

History, Science and Dreams: genres in Australian and European cultures

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Abstract

This paper contrasts a set of genres from Indigenous Australian and European cultures, with comparable functions. The focus is on genres in which change is construed, firstly changes in social processes, from Indigenous and European perspectives on histories of colonisation, and secondly changes in natural processes, from the perspectives of European science and the Indigenous Australian cosmology known as the Dreaming. Differences and commonalities are highlighted using discourse analysis tools drawn from both systemic functional linguistics, and the author's experience of both cultures. Implications are then discussed for cross-cultural understanding and language and literacy pedagogy.

1 Introduction

Two common themes in discussions of genre (e.g. Christie & Martin 1997, Cope & Kanlantzis 1993, Martin & Rose to appear) are that they are cultural conventions, like table manners or child control strategies they vary from one social group to another, and their forms and functions change over time, as the cultures they constitute change from within and without. In this paper, I want to look at genres in which change itself is discussed, firstly changes in social processes from the perspective of both European Australian and Indigenous Australian texts, and secondly change in natural processes, again from both European and Indigenous perspectives. Each of these four sets will be illustrated with a text.

The text used to exemplify social change from a European Australian perspective is an historical account that explains the ideas and actions behind the establishment of a Presbyterian mission during the 1930s, in the Pitjantjatjara lands in central Australia. The corresponding Indigenous Australian text is from a Pitjantjatjara speaker who personally experienced the effects of the establishment of the mission. It is translated into English from the spoken Pitjantjatjara, and of course views events from a different perspective, and in a different generic form from the European account. The texts that discuss changes in the natural world from a European perspective are two scientific explanations in the field of geomorphology, explaining how landforms are created. The corresponding Indigenous text is a mythic narrative, a 'Dreaming story', again a translation from the Pitjantjatjara. It also discusses the creation of landforms, but in this case from the perspective of an Indigenous Australian traditional belief system. Analyses and discussions of these texts and their cultural contexts are grounded in two paradigms: on one hand the systemic functional model of language in context, acquired by the author through academic study, and on the other an Indigenous Australian model of social and natural reality, acquired by the author as an adopted and initiated member of the Pitjantjatjara community. While the Pitjantjatjara texts are presented in English translation, for original texts and descriptions of the language in its

cultural contexts, and comparisons with English, see Rose 1993, 1996, 2001, 2004, 2005a,b.

I have selected these texts to illustrate both their relationships with their cultural contexts, and the implications of these relationships for education. In order to understand how a genre functions within a specific cultural formation, we need to locate its evolution in the history of the culture. Historical accounts and scientific explanations are two genres that have evolved in European culture over the past few centuries, in response to major socio-economic changes. They are key components of the contemporary global industrial system: one enables workers in political and administrative institutions to control changes in social processes; the other enables workers in industrial institutions to control natural processes. In order to participate in the exercise of power in and over these institutions, students need to learn to control both of these genres, and a range of others related to them. To this end, understanding and explaining how these genres work should be an essential component of an effective secondary school pedagogy.

At the same time, students and teachers need to be aware that these genres are indeed only cultural conventions, albeit very powerful ones within a powerful cultural formation. They need to understand the historical forces that brought them into being, and the social effects that they have. An understanding of the culture's history is essential for such a critical perspective, and so too is an understanding of other cultures' perspectives on the same historical and natural processes; students and teachers need to be able to stand outside their own culture and view it objectively from the perspective of other peoples and other times.

This paper then has two broad goals. The first is to illustrate for the reader the ways in which the powerful genres of history and science are constructed; on the one hand to de-mystify the construction of reality they present, and on the other to enable teachers to analyse these genres for themselves, and thus to teach their students how to read and write them. The second goal is to illustrate the differences and commonalities between the powerful genres of contemporary European culture, and those of the Indigenous cultures of Australia.

2 History

One of the prominent advocates of Indigenous rights in the 1930s was Charles Duguid, an Adelaide surgeon and leader in the Presbyterian church. In 1935 Duguid visited the north-west of South Australia and central Australian native institutions. He then lobbied the South Australian government for the establishment of a reserve to protect the Pitjantjatjara people from the dispossession and cultural disintegration that it seemed inevitably followed advancing pastoralism. Conversely, he also lobbied the Presbyterian church for the establishment of a mission to bring to the Pitjantjatjara the cultural foundations of the same civilisation from which he sought to protect them. In fact these contradictory goals of physical separation/protection and cultural

enlightenment/assimilation had characterised the establishment of missions, native institutions, and general policy, since the beginning of the British colonisation of Australia. The consequences for the Pitjantjatjara, and Indigenous people throughout Australia, continue to be disastrous.

The following text is an extract from Duguid's account of the benign colonisation of the Pitjantjatjara people, *Doctor Goes Walkabout* (1972:115-6). The genre is procedural recount, which records a sequence of steps followed in a procedure. Each sentence is numbered so they can be referred to in the following analysis.

- 1 ... we discussed the principles which we felt fundamental to the establishment of the Mission.
- 2 The most basic was the conception of freedom.
- 3 There was to be no compulsion nor imposition of our way of life on the Aborigines, nor deliberate interference with tribal custom.
- 4 We believed that only people trained in some particular skill should be on the mission staff, and that they must learn the tribal language.
- 5 As the economy of the mission developed responsibility should be passed on to the Aborigines as soon as possible.
- 6 With the setting up of a school the acceptance of the native tongue would be vital and all teaching for the first years should be in the Pitjantjatjara tongue.
- 7 I believe this insistence on learning in the mother tongue was something new in Australian missions of the time.
- 8 Years later in 1968, when the government settlement at Amata 100 miles west of Ernabella opened its school, the South Australian Education Department adopted the same principle and was able to borrow Pitjantjatjara primers developed at Ernabella.

This extract follows accounts of Duguid's travels in central Australia where he witnessed the degradation that Aborigines were often subjected to on the pastoral frontier, and is itself followed by accounts of the political battles that he fought for the establishment of the mission. The 'macro-genre' of the book is autobiography in which is embedded various sub-genres including the extract above.

Historical accounts are generalised discussions of social processes, usually sequenced in time, one (macro)event after another, in which specific individuals and institutions feature as the shapers of these events. In this account, Duguid himself is the 'hero'; it is he that has brought ideas, institutions and social practices into being (see Martin & Rose 2003 for these discourse patterns). The events discussed here include Duguid developing his ideas, and their consequences 'years later'. Within the development of ideas there is also a temporal sequence: 1) planning of 'principles', 2) employment of 'mission staff', 3) development of 'the mission economy', 4) 'responsibility...passed onto the Aborigines', 5) 'setting up of a school', and 6) 'teaching...in the native tongue'.

So within the temporally sequenced autobiography there are layers of temporal sequence within each sub-text. The overall structure is progression in time. This is the basic structure of all narratives. It makes sense because it resonates with our sensuous experience of time unfolding, one event after another, and with our symbolic experience of narrative genres that we hear, read and reproduce from an early age. However, in this text the structure is more elaborate than a simple narrative. Furthermore, the temporal sequence of Duguid's plan is implicit since there are no conjunctions indicating sequence, such as *first*, *then*, *afterwards* or *finally*. The only such temporal marker is in the 'outer layer' of sequence - 'years later'.

Temporal sequence is not the only logical relation that is implicit here. There is also a great deal of causality that is implicit, as well as abstractions that are implicitly elaborated by the readers' cultural positions. Each of the components of Duguid's plan, i.e. each stage in the sequence, stands in a causal or elaborating relation to historical facts and ideas that are not actually mentioned in the text here. I will try to exemplify these one by one.

- 2 The most basic (principle) was the conception of freedom.
That is the liberal humanist conception of freedom that has evolved since the middle ages, along with the nation state and industrial capitalism.
- 3 There was to be no compulsion nor imposition of our way of life on the Aborigines, nor deliberate interference with tribal custom.
Because the history of European colonisation to this point had consisted of deliberate destruction of Aboriginal culture, but new, more liberal ideas were becoming current in Duguid's time, (because explicit violence was no longer necessary for the growing colonial economy, so it was becoming less acceptable.)
- 4 We believed that only people trained in some particular skill should be on the mission staff, and that they must learn the tribal language.
That is they would teach the people (European) tasks in which the staff were skilled, because they had to become economically independent so they had to learn how to work like Europeans But they would teach them in the tribal language, because that would protect their traditional culture.
- 5 As the economy of the mission developed responsibility should be passed on to the Aborigines as soon as possible.
Because in the liberal conception, 'freedom' does not come without work and 'responsibility'. So when 'the Aborigines' had learnt how to work, they would have earned the right to be responsible for managing their own economy.
- 6 With the setting up of a school the acceptance of the native tongue would be vital and all teaching for the first years should be in the Pitjantjatjara tongue.
1) That is the new ideas included allowing remote Aboriginal people to maintain their culture, (because it was no longer a major threat to the European colony.) 2) That is, as in other missions around the globe, Bible extracts and tracts would be translated into the native tongue, so the children

would learn Christianity and literacy simultaneously, because this was a proven method of evangelism.

Of course, set out like this, the causal relations between Duguid's plans and the discourses and history in which they were set look absurd. However it also makes it clear how the text is located in these discourses and history. It also makes clear that reading the implicit meanings of the text depends on extensive knowledge of the ideas that were current in the 1930s, and the history from which they sprang. So while the temporal sequencing of the text is closely related to narrative genres, and to our sensuous experience of unfolding time, it assumes a different order of symbolic experience, that the reader has read and discussed many other texts in the fields of history, philosophy and social policy.

This (implicit) relation to other texts is sometimes known as intertextuality. What it means in terms of education is that, in order to read and critique such texts, students not only need to learn to read the genres and the grammar, they need to gradually accumulate knowledge of the field, and to be able to locate the texts in their discursive and historical contexts. Currently only a minority of secondary school students in most western countries learn to read these genres and the grammar; these students go on to acquire extensive knowledge of the field in senior secondary and tertiary education, and eventually come to occupy relatively powerful positions in social institutions. The majority do not acquire either the literacy skills, or the field knowledge, and may thus be locked out from participation in social policy making.

It is important to also note that the ideas that Duguid's text refers to are still current in social policy in Australia and other countries. There are two central concepts here which have always conflicted in the history of European Australian policy towards Indigenous people, and continue to do so. On the one hand is the discourse of 'protection' of traditional Indigenous culture and language, at least in remote areas that do not directly threaten the European economy, and on the other is the discourse of 'assimilation', currently re-coined as 'self-management', which demands that Indigenous Australians become self-supporting members of the mainstream economy and social practice. In sentence 4, Duguid runs both these ideas together, apparently without recognising the inherent contradiction (or perhaps because he has to justify protecting the language to less liberal opponents): "We believed that only people trained in some particular skill should be on the mission staff, and that they must learn the tribal language." In other words, the Pitjantjatjara must learn to behave as Europeans, but they will be allowed to do so in the medium of their own language. This wish to 'protect', or in the current parlance 'conserve', Indigenous language and culture, at the same time as expecting that the people will learn to work as Europeans, is linked to a fundamental blindspot in European Australian culture, and social policy. It appears to be impossible for the colonising culture to explicitly recognise, and come to terms with the brutal reality, and illegitimacy, of the act of colonisation.

These contradictory social and pedagogical goals continued to inform educational policy towards the Pitjantjatjara until very recently, despite the fact that the people have been saying for many years that they are responsible for educating their own children in traditional language and culture, but that they want the schools to teach the children English literacy and associated skills for dealing with the coloniser's institutions. The contradiction also stems from an inability to recognise and deal with the global function of the institutions of formal education in industrial society; that is to train and socialise students into roles in the stratified industrial economy, i.e. to reproduce the culture into another generation. From within the institution, it is difficult to stand outside and see this, and conversely difficult to recognise that other cultures have very different institutions of cultural reproduction. Thus educators often believe they can help to conserve other cultures by changing the curriculum of their institution, without realising that the complex of practices that constitute formal education in European schools conspire to assimilate students into industrial society's practices. Other cultures can only be reproduced through the complex of practices in that society's institutions, including kinship relationships between teacher and student, environment, economic practices and so on.

Having established this social context, I now want to look at the grammar of Duguid's text, to see how it means what it does, and how it diverges from the grammar of texts that are familiar to young students, such as narrative genres. The first thing we should say is that the text is **generalising** about ideas and social practices. In order to do so, it uses a lot of **abstract** grammar, for example, *the principles which we felt fundamental to the establishment of the Mission*. Here Duguid is implying a metaphor of 'building'; *principles* are conceived as *fundamental*, i.e. 'foundation stones', and the 'building' which he goes on to plan is *the establishment of the Mission*.

Such spatial metaphors are commonplace, perhaps universal in abstract written English. They are linked to another type of metaphor that Michael Halliday calls grammatical metaphor (Halliday 1998, 2004, Halliday & Martin 1993, Rose 2004c, Simon-Vandenberg et al 2003). Here, a meaning that in everyday spoken language is typically expressed as **verb** for instance, may be realised instead as a **noun**. An example is *the establishment of the Mission*. A spoken form might be 'we established the mission', or perhaps 'we made the mission'. In this form, there is a concrete Actor, 'we', acting on (i.e. 'making') a concrete Goal 'the mission'.

'we	made	the mission'
Actor	Process	Goal

In the abstract version, the process 'establishing' is expressed as a noun 'the establishment', and it is a part, or facet 'of the mission', similar to 'the top of the tree', 'the side of the house'. Instead of a whole sentence, the process is expressed as a nominal group that is part of a larger sentence.

‘the establishment Facet	of the mission’ Thing
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Each of Duguid's abstract ‘principles’ is expressed in the same way, as ‘things’ rather than processes: *the conception of freedom*, i.e. ‘thinking about freedom’; *no compulsion nor imposition of our way of life on the Aborigines*, ‘not forcing the Aborigines to act, talk and think like us’; *the economy of the mission developed*, ‘the mission started to make money’; *responsibility should be passed on to the Aborigines*, ‘we should allow the Aborigines to become responsible (to begin to look after their own community)’; *the acceptance of the native tongue*, ‘we would accept people speaking the native tongue’.

Each of these nominal groups still has the meaning of ‘processes’ unfolding in time, but they have another layer of meaning as ‘things’, since they are expressed as nouns. Because these processes are expressed as things, they can be **classified** and ascribed **qualities**, e.g. *The most basic (principle) was the conception of freedom*. In other words, ‘the conception of freedom’ is a member of the class of ‘principles’, and has the quality ‘most basic’. And, as objects, they can be ascribed permanency, i.e. whereas processes **unfold** over time, things **persist** in time, e.g. *There was to be no compulsion nor imposition of our way of life*.

This type of grammar is remote from the everyday speech of most English speakers. It has evolved in written English over the past few centuries in the fields of science, history, philosophy and social administration, enabling writers (and speakers) to generalise about and ‘objectify’ social and natural processes. It is still the privilege of a powerful minority in industrial society, is demonstrably powerful, and incidentally excludes the less educated and less powerful. It enabled Duguid to exercise power in the realm of social policy, with lasting effects for the Pitjantjatjara. This is clear in the last two sentences:

- 7 ... this insistence on learning in the mother tongue ...
8 Years later ... the South Australian Education Department adopted the same principle...

‘This insistence’ is a metaphorical expression of a command ‘I insist..!’. Literally it means that ‘You/they must learn in the mother tongue!’. By means of grammatical metaphor, Duguid's command becomes an abstract thing ‘this insistence’, a member of the privileged class of abstract things known as ‘principles’. This metaphorical ‘thing’ became a ‘component’ of ‘the establishment of the mission’, and was subsequently ‘adopted’ by a major social institution, the South Australian education department. Thus grammatical metaphor enabled Duguid to project his wishes, his command, his ‘insistence’, down the decades, to shape the curriculum that Pitjantjatjara children continued to be taught 40 years later.

This is part of the power of grammatical metaphor. Amongst other functions, it is a discursive means by which prominent individuals, powerful members of social

institutions, are able to command other members of institutions to act according to their wishes. This interpersonal function has evolved in English as the administrative institutions of mercantile/industrial society have evolved. The congruent spoken forms, 'You must..!', or 'I want you to..!' have no weight unless the speaker has indisputably greater power than those she commands. But at the management/political levels of industrial society, and its institutions, power, commands and responses are negotiated, argued and traded. The language of negotiation at these levels is always highly metaphorical. This and the other papers in this volume are prime examples; the writers and readers, and through them other members of educational institutions, are negotiating the forms of literacy pedagogy that we want to see applied in our schools. We do it by means of grammatical metaphor.

Pitjantjatjara on the other hand is a spoken language which has not developed an abstract written grammar as English has in science, administration and so on. This does not mean that Pitjantjatjara speakers do not discuss abstract ideas, but the grammar remains that of everyday speaking. This means that in the realm of social policy making, Pitjantjatjara speakers, who understand everyday spoken English, find it very difficult to understand what bureaucrats and politicians are talking or writing about. This is often referred to in Aboriginal Australia as 'government English' or 'secret English' (Martin 1990). It also means that in contexts such as meetings, memorandums, reports, submissions and so on, they usually have to rely on interpreters to mediate for them. Furthermore, since this is also the grammar of senior secondary and higher education, it is very difficult for Pitjantjatjara people, and Indigenous Australians in general, to enter or succeed. The same applies to the majority of non-Indigenous students in Australia. This type of grammar is not explicitly taught in secondary school, although it constitutes the bulk of the curriculum in the senior years. Thus students from non-middle class, or non-English speaking backgrounds are effectively excluded from further education and economic privilege, and the structures of socio-economic stratification, cultural hegemony and colonisation are effectively maintained.

From the perspective of the Pitjantjatjara of course, 'the establishment of the Mission' had a very different set of meanings. Their understanding of the events were not embedded in discourses of liberalism, colonial history, protection or assimilation. Rather their motivations for participating in the act of colonisation were firstly economic survival, and secondly the maintenance of kin relationships. A savage drought precipitated the move into Ernabella mission for most of the Pitjantjatjara. This movement occurred family by family: those whose lands were closest to the mission were the first to move in. But once the movement had begun, pressure to be close to one's relatives meant that more and more families abandoned their traditional lands.

The following is an extract from a recount by Nganyintja (my adopted mother) of her family's move to the mission in about 1939 when she was young girl. In the following translation I have attempted to keep as close to the textual forms of the

Pitjantjatjara as possible. In some ways these forms diverge from everyday spoken English, but in general they are mutually intelligible. These issues of translation are discussed in Rose 2001, 2004, 2005a.

My father's people lived within the *tjukurpa*. They were the people of the *tjukurpa*, following the *tjukurpa*. They were the creators of the *tjukurpa*. The creators cared for the land, all of them before the whiteman, before the missionaries.

This was our own families' *tjukurpa*. We lived in our families' country, countrymen in our own country. We were the caretakers of the land, we cared for the land ourselves ... Only with our own *tjukurpa*, with our own *tjukurpa* we lived. With our own *tjukurpa* my father's people lived. They were the caretakers and they created it. They looked after their own country and they traveled (across the country) for different purposes. And through all this we grew up strong. We stood strong, my father's people. And in all this they educated us...

Whitefellows often came on camels, and from there they showed us flour, sugar. And we thought "Maybe this food is good food, why don't we go to Ernabella?"¹ Father thought about going, since his older brother had already gone. He had married a Yankuntjatjara woman from Ernabella area, my older brother's mother. We were living apart, and he greatly missed his brother, so we went to see him. And we arrived there, all of us. Arriving there we saw them. There was only one house, and we were living there, eating many different foods. It was a sheep station, before the missionaries, they worked a little with the sheep, for tea, sugar and flour...

And then the old man (Duguid) came and the missionaries, looking around at many places, seeing all the people living in their families' country. We were living at Itji, near Amata, and saw them arriving on camels. We were small, and he came with love, giving food and lollies...

At that time, the men were continually killing for revenge, and father thought of getting away from the revenge killings, to live in quiet. He was a great man, your grandfather. The bush food finished, there was a big drought. With all the revenge killing, perhaps God destroyed the food. And the people came after us, since we had gone beforehand (to Ernabella). Others were dying, starving, and everybody came to Ernabella. People were starving to death, and were being eaten. They were crying for rain. Children were going to sleep crying for water. Their fathers would travel all night for water, bringing it back at daybreak, and the children would go back to sleep, and then die. Poor things. In the great drought, all the food finished.

¹ Ernabella, at that time a small sheep station on the fringes of the Pitjantjatjara lands, was the nearest outpost of the European colony.

For that reason all the people went to Ernabella, others went to Warburton, others to Yalata (missions and government settlements). Some went west, and others went south. Living away, learning with the missionaries, Christianity, learning, learning, learning. Learning about work as well, looking after sheep, fixing windmills, with bullocks, shearing sheep. All the girls learnt about washing plates, about houses, weaving, we learnt. In the school at that place we learnt well, and every Wednesday we learnt about work (Nganyintja personal communication 1992).

This is very different construction of historical events and of a social reality to that presented by Duguid. The first difference we may note is that it consistently personal; instead of talking about abstractions such as *principles which we felt fundamental, ... the conception of freedom..., compulsion or imposition of our way of life..., and interference with tribal custom*, Nganyintja talks about concrete people, most of whom were related to her, engaged in concrete activities in actual places and real time. This doesn't mean that abstract principles about society and the material world do not underlie what Nganyintja is saying, but they are implicit in the discussion of social practices and the unfolding of events. For example, she begins the account by discussing the traditional practices and values of her father's people. By reiteration, she emphasises the unity of family, land and sacred *tjukurpa*, within which the people lived before the move into the mission. The impression she gives is of the families, the land and the *tjukurpa* as an integrated whole, cared for, recreated (through the ceremonies) and taught to the children by her father's generation. This first stage of the text is actually an extract from a much more detailed discussion of traditional practices. Its functions are: a) to establish a contrast between the traditional way of life and the contemporary consequences of the moment of colonisation, and b) to describe how the people should be living in an ideal situation that she and her generation would like to re-establish in some form.

The second stage of the text states the reasons for the move into Ernabella - firstly in order for her father to make contact with his older brother who had moved to that area, and secondly because they were interested in the food that was available at the station. Duguid and the missionaries arrived during this period, with a very different set of intentions, and made contact with Pitjantjatjara people who had already had experience of the white frontier, and who came and went to the station at their own discretion. In the third stage, Nganyintja discusses the reasons and processes by which the Pitjantjatjara people as a whole abandoned their traditional lands and moved into missions and government ration stations at the fringes of their lands. The primary reason was a massive drought in which people were starving en masse and dying of thirst. Far from a need for either 'protection' or 'training', the people's reasons were purely material, the result, not of political forces in the colonial world, but of natural processes in their own lands.

This text is an extremely valuable historical document; it recounts the moment of colonisation from the perspective of some of the last peoples on Earth to live

independently of the European expansion of the past five centuries. It is at least as valuable as the canonical texts of Australian history that rely on secondhand accounts, rarely going to original sources such as the elders of northern and central Australian peoples who personally experienced the coming of the whiteman. Whether historians are sympathetic or antithetic to Indigenous Australians' experience of European colonisation, their authority derives from sources that are already written down. This is the basis of the current 'history wars' between Keith Windschuttle and historians he has attacked for their pro-Indigenous perspective (Manne 2003, Windschuttle 2002); it is a struggle about the accuracy and accurate use of second hand sources. This struggle has highlighted the fact that history is a contested discourse, a site of power struggles over the symbols that constitute a culture. In order to participate in and critique this contest, it is necessary to use the genres and grammar of the institution.

On this point, later in the text Nganyintja suggests a reason for the drought which precipitated the Pitjantjatjara migration to the mission, possibly as a punishment from God for the revenge killings. The latter was one aspect of 'tribal custom' that the Presbyterians were determined to interfere with, and they used the drought to illustrate the power of the God whose 'word' they had come to spread. That the drought is still regarded by older people as God's punishment for the people's sins, illustrates the power that the missionaries' discourse had with the Pitjantjatjara. The source of this power is to be found in the generic forms of that discourse, i.e. the Biblical doctrines of Original Sin and Salvation. These doctrines are encoded in narratives involving concrete people and activities, activities that are metaphors for principles by which people lived in a sacred state, and instructions for how they should live. They do not describe history as causal relations between abstract principles, such as we have seen in Duguid's account; rather they use stories to exemplify abstraction.

These generic forms are very similar to those by which the Pitjantjatjara speak of the world, particularly in sacred texts, such as the *Piltati* narrative reproduced below. The generic forms, the congruent spoken grammar, the personal subject matter, involving named individuals who are related by kinship, all combine to produce a message that resonates with the traditional Pitjantjatjara model of reality, and the forms of their own texts. The missionaries used the Biblical texts to offer an explanation for the changes wrought on the Pitjantjatjara by colonisation: the drought was the result of their sins, the message of salvation was the reason the missionaries had come, the combination of their own sins and their need for salvation was the reason the people had to stay in the mission and subject themselves to 'learning'. This learning included a range of labouring and domestic service skills, as well being able to read the missionaries' translations of Bible extracts into 'the native tongue'. But it did not include learning to read the genres of history, which, as we have seen, can be used to construct very different explanations for the changes wrought by colonisation, and ultimately can be used as tools for negotiating power with the colonising ethnic group.

3 Science

At about the same time that Nganyintja was moving into Ernabella with her family, my European Australian father was at school in Newcastle, NSW, learning to read the genres of science. He went on to win a scholarship to study at Sydney University where he read chemistry and geology, and subsequently worked as a geologist with the NSW Mines Department, and joined the private sector during the mining boom in Australia of the sixties and early seventies. While his own father had been a railway worker, learning to read and write the genres of science had direct economic benefits for my father and our family, and ultimately for the corporations he worked for and for Australia's export economy.

In other words, these genres are powerful in the direct economic and political sense; they enable individuals, groups and institutions to improve their economic well-being, often at the expense of other groups. Indigenous people in particular have not received a fair share of the benefits that science has brought to the Australian economy. In fact the science of geology is an essential tool of the mining industry which, in Australia, has generated wealth for the nation but has consistently lobbied against Indigenous Australians gaining secure title to their ancestral lands which would enable to control the effects or to claim significant shares of the profits of mining.

It may be argued that geology (or science in general) is not in itself political; after all science may be used to heal and liberate as well as to exploit. Nevertheless modern science evolved over the past five centuries as part of a political-economic complex which operated to advantage a minority of the world's peoples, while disadvantaging many others. This and the other natural sciences are links in a chain of economic exploitation and production, the end points of which still include enormous wealth for a fortunate (mostly European) few, mass poverty in the Third World, as well as global environmental disasters. Although its subject matter is not apparently concerned with the social, the texts of natural science have, in other words, at least the same social implications as the texts of history and the other social sciences. The apparent exclusion of the social from scientific texts begs us to examine just how they work as expressions of the culture in which they arise. What is the view of material reality that they present, and how does that view of material reality express the social meanings of industrial culture?

The following text from Wignell, Martin and Eggins (1993) is an example of the kinds of text a junior secondary student reads at the early stages of a science education. It is from a current textbook in junior secondary geography, but the subject matter is the formation of geological phenomena (geomorphology), and the construction of reality is similar to that we can find in any text in the field.

- 1 After flash floods, desert streams flowing from upland areas carry heavy loads of silt, sand and rock fragments.
- 2 As they reach the flatter area of desert basins, they lose speed and their waters may also soak quickly into the basin floor.
- 3 The streams then drop their loads, the heaviest materials first - the stones - then the sand and finally the silt.
- 4 (Because they are) choked by their own deposits, these short lived streams frequently divide into a maze of channels spreading their load in all directions.
- 5 (As a result) In time fan or cone shaped deposits of gravel, sand, silt and clay are formed around each valley or canyon outlet.
- 6 These are called **alluvial fans** (Sale et al 1980).

This text is a scientific explanation. Like the historical account we examined, it is sequenced in time, as one (macro)event following another. Each sentence represents a stage in the temporal sequence, and in this text for young students there are explicit time markers *after, as, then*, etc. These are generally the starting points for each sentence, and I have underlined them for emphasis.

There is also an implication of cause/effect relations between each event, but like the temporal sequence in the historical account, the causal relations are not made explicit by conjunctions. In fact the pivotal causal connections 'because' in sentence 4, and 'as a result' in sentence 5, were left implicit in the original text, and I have added them to make the logical meaning explicit.

This implicitness of causal connections is consistent with tendency of scientific writing at all levels to be very tentative about asserting causation. Since scientific 'facts' are actually the result of protracted negotiations between members of the field, science writers rarely make categorical statements until they feel sufficient evidence has been accumulated to justify them to their colleagues. As with logical connections in history, this is an aspect of interpersonal negotiation, inherent in writing, between writer and reader. As far as possible, the writer tries to leave it open to the reader to reach her own logical conclusions about social or material reality - 'Your turn!' Writing in other words is a dialogue, in which the writer attempts to 'second guess' the reader's responses, and answer them simultaneously. Science writing, although apparently presenting plain truth impartially, is no exception.

So the goals of this type of text are first to explain a **cause/effect sequence**, and implicitly to persuade the reader of its validity, or 'truth value'. But then having explained the sequence, the goal is to define a **technical term** that represents this causal sequence. The technical term is the 'New information' of the text, in the final sentence 6, 'These are called **alluvial fans**'. In other words, the members of the scientific field have agreed to 'call' them alluvial fans. Like many such texts in secondary and university sciences, the technical term is highlighted in bold face. This term thus becomes part of the repertoire of the field, and the causal sequence it represents will probably not be reiterated in the student's education. Instead the

technical term will be referred to again and again in other texts as the student learns more about the field.

This text is a generalised reconstruction of natural processes of a particular type. It is **generalised** because it can be applied to any stream anywhere in the world that belongs to the specific type of natural phenomena that has been classified by the discipline of geomorphology. It is a **reconstruction** because the processes involved have been deduced by scientific methods of observation and reasoning about many such streams of a similar type, observed by many members of the discipline and agreed about through an historical process of debate between these scientists.

The immediate purpose of the text is to initiate young students into an aspect of the discipline and more generally into a scientific way of talking about the world. Central to this mode of speaking is the notion that 'objective' reality consists of sequences of causes and effects that can be observed, deduced, taught and applied. However, in its temporal sequence - one event after another, and its reference to concrete things in the natural world - 'streams', 'sand', 'rocks' etc., the text is not very remote from the young students' sensuous experience of unfolding time and things of the natural world, nor of their symbolic experience of narrative genres which also unfold over time. The text is therefore likely to be meaningful to young students because it resonates with their everyday experience. In addition it gradually introduces new information, i.e. causal connections between events and the technical terms scientists use to refer to them.

But the broader social purpose of such texts is ultimately economic. By generalising about the world in terms of causal relations between natural phenomena, scientists are able to devise techniques for intervening in these processes, enabling industry to exploit natural phenomena for economic gain. Geology is a good example of this social function of science; its descriptions of landforms and their origins lead directly to mineral and petroleum exploration and extraction. The products are then manufactured in refineries and steelworks to eventually become the commodities we use and exchange in everyday life in industrial culture. To enable this system of economic production, a cohort of scientists and others must be trained in the texts and practices of the disciplines, and it is the job of primary and junior secondary teachers to introduce potential science students to the relevant texts for the first time. Since the proportion of school leavers required for the roles of scientists, engineers, etc. is relatively small, there has been to date little pressure to impart such linguistic skills to all students. And indeed the majority of students leave high school without having effectively learnt the written language of science.

In addition to the linguistic skills however, school texts such as that above serve to initiate potential science students into the corpus of knowledge of each discipline. This is essential since the volume of information that science students at university must absorb is very large indeed. The technical terms that represent the

processes explained in the text above can be seen as a kind of shorthand that enables students and practicing scientists to absorb and discuss such bodies of information.

The following text in the same field, 'formation of alluvial fans', is from a geomorphology textbook at university level. The first thing we can note about it is the density of technical terms that the reader is assumed to know (underlined below). In addition several new technical terms are introduced which were highlighted in the original textbook in italics.

Alluvial fans and bajadas.

- 1 Somewhat analogous to deltas are the deposits on land known as ***alluvial fans***.
- 2 Where a heavily loaded stream emerges from hills or mountains onto a lowland area there is a marked change in gradient with resulting depositing of alluvium, apexing at the point of emergence and spreading out in fan-like form onto the lowland.
- 3 If the slope of the surface is steep, as it is likely to be where minor streams descend from upland areas, the feature may be called an ***alluvial cone***...
- 4 A series of adjacent fans may in time coalesce to form an extensive ***piedmont alluvial plain*** or ***bajada***, which may extend for several miles from a mountain front.
- 5 The building of fans takes place largely during flood times, when great quantities of water with accompanying alluvium debouch onto them (Thornbury 1969).

The purposes of this text are first to explain the formation of alluvial fans in general, and then to give a more highly detailed account of various types of alluvial fans. The explanation of the formation of alluvial fans, which required five sentences in the junior secondary text, is here compressed into a single sentence 2. The following sentences, 3 and 4, then explain the processes for the formation of different sub-types of fans, 'alluvial cones', and 'bajadas'. The final sentence 5 gives additional information about the formation of fans.

The organisation of this text is thus more complex and the information given is more dense than the simple scientific explanation found in junior secondary school. As well, the grammar is more abstract, for example causal connections may be expressed metaphorically:

- as adjectives '...change in gradient with resulting depositing of alluvium', i.e. 'alluvium is deposited because the gradient changes',
- or as verbs 'fans...coalesce to form...bajadas', i.e. 'bajadas occur because fans coalesce'

Because it is no longer sequenced in time, and refers to technical terms and abstractions, rather than everyday things, this text is more remote from our

sensuous experience of unfolding time. It is part of the same construction of reality as the junior secondary explanation, but, like Duguid's historical account, it assumes that the reader has more extensive symbolic experience in the scientific discourse of geology. In other words, while the first text referred largely to the everyday experience of the junior reader, this text refers to a host of other texts in the field of geology that the student is assumed to have read. The junior secondary text is an entry point to this corpus of texts. To gain access, the student must first learn to read the genre, and then to reproduce it in examinations, if she is to be allowed access to the rest.

Although their subject matter is apparently pure facts about the natural world, the texts of the natural sciences are thus the products and means of social processes, whereby industrial society trains and organises its elite corps of scientific researchers and appliers, who then negotiate the nature of reality amongst themselves and let the rest of us know. At the same time the system effectively excludes the majority of its subjects from the knowledge bases of the sciences, as scientific texts become more remote from everyday experience, and the volume of background knowledge required to be able to understand them increases. The device by which both these ends are achieved is the education system of industrial society, which continues to distribute scientific literacy unequally, generally along class, gender and ethnic lines.

4 Dreams

As is commonly known by most white Australians, the construction of reality represented by the scientific texts above is very different from traditional Aboriginal explanations of the formation of the land. Most of us have been exposed to versions of Aboriginal Dreaming narratives that explain natural phenomena in terms of the actions of ancestor figures who are both human, animal and super-human. These types of texts currently occupy the children's shelves of libraries and bookstores, partly at least because they seem to resemble the style of European fairy stories, and partly because they offer a vicarious experience of the original culture of our continent which many of us would like our children to be exposed to. However no such traditional narrative is ever simply an explanation of 'how the kangaroo got his tail', 'how the birds got their coloured feathers', or 'how the rainbow snake created the land'. Like the scientific explanations, or the historical accounts of contemporary industrial culture, each Dreaming text is an element in an integrated systematic account of natural, social and symbolic reality. In Pitjantjatjara, the word *tjukurpa* refers to both the narratives, the events themselves, and the whole body of sacred knowledge known as the Dreaming.

The following example is a narrative about the physical and spiritual origins of Piltati spring in the Mann Ranges, and the Wanampi serpents that created it and dwell within it. This is the principle *tjukurpa* for Nganyintja and her close relatives. In other words, Nganyintja and her father, father's father and their offspring are direct descendants of the ancestor figures in the story, in both physical and

spiritual terms; in consequence they both own and belong to the location at which the events occurred in the *tjukurpa*, and are responsible for the maintenance of the place and reproduction of the story and associated ceremonies. As such this story is directly relevant to Nganyintja's account of her father's people 'living within the *tjukurpa*', but it is, in addition, the property of the entire Pitjantjatjara people, a component of the theory of reality which underlies the culture.

There were once two men who were brothers. They were married to two women who were sisters and they were camping over yonder. These two men having slept and the day breaking went out hunting for kangaroos. In addition to kangaroos they climbed the hills in search of hill wallabies, and having speared wallabies, they carried them back to camp. And the two women dug for yams and collected wild figs. Living together as spouses, they speared game around that place called Piltati.

But the game became scarce and those two had to travel far away for it. And the two women would strike the throats of small game to kill them, dragging them, striking, striking they brought them (to camp), carrying, carrying, striking they brought them, striking they brought them, in different places, going to different places. At that place yonder those two were camping, at their own place they camped, at Piltati.

Those two men hunted for game, and the two women harvested fruits and grains, for fruits and game they hunted. And those two women dug for women's (small) game such as bandicoots. Digging it out they brought it, striking it they brought it. And those two men climbed the hills, and spearing game they brought kangaroo meat. They ate it, sitting in their camp, then they would go out again for game. Right in that place it was said they were camping,

And the men said "There is no game, there is a drought". And unable to dig out game the women were travelling; those women traveled to a great distance (for food), and they slept away in a strange place. And sleeping away, and killing game they arrived at a strange place. And then they traveled a great distance, to a great distance, a distant place. Yes, single-mindedly, heedlessly they were digging.

And the two men unable to find them, thought "Surely they should have returned. What's wrong with them, ai? They've probably traveled a great distance." And they thought "What shall we do? What shall we do?" And they drew designs, having climbed up the valley they inscribed circles. And it's said they drew there those two, drew and drew. Many different things did they draw.

And they thought, and they put their spears in a cave, and they thought. They put their spears in a cave, drawing, drawing, drawing, drawing. Many

designs it's said, drawing, drawing, drawing, thinking about it. And they talked about Wanampi it's said. And they rose up twisting their bodies around. The two of them rising up its said, becoming Wanampi. "Look there! Over yonder."

And the two sisters were still digging for game, heedlessly those two women were digging, digging, digging. And one (finding a burrow) said "Wait, I'll fetch a stick." And fetching it (she prodded up a burrow and said) "What's this here? Wanampi's tail!" This was the mouth of a burrow it's said, it was the open mouth of a burrow. "A Wanampi is here, it's entered the burrow." Here it's said, the younger sister came and looked and seeing she thought "I alone will pull it out." And when she pulled at it, it almost pulled her back up the burrow and he pulled his tail back into the burrow...

And she ran and told her sister "Get up and come!" And her sister said "What did you see? What, what? Speak quickly! Come and see. A huge *kuniya* (carpet snake) entered a burrow! It nearly pulled me in! Really huge!"

Coming she saw. "This really huge thing has entered!"

And they dug, digging, digging, digging. They struck it a little as they dug, and it went in further. Eating, they slept, and getting up they saw the huge thing again, going in further. Digging, digging, striking it a little again. This huge thing they saw. Continually they dug, continually digging, striking it, it entered further.

Digging, digging, they created the creek, Piltati creek they created, digging digging. Those two men were racing away from them. They arrived at the top, and the two women saw that they were huge Wanampi serpents... (Nganyintja personal communication 1987).

From the perspective of generic structure, this text is a type of narrative; it consists of concrete people engaged in a sequence of activities, in actual places over real time. As is typical of narratives in any culture, its grammar is not abstract, yet it represents a slice of the Pitjantjatjara theory of reality at the same level of abstraction as European scientific theory. Like the scientific explanations we have examined, the text explains the formation of a natural feature, Piltati creek, but instead of a causal sequence of natural processes it explains the origin of the landform as a result of the actions of ancestral women, digging out the Wanampi serpents. This is the most open layer of meaning in the text, accessible to children who often hear the story from their grandparents. As with the junior scientific explanation, the explanation is sensible to Pitjantjatjara children because it resonates a) with their sensuous experience; for example, seeing their mothers and sisters digging out the burrows of animals such as *kuniya* carpet snakes, and b) with their symbolic experience of narrative texts. On both counts we can see a

similarity, in how meaning is made and understood, between this text and the junior secondary science explanation.

Because the explanatory level of meaning is obvious, and requires no additional interpretation, it is usually the only level of meaning in Indigenous *tjukurpa* texts that is recognised by Europeans. However, to Pitjantjatjara adults, the explanations of natural phenomena are only one element of *tjukurpa* texts; they function principally as metaphors for more abstract meanings. As with scientific texts at tertiary level, reading these more abstract meanings in *tjukurpa* texts depends on extensive experience of other texts in the field, i.e. the vast corpus of Pitjantjatjara sacred knowledge. Like the technical terms and abstract grammar of scientific and historical texts, the 'inner meanings', represented by the metaphors in the *tjukurpa* texts, are only accessible to those who have been educated to the required level, and have acquired sufficient background knowledge of the field.

So there are fundamental similarities between texts and their social contexts from Indigenous *tjukurpa* and European science and history; they each represent elements of an articulated theory of reality that is negotiated and agreed upon by knowledgeable members of the culture; they serve to educate members of the culture in their respective theories, at different levels according to age and qualification; and they each use metaphor as a shorthand to refer to other texts within the theory - science uses grammatical metaphor and technical terms, while *tjukurpa* uses semantic metaphors. In both cases, ability to read the metaphors depends on stage of education, and in both cases the important first stage of education occurs around puberty.

On the other hand, there are major differences between scientific and *tjukurpa* texts. One is that tertiary level science texts are largely meaningless to the uninitiated reader, whereas *tjukurpa* texts are meaningful to children as well as adults, although at different levels; all members of an Aboriginal *tjukurpa* group eventually get to learn the inner meanings of their texts, while only a handful of industrial society's subjects ever get to read the meanings of scientific texts. Another difference is that *tjukurpa* texts are explicitly social in their subject matter, whereas the social significance of scientific texts, as we have seen, is usually only apparent to initiates. Furthermore, science texts usually attempt to generalise about natural phenomena; they explain general categories that can be applied to particular cases anywhere at anytime. They are part of the baggage of a portable culture that can, and has for five hundred years, been transported across continents and oceans in search of new fields of exploitation. *Tjukurpa* texts on the other hand always embody the general in the particular; they are about specific places and specific events, at the same time as these events are metaphors for generalisations about the social and material world. They are part of a culture that is inviolably linked to the land in which it arises. Each text, and each place to which it corresponds, is a component in the overall system of meaning, the theory of the culture.

A fourth difference is that while science texts have only one possible interpretation, intended by the writer and understood by initiated readers, *tjukurpa* texts have layers of interpretation, according to the level of initiation. In this sense *tjukurpa* texts operate like poetry, except that the multiple interpretations are not open to individuals to make; as with science, each interpretation is completely prescribed by tradition. Finally, science texts have a very recent history. In geology for example, explanations of landforms come out of a theoretical framework that has only reached maturity in the last century. I.e., only in the past four generations have geologists reached general agreement on the shape of their model of the natural world, and there is still savage disagreement over many aspects of the theory, as is also the case with European history. *Tjukurpa* texts on the other hand, and the theoretical framework they realise, are immeasurably old; thousands of generations have retold, interpreted and lived by them, and the inner meanings of the texts are not open to contestation, anymore than the land can be transformed by individual action.

It follows that the *Piltati* narrative is much more than an explanation of a natural feature. At another level it is generalising about the structure of the Pitjantjatjara social system, the relationships between men, women and the land. The participants in the story are two men and two women who are brothers, sisters, and spouses. This double pair represents relations of blood and marriage which are the most general categories of the kinship system, out of which all its complexity and richness arises. It also generalises the differences and complementarity between men and women; the circles that the women travel as they dig for small game are at one level a women's symbol, while the straight lines the men travel, whilst hunting for large game, symbolise their gender; the couples share their harvest, signifying the economic reciprocity between the genders.

So the first stage of the narrative is, at one level, a highly generalised account of these complementary roles of men and women, and so far their activities are identical with normal practices of contemporary people. However at this point, a drought creates a disruption in their activities, and the women's cyclic pattern of food gathering becomes a trip across country. Their husbands then respond to this anomaly in their wives' behaviour by a complementary transformation. They place their spears (men's symbol) in a cave (women's symbol), and after repeatedly inscribing circles, which are both female symbols and, at another level, symbols of place/country, they transform themselves into spiritual beings, soar into the sky, and dive back into the earth, becoming the spiritual essence of their own family country - *Wanampi tjukurpa* at *Piltati*. All their descendants are thus owners, caretakers and at one level, the human embodiment of the *Wanampi tjukurpa* at *Piltati*.

Thus at the next level, the narrative generalises about relations between people and place. The women's return symbolises the journey that women make when they marry into their husbands' family and lands. Ceremonial responsibility for land is predominantly inherited through the paternal line, and to reproduce the *Piltati*

line, the women must become part of their husbands' *tjukurpa*, to some extent abandoning their own family and country. In the conclusion of the story, the sisters stab their *wanampi* husbands in terror, with their digging sticks. Their husbands then rear up and swallow their wives who are then transformed, within the bodies of their husbands, into *wanampi* themselves. Thus they are able to give birth to the descendants of the *wanampi tjukurpa*, the *Piltati* clan.

This is a thumbnail sketch of some inner meanings, general categories of Pitjantjatjara theory, that the narrative represents. There are further layers of interpretation, and considerably more detail. But there is not the space here to go further, aside from the fact that the deepest levels of meaning are only accessible to elders of the *Piltati* clan and their peers.

5 History, politics and pedagogy

I have counterposed texts, and their social contexts, from two widely divergent cultures. These cultures, and the genres that constitute them, evolved in isolation from each other, but they are no longer isolated. Europeans violently appropriated the economic resources of the Indigenous people of this country, and despite a progressive softening of its processes, the processes of colonisation continue unabated. The means by which it is achieved are no longer physical violence, but symbolic violence.

The history that is written in universities and taught in schools constructs the past in the image of the coloniser. Whether it is written from the perspective of the left or the right, history is locked into a form of reasoning about society that abstracts social processes from the desires, purposes and actions of peoples. It is a symbolic construction of social reality that is remote from the experience of the people who make it and live with its consequences, and so becomes the privilege of an educated elite who use it to control political institutions, to gain and maintain power, and to challenge the power of others. The second order history that we are taught at school, or receive through the mass media, does not simply exist out there. It makes sense to people because it resonates with their symbolic experience and their economic interests. But it does not make sense to all of us; there is a point in the educational pathway where the symbolic construction of reality in historical genres begins to depart from students' sensuous experience of unfolding time and concrete events, and from their symbolic experience of narrative texts. This point typically occurs in junior secondary school, and it is usually only elite students that successfully learn to read and write the 'uncommonsense' of historical genres. These texts then become part of their experience, and as they graduate and take up their roles as professionals, becoming economic beneficiaries of the history they have learned to read, this version of history makes even more sense. On the other hand, students from other backgrounds, particularly Indigenous Australians, are too often locked out from the opportunity to learn the genres of history.

These are pedagogic problems that need to be addressed from two angles. Firstly, all students need the opportunity to learn to read and write the genres of history, so that they may effectively participate in the political processes that these genres are used for. This entails teachers understanding how these genres are constructed linguistically, and how they diverge from the symbolic experience of different groups of students. Secondly, students need to be able to see how these genres construct a particular representation of social reality that may be very different from that of their own or others' cultural background, or economic interests. As well as learning to read and understand them, they also need to understand the political-economic function of these genres, and the political-economic contexts in which they function.

Comparable issues apply to the teaching of science. Scientific genres are the discursive means by which technological development and industrialisation have become possible. All students need the opportunity to read and write these genres, to participate in the march of science and to control its social and environmental effects. Without these discursive resources they can only participate on the margins of scientific activity (Christie & Martin 1997, Halliday & Martin 1993, Martin & Veal 1998). At the same time they need to recognise that scientific discourse is only one of many possible constructions of reality, that it has a particular history that is intimately connected with the history of exploitation, and that alternative explanations of social and material reality are equally valid in their own contexts.

These proposals demand a great deal of teachers. No matter what subject we teach, we need to be educational linguists, in order to show students how the texts we work with make meaning. We need to be historians, so that we are able to locate our subject matter in its historical contexts and critique that history. We need to be sociologists, so that we can recognise and work effectively with the cultural background of our students. And last but not least, we need to be conscious of the forms, functions and origins of the pedagogy we are working with. Are we content to produce graduates with unequal levels of literacy and critical skills, some destined for professional roles, others for manual trades, and others for a shrinking market for manual labour? Are we content to reproduce the blinkered specialisations that have produced accelerating technological advancement while increasing global inequalities and injustice? Or is it possible to democratise our classrooms, to give all students the tools, the cultural breadth, and the social commitment to build a truly democratic society?

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