - Emily



Monolithic

Figure 14(b). Articulated structure of a dichotomous grid with acquaintances as elements - Cedric



Figure 14(c). Articulated structure of a dichotomous grid with acquaintances as elements - Ethel

Respondent:- Tom



Monolithic

Figure 14(d). Articulated structure of a dichotomous grid with acquaintances as elements - Tom

Figure 14(a-d). Diagramatic representation of the articulated structure of grids of the Euro-Australian comparison group. The same data are shown in a different form to represent the level of superordinancy of constructs. The superordinate constructs are indicated by the ordinate which shows the number of significant correlations of each construct.

Principal component analysis results

The first component contributed 52.78% to the variance in the matrix with another 17.72% being accounted for by the second component. Further analysis of the components is not necessary for the Euro-Australian grids.

Articulation analysis results

The construct system consists of one primary cluster of constructs 3,4,6, and 8 with construct 7 secondary and construct 5 tertiary. Constructs 1 and 2 are isolate (n = 15 r = .51 p < .05). The structure is monolithic. Of the twenty eight correlations in the matrix ten are significant at the 5% level. The range is from .60 to 1.0. Constructs 3,4, and 6 are superordinate. The articulated structure is shown in Figure 14(a).

<u>Cedric</u>

Cedric, aged 81, is a retired cane farmer. He was educated to Scholarship level.

Data interaction results

Cedric completed a grid of 15 elements and 12 constructs. Elements were reduced effectively to 12 by equivalence. Constructs were functionally reduced to eight by equivalence. Elements form two distinct initial clusters at level .08 which are each separately joined by other constructs from level .25 and do not join to form one cluster until level .42.

Constructs form an initial weak cluster which is augmented successsively by other construct joining the first cluster. Constructs 9 and 12 appear not to be integrated into the system. It appears to be an undifferentiated system.

Principal component analysis results

The first component accounted for 60.18% of the variation in the matrix with a further 13.70% being contributed by the second

component.

Articulation analysis results

The construct system consists of one primary cluster of constructs 10, 3, 6, 8, 11, 2, 4, and 5 with constructs 1 and 9 as secondaries and constructs 7 and 12 as isolates (n = 15 r = .51 p (.05). The system is monolithic. Of the 66 correlations in the construct correlation matrix 34 are significant. Construct 10 is superordinate. The articulated structure is shown in Figure 14(b).

<u>Ethel</u>

Ethel, aged 72 was educated to Junior level, worked as a clerical worker, shop assistant and established her own quick food outlet.

Data interaction results

Ethel completed a grid of 13 elements and 7 constructs. Elements were reduced to 10 by equivalence. Elements form two weak clusters which unite at the same level that four other elements join the cluster. Element 1 appears unrelated to the other elements but like some others it appears on discussion to be distinguished by strong negative feelings. Constructs form one initial cluster which others join successively.

Principal component analysis results

The first component accounts for 42.64% of the variance in the matrix with a further 17.85% being contributed by the second component. Indications are of a grid more differentiated than others.

Articulation analysis results

The construct system consists of one primary cluster of constructs 1 and 5 and a second primary cluster of constructs 2 and 7 with constructs 3,4, and 6 as isolates (n = 13 r = .55 p < .05). The system is segmented. In a correlation matrix of 21 correlations two are significant at the 5% level. Constructs 1,5,2, and 7 are

superordinate. The primary clusters each reflect one correlation each and there is little structure in the system. Ethel completed a different grid, with different elements and constructs, twelve weeks later. The second grid was also segmented with similar results. The articulated structure is shown in Figure 14(c).

Tom

Tom, aged 67, is a retired medical practitioner. Unfortunately the University mainframe computer was changed twice during the period of analysis and while access to the original remained possible on one Department terminal that access disappeared with the second change with the result Tom's grid was subjected to hand analysis only.

Articulation analysis results

Tom completed a grid of 15 elements and eight constructs. It was analyzed only by Makhlouf-Norris' measure of articulation (n =15, r = .51 p < .05). The construct system consists of a primary cluster of constructs 6,7, and 8 with three secondary clusters of constructs 1,3, and 4 with constructs 2 and 5 isolate. The system is monolithic. Seven significant correlations occur within the construct correlation matrix of 28 correlations. The range of correlation is from .07 to .87 with significant correlation ranging from .58 to .87. The diagramatic representation of articulation shows constructs 6, 7, and 8 as weakly superordinate. The articulated structure is shown in Figure 14(d).

RESULTS FROM COMPARISON OF GROUPS

Results for each respondent are shown in Table 2 and means for each group are expressed as a percentage in Table 3. Although numbers of respondents in each group are small, trends are discernible from these figures. Only dichotomous grids with acquaintances as elements are used for comparison purposes.

Ninety-six percent of the constructs of traditionally instructed

preliterate Aboriginals are in the primary cluster group extracted by Makhlouf-Norris et al's (1970) method. This compares with 62% for the transitional preliterate group, 68.38% for the literate Aboriginal group, and 65.47% for the Euro-Australian group. This is a powerful indication of how much more tightly integrated and implicated are the constructs of the traditionally instructed preliterate group.

The mean percentage of elements sorted as identical to at least one other element in the matrix is 55.93 for the traditionally instructed preliterate group, 66.79 for the transitional Aboriginal group, 45.62 for the literate Aboriginal group and 29.87 for the Euro-Australian group. This shows a tendency for the transitional preliterate Aboriginal group to discriminate less between acquaintances than the traditionally instructed Aboriginal group and for both to discriminate less than both the literate Aboriginal and Euro-Australian groups. When the number of constructs which are excluded from analysis because of failure to discriminate at all between elements is considered in conjunction with the above percentages there is a defensible assumption that both preliterate groups have a highly undifferentiated cognitive structure.

Mean percentages of the amount of variance accounted for by the first component and the first and second components extracted by the Ingrid program also suggest a more cognitively non-complex structure for Aboriginal groups.

All grids are unarticulated in structure. Of the dichotomous grids with acquaintances as elements 15 are monolithic and 6 are segmented. Of the 6 grids with segmented structure 4 are grids completed by the transitional preliterate Aboriginal group. This is a result of some significance to be discussed later together with the concept of articulation as measured by Makhlouf-Norris' concept.

Respond- i ent :	Art-* icul- ation	No.con.‡ Primary Cluster Group	No.ident.** elements	% si ific cons corr ions	lgn- eant struct relat- 5.	∦ Comp.	% 1 Comp.	1+2
Preliterate	e Abo	riginals Die	chotomous gr	ids	with	people	as ele	ments
Miliqi	М	7/8	17/25	32.	14	50.50	66	. 99
George	М	8/8	10/20	39.	29	47.16	67	. 77
Possum	М	7/8	10/22	42.	86	49.53	65	. 29
Toby	M	9/9	12/16	94.	74	78.39	86	. 67
Francis	М	9/9	9/20	63.	89	58,66	71	. 64
Kate	М	8/8	12/23	67.	86	56.02	72	. 69
Nindi	S	5/8	17/19	39.	29	59.25	79	. 87
Rosie	S	4/7	10/16	23.	81	49.05	70.	. 08
Millie	М	8/8	15/17	100.	00	90.75	95.	. 27
Ernie	S	3/6	13/16	26.	67	53.02	76	. 11
Micky	S	4/10	2/16	8.	89	29.07	47	. 10
			Ranked Gri	ds				
Milidi	М	5/7		23.	81	52.13	69.	. 20
George	М	9/9		100.	00	90.42		
Francis	М	6/6		100.	00	77.9		
Тођу	М	8/8		100.	00	82.51	-40	antin 2000
Micky	М	7/7		100.	00	86,93		
		Dichotomous	Grids with	Spiri	t Eler	nents		
Milidi (1)	М	6/8	10/16	42.	86	73.06	85	. 44
Miliģi (2)	М	5/7	12/16	33.	33	59.51	76	. 22
Toby	S	3/7	8/16	19.	05	42.34	67	. 94
		Dichotomous	Grids with	Dudal	ba Elen	nents		
Milidi (1)	М	6/8	12/17	53.	57	78.47	88	. 19
Miliģi (2)	М	7/9	9/17	36.	11	47.13	67	.06
George	М	2/3		100.	00	32.69	54	. 82
Possum	М	4/7	10/18	14.	29	32.69	55	.94
Kate	S	3/7	13/18	42.	86	42.95	66	. 41
Toby	М	4/8	9/18	10.	71	41.28	63	.86
		Educated A	boriginal Co	mpari	ison Gi	roup		
Harry	М	12/12	9/19	37.	88	52.91	69	.94
Magaret	М	7/10	7/13	28.	89	51.93	74	.46
Iris	М	2/6	4/9	6.	67	42.57	71	. 09
Mandy	М	4/7	4/12	28.	57	58.63	71	.94
Kevin	S	7/14	3/14	16.	48	35.80	54	.74
Richard	М	5/5	11/15	40.	00	61.82	81	. 18
		Euro-Aus	tralian Comp	ariso	on Gro	цр		
Ethel	S	2/7	6/13	9.	52	42.64	60	. 69
Cedric	М	10/12	5/15	51.	51	60.18	73	. 89
Tom	М	6/8	1/15	25.	00			
Emilv	м	6/8	5/15	35	71	52.78	70	50

Table 2: Summary of results of grid analyses

*M = monolithic S = segemented

Includes constructs secondary and tertiary to the primary cluster. ** The total number of elements seen as identical to at least one other element, presented as a fraction of element total It seems reasonable to assume that the number of significant correlations between constructs in a matrix is an indication of how closely integrated and implicated is the construct system. The mean

Table 3: Com	parison of mea:	n scores on mea	sures of cognitiv	ve structure
Respond- ent group	Mean % cons. in Primary Cluster group	Mean % ident. elements	Mean % sig. construct correlations	Mean % comp. 1
Preliterate Traditional Aboriginals	96.00	55.93	56.80	56.71
Transitional Aboriginals	52.00	66.79	39.72	56.23
Literate Aboriginals	68.38	45.62	26.42	50.78
Euro-Aust. Group	65.47	29.87	30.44	51.86

percentages of significantly correlated construct relationships shown in Table 3 (p < .05) are 56.80 for the preliterate traditionally instructed group, 39.72 for the for the preliterate transitional group, 26.42 for the literate Aboriginal group and 30.44 for the Euro-Australian group.

There is growing recognition that the underlying continuum of the differentiated - undifferentiated continuum is complex and is unreliably reflected by the cognitive complexity continuum. Integration appears to be a separate process. What has been developing in theory and has been discussed in Chapter 3 is that differentiation, cognitive complexity and integration are different aspects of cognitive structure and may occur in varying combinations in different sub-systems of an individual's construing. The combinations most likely to be encountered and are currently being investigated empirically are: -

Undifferentiated - highly integrated Undifferentiated - loosely integrated Differentiated - highly integrated Differentiated - loosely integrated.

It has been generally found (Epting, 1984) that people with highly differentiated but low integrated construct systems have most difficulty handling life's experiences. The preliterate traditionally instructed Aboriginals appear to have undifferentiated highly integrated cognitive structure in the systems tested. This indicates rigidity. The preliterate transitional Aboriginal group appear to have undifferentiated more loosely integrated cognitive structure. The literate Aboriginal group have a more differentiated and even more loosely integrated structure. The Euro-Australian group show the most differentiated structure which is more integrated than the literate Aboriginal group.

In the closing chapter it will be helpful to examine the implications of the type of cognitive structure revealed by the grids and the general relationships to major issues discussed in earlier chapters.
CHAPTER 8

Discussion

One central question was asked by this research: what is the cognitive structure, based on the approach of Kelly's personal construct model, of a group of preliterate, traditionally instructed Aboriginal Australians. The simple answer is that it is undifferentiated to a high degree, inflexible to an extreme degree, monolithic, and structurally simple. However no answers are so simple. The study began in an exploratory manner even to the extent of not knowing whether Kelly's model would apply to such a nonstandard population, or if his methodolgy could be used and what constraints, if any, would inhibit the choice of grid format. Possibly the one central inhibiting characteristic to the use of certain grid formats was the empirical bias. The investigation progressively tightened the original exploratory approach and has shown what there is to look for, the type of cognitive structure operating within this group, and has to some extent elaborated the questions which might be put in a more predictive manner.

Results show the construct systems of such non-standard groups are coherent and intelligible which fact is in itself a test of reliability. This supports Kelly's thesis that his model is suitable for all humankind, that people do interpret their world and respond through constructions which are organized into subsystems which are hierarchically organized. While a grid only partially captures the universe of the cognitive behaviour in any subsystem, the constructs elicited from the traditionally orientated Aboriginals are similar in number and in label- type to those elicited from a standard population while retaining peculiarly Aboriginal characteristics. The cognitive structure revealed is also of a general type, but not of degree, to be found represented in the literature (e.g. Makhlouf-

Norris et al, 1970) but not usually found in the general population. It is a matter of degree, with the type of structure disclosed in the grids of the preliterate, traditionally instructed Aboriginals being such extreme examples of lack of articulation and differentiation on the whole, that they are beyond the scores reported by Ryle and Breen (1972) and Millar (1980). This supports those views that cognitive processes do not vary across the spectrum of humanity and that if differences exist they are to be found in cognitive functioning where the emphasis should be placed on quality and utility for the needs of the individual.

A finding of some interest is that Aboriginals analysed their community into three groups based on tribal instruction and traditionality of attitude and affiliation and that results from the analysis of grids show shifts in cognitive structure in line with the group divisions perceived by Aboriginals themselves. There is a tendency for transitional Aboriginals to move from the levels characteristic of the traditionally instructed Aboriginals to a less differentiated, less integrated, and less effective structure. There is also a tendency for the literate, numerate Aboriginals to move from the levels of both preliterate groups in the direction of Euro-Australian structure, although there is evidence of a looser and more uncertain integration where a few minor revisions can turn the minimally monolithic systems into segmented systems. Operative factors influencing such shifts cannot be tested. Socializing systems have many roles. Therefore, because the bulk of archival knowledge, the deeper symbolism inherent in the myths, and the experience of living with the automatic disciplinary punishment systems of tribal affiliation was not handed on or experienced by the transitional group, some socio-cultural deprivation could be a contributing factor.

Psychological Change

Kelly (1955) argues that when change takes place within a personal construct system there is an attempt to integrate the novel events within the current conceptual framework but by his Modulation Corollary (1955, p. 79) variation is limited by the permeability of the constructs within whose range of convenience the variaton lies. Therefore, as Adams-Webber (1970) points out, change is ultimately limited by the permeability or otherwise of a construct.

Support for these hypotheses regarding change is to be found in Kelly (1969) puts all responsibility and this investigation. relevance for change in the construct system of the individual. Change comes from within the system. At present there is an accelerated effort by three current charismatic religious groups to recruit Aboriginals for their several congregations. Aboriginals appear to be assimilating new information engendered by the religious effort not by extending the range of convenience of constructs or making them more permeable to incorporate any new knowledge but by identifying religious Beings with appropriate Dudaba entities from their archival history. They also endow the religious Beings with the capabilities of the Dudaba rather than modify beliefs about the Dudaba. Evidence from the repeat grids of Milidi after invalidation his constructs, shows some loosening between construct of relationships but on the whole a retention of structure even though the contents of the matrix have changed. As Radley (1974) points out invalidation results when when a persons constructions encounter inconsistencies or conflicting evidence. When this happens the climate for change is set. However sudden forced change is traumatic and leads at first to confused reallocation of poles and constructs within the existing system. This appears to have happened in the case quoted. Anecdotal evidence gathered during fieldwork shows also

that single mother pensions, aged pensions, ownership and possession, to name but a few systems, are understood through the traditional norms rather than the principles behind the Social Security legislation of the dominant culture.

Questions implicit in the results of the investigation are the efficacy of the revealed cognitive structure for living or what difference it makes to live with such cognitive structure, the value of these type of systems and the adaptive value of psychological differentiation.

Efficacy of Revealed Cognitive Structure Types

The grids completed by Aboriginals showed two types of cognitive structure, monolithic and segmented. These were either differentiated or undifferentiated, inflexibly organized or loose. Systems were not cognitively complex. What the several structures imply for cognitive processing in terms of quality and utility for the construer have important implications for learning and psychological change.

Monolithic Structure

 \mathbf{of} Ιn the case of the monolithic type construct organization, independent judgements with opposing implications are impossible. Therefore the tendency is to make judgments which mean the same thing. More important is the manner of integration in a monolithic structure. This type of system is considered prototypical of Bieri's (1966) cognitive complexity-simplicity dimension. However the strength of correlations determine the degree of flexibility. A monolithic system is one where constructs are so highly organized that all construct dimensions tend to collapse into one construct or to converge onto one construct so that the construer is less able to anticipate new events because there are fewer alternatives available. Very high correlations between constructs are indicative of a tight

structure in the Kelly (1955) sense. The extreme indicated here is of a system so tightly organized that all lines must converge on a central construct and events are interpreted in one fixed pattern of expectations. The more the tendency is to a monolithic system, the fewer are the alternatives available in interpreting a given sequence of events because all constructions have to fit the constraints of a single fixed pattern of logical relations between constructs as pointed out by Adams-Webber (1979, p. 60).

People using such monolithic systems are less able to interpret the same situation from a different point of view (Olsen and Partington, 1977). Crockett and Meisel (1974) show that for a tightly organized system only a few minor revisions may have sweeping implications for the whole construct system. Schroeder et al (1967, p. 71) show that the more absolute the rules of integration, the greater the generalization of functioning with a certain range and the more sudden is the change to compartmentalized thinking when change comes (see also Lemon & Warren, 1974). Kelly (1963) says that individuals with monolithic undifferentiated construct systems cannot risk adjustment at any level for fear it places them in a dangerous position regarding anticipation of events.

Ethnographic evidence reported earlier suggests that monolithic type systems may have been culturally encouraged and certainly informants believed that to break the behavioural code resulted in inevitable punishment and certain beliefs were the right way for them. Examples given of punishment are legend. To entertain radical beliefs or behave in defiance of the law was seen not as irresponsible but as something gone wrong with their head. Even so there is no consensus as to who were gubis or whether a female could be a gubi.

Segmented Structure

Low correlations clearly allow more flexibility in the system. However, with a segmented organization of the construct system, independent judgments are made which have no implications for each other. Without linking constructions there are no means by which one part of the system can influence another and the system lacks an overall cohesive idea. It is a system without glue. It permits discrete cataloguing of the separate aspects of an element but cannot bring aspects together into a single identity. A segemented system lacks vitality. It has no elaborative capacity and if extended by the addition of more and more compartments would soon become Kelly says there are no useable alternatives unmanageable. forthcoming, there is no going back, because old beliefs are rejected, and there is no going forward. People are unable to manage and feel frustrated. They cannot enter into reconstruction and it is not a question of adjusting effectively. The system has to be opened up to the consideration of new possibilities (Kelly, 1966, p. 41). In Kelly's thinking the extreme of the segmented system indicates that such construers "need a separate pigeon hole for each new experience" (Kelly 1955, p. 89).

This investigation provides some support for the view (e.g. Adams-Webber, 1979; Bannister, 1963) that the opposite extreme to the tight, monolithic, construct organization of this study would not be based on an articulated - non-articulated dichotomy. Actually this study suggests that the dichotomy of structure is tight versus segmented not articulated versus non-articulated as operationally defined by Makhlouf-Norris (1970). If a rigid structure begins to collapse under massive invalidation according to Lemon and Warren (1974) superordinate constructs lose definition and so the individual may be forced to operate on a construct system where constructs are

related to concrete events rather than to each other. This appears to be the segmented system revealed. Integration appears to be the key to cognitive functioning and it should be noted that according to Makhlouf-Norris a system is monolithic in structure if all constructs are significantly correlated at the 5% level in the primary cluster or if only two constructs in the whole system are significantly correlated at the same level. This does not appear to accord with Kelly's interpretation. If there is a distinguishing feature of the cognitive structure of the traditionally instructed Aboriginals of it is one of rigidity or tightly integrated this study undifferentiatiom. It is felt the measures of articulated and nonarticulated structure as proposed by Makhlouf - Norris (1970) are too broad to cover the spectrum of differentiation and integration revealed in this study. Functionally there appears to be less difference between a monolithic structure in which only two constructs are significantly correlated at the 5% level and a segmented structure than between the same minimally monolithic structure and one where every construct is significantly correlated at the same level. If anything the segmented structure could be more complex.

Adaptive Value of Psychological Differentiation

Care needs to be taken in discussing the adaptive value of differentiation to maintain the distinction between having a capacity and using it. Evidence from George's sorting of the moon and the rainbow snake on the construct 'big shot' shows he at least was capable of a deductive type reasoning in opposition to what was held to be culturally correct. It can be argued that in a culture where there was a high need for affiliation it would be important to encourage an inflexible monolithic system because such a system would augment group cohesion and for individuals within the group would

provide the security of a firm sense of what would happen. There is an advantageous precision of prediction in a monolithic rigid system which corresponds to the needs of a society such as this one where life is determined by the Dudaba, is supervised by the law, and retribution is inevitable.

The rainforest ecological niche could well have contributed to the need for what appears a culturally inculcated rigid adherence to the group's systems simply because of the close settlement and the presence of close neighbouring cultures with sometimes conflicting beliefs. The buya ensured regular and frequent exposure to different beliefs and a minimum requirement would have been insistence on conformity to preserve a separate identity.

It is therefore suggested that rigidity was an essential prereqisite of this particular culture and its source of cohesion and that propositonal construing would have admitted a flexibility which posed too many questions. A rigidly hierarchically organized system had advantages for predictive power, for stability of the system, the group and the culture, for imposing order and preserving the traditions handed down by the old people. However it also has disadvantages. Constructs are reduced to impermeability. Disadvantages are mainly for a contact situation. The non-tribally instructed Aboriginals have been excluded from the security of tribal instruction because of the system ceasing after white contact and seem in a sense alienated from the core of the culture. They lived in a kind of limbo, the insecurity of which may be reflected in the segmented structure of their construct systems. They have been allocated the position of 'nothing' by traditional Aboriginals and allocated roles by the dominant white culture to get them a manageable identity. Aboriginals know all about playing the role allotted them but unfortunately this can become part of their core

constructs regarding self. People become elements in the construct systems of others and if the constructs are used in a preemptive way it can be devastating. Once an identity has been construed for people, they are denied roles which would invalidate the system. The Choice Corollary for some young Aboriginals is to this extent illusory. Technically they are free to construe themselves otherwise but if they construe themselves as confined in the imposed identity it would be difficult to construe their way out and they may be continually blocked by the construction of others.

Evidence from this investigation suggests that failure of the traditional systems to be handed on did not result in a shift towards the dominant Euro-Australian culture but rather in the acceptance of the status of 'nothing'. This is the group who rejected initiation which was the means of access to traditional acceptance and knowledge. The last male initiated had to be run down. While formal traditional instruction was repressive, this is the group who reared the literate and numerate group with licence.

However neither of the cognitive structure types revealed are advantageous for a minority group trying to live within a dominant culture. The main function of construction is to reduce uncertainty and while a tight constructive process refines predictive powers within a closed society, the impermeability of construction defeats efforts of acculturation should people wish to extend their understanding and experience in a wider society. However if the aim should be towards self determination for each group such a type of constructive process could be advantageous. Neither type of system is conducive to learning. They do not make it impossible but certainly very difficult. More flexible structure is needed for kith ideas.

Superordinate Constructs

The superordinate discrimination of the preliterate groups appears to be the construction of gubiness or good - bad. It is emphasized that good - bad is not used as the English label would suggest but is actually a gubi - non-gubi distinction. It indicates stereotypic thinking which is culturally derived and functions as the integrating construct in the system. To test the importance of this construct grids were split into two grids of gubi and non gubi elements. The differentiation disappeared.

In this investigation the superordinate constructs have proved to be impermeable and constellatory and so a high degree of resistance to reorganization of the construct system could be anticipated.

It can be argued that it is the impermeability of superordinate constructs which may underlie the development of nonarticulated systems and as Adams-Webber (1979) suggests, it is perhaps the impermeability of superordinate constructs which continually inhibit changes necessary for adaptation in the face of environmental variation and hence feedback produces no change.

The good - bad dimension appears to be not the dominance submission dimension of White (1980) which represents a proclivity to influence or be influenced. It is more similar to the good versus bad, that is tough minded, cruel versus tender minded dichotomy proposed by Eysenck (1954).

Content of the Construct Dimensions

The content of construction discloses some some points relevant to the psychological model and ethnographic enquiries.

The importance of establishing both the similarity and contrast poles of a construct was indicated in the sphere of Aboriginal English not only to know what sort of events are included under each

pole and what other events are opposed to them for individuals but to give meaning to the dimension. Aboriginal English contains many familiar words and structures but it is a special language. The use of constructs has disclosed that the use of Aboriginal English words which appear to be equivalent to the English word are not necessarily equivalent and therefore the construct is other than what it might at first glance appear to be. The extent of disparity between Aboriginal and Euro-Australian constructions was by no means tested in this study but there were indications from the ethnographic enquiry and from elicited construct poles that discrepancies in meaning between Aboriginal English and Standard English go beyond the usual examples, some previously used in this thesis, such as 'no meaning 'never'; 'no fear' an emphatic 'no; 'kill' more' meaning 'hit'. This goes beyond an individual's idiosyncratic and unexpected construct dimensions, which phenomenon was not exclusive to Aboriginal respondents. The example of a truthful person for some respondents being highly correlated with 'bad' is an idiosyncratic, but, given the reasoning, justifiable discrimination for some. The word 'cranky' in English is more as if derived from the German word 'krank' and translates a construction not of bad temper or cross but of mental unpredictability.

Nalmbilanu means to create trouble, to stir up, to arouse rather than to rouse a sleeper. The construct dimension of cunning doesn't talk behind your back suggests that cunning probably means something more akin to untrustworthiness or sly. Randa randa is poorly translated as rough. It is dangerous, impulsive violence. Malngal is a nonsense talker, a teller of tall stories so much so whatever is said one is uncertain whether to believe it or not (c.f. Roth, 1900 ' a good story teller'). Malngal malngal is a liar. The more tranquil emotions are expressed as frequently as violent

construct labels are used but most frequently in the negative.

Content of Grids with Dudaba Elements

The trial grid using cultural givens in the sense of present absent with Dudaba elements indicated there is no consensus as to physical abilities of the Dudaba which presumably would be cultural givens and no consensus as to other attributes. One respondent thought all were gubis, others that none were. The supremacy of Girgur in the hierarchy is being displaced by Warigal for the Giramay in an attempt by one respondent to Christianize the Dudaba. Warigal was the first man to die and the theme of the myth is that death was brought to the world by violation of the chastity of the male Warigal before initiation.

Yamini, the rainbow snake, appears not as important to this population as to other Aboriginal groups. There is confusion as to whether he is correctly Dudaba or a powerful entity. There are many yamini and so yamini (the rainbow snake) and Malnara which means grandfather and refers to the yamini in a Dudaba myth both appear as elements in the one grid. Malnara is treated as a personal name and almost as a special case of yamini. It is possible the belief is being lost by attrition but that explanation does not fit the case as yamini is the principal power presently active and presently feared. A preferred explanation is that the acquisition of this belief is comparatively recent and was not firmly embedded in the system before the high white contact period. Myths are continually being nourished by stays in the Base Hospital in Cairns where Aboriginals from different districts are bedded beside each other where possible for companionship. The Girgur myth is one where the saga is known well beyond the original boundaries of acquaintances.

<u>Conclusions</u>

The investigation has shown that the method used is applicable

for work with Aboriginal Australians and that personal construct theory is a theory of explanation which can be applied to different belief systems and a different cognitive content.

It has been shown to work under the extreme test conditions of an elderly, isolated group of preliterate Aboriginal Australians.

Use of Kelly's model shows that the cognitive structure of the preliterate Aboriginal group does differ from that mostly found in standard populations, both of normal and abnormal respondents. These data are consistent with observed belief patterns in both general and religious thinking of the people.

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