



Ethnogeographical categories in English and Pitjantjatjara/Yankunytjatjara

Helen Bromhead *

Linguistics Program, School of Language Studies, Australian National University, Canberra, ACT, Australia

ARTICLE INFO

Article history:

Received 6 September 2009
Received in revised form 7 July 2010
Accepted 9 July 2010

Keywords:

Anthropological linguistics
Contrastive semantics
Landscape terms
Language and culture
Lexical semantics
Natural Semantic Metalanguage

ABSTRACT

This study examines the contrastive lexical semantics of a selection of landscape terms in English and the Australian Aboriginal language, Pitjantjatjara/Yankunytjatjara. It argues that languages and cultures categorize the geographical environment in diverse ways. Common elements of classification are found across the languages, but it is argued that different priorities are given to these factors. Moreover, the study finds that there are language-specific aspects of the landscape terms, often motivated by culture and land use. Notably, this study presents ethnogeographical concepts as being anchored in an anthropocentric perspective, based on human vision and experience in space. The Natural Semantic Metalanguage (NSM) technique of semantic analysis is used throughout, and it is argued that this methodology provides an effective tool in the exploration of ethnogeographical categories.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

How can we state the meanings of landscape terms, that is, words like *mountain* and *river*, in the world's languages? What are the differences between ethnogeographical categories in various languages and what are their common features? In this study I provide fine-grained semantic analysis of selected landscape terms in English and in the Australian Aboriginal language Pitjantjatjara/Yankunytjatjara. I focus on terms for “elongated” hydrological features, *river*, *stream*, *creek* and *karu*, and terms for “elevated” features, *mountain*, *hill* and *apu/puli*.¹

One finding of previous work which is supported by my present study is that, although the referents of topographic terms are objective physical entities, landscape vocabulary does not carve nature at its joints (e.g. Burenhult, 2008; Mark and Turk, 2003a). Culture and utility also play a part in ethnogeographical categorisation, as well as differing geographies. There is a great deal of diversity in the meanings of landscape terms across languages, even within language families, as is demonstrated in the following example of two Indo-European languages:

Mark (1993) discussed differences in water body categorisation between French and English ... French appears to distinguish *étangs* [trans. as *ponds*] from *lacs* [trans. as *lakes*] based on water quality and a lack of a surface outlet, rather than giving priority to the size difference that ... separates *ponds* from *lakes* in English (Mark and Turk, 2003a).

* Tel.: +61 2 6125 8860.

E-mail address: Helen.Bromhead@anu.edu.au

¹ Fieldwork was undertaken with an Australian National University Faculty of Arts Fieldwork Grant. I would like to thank the senior women of Ernabella (Pukatja) for their stories and generosity, and the women of Anangu Tertiary Education program for all their help and hospitality. I acknowledge the organizations which made my fieldwork possible: Pitjantjatjara Yankunytjatjara Education Committee, Anangu Education Services and Anangu Pitjantjatjara Yankunytjatjara Land Management. Many thanks go to Anna Wierzbicka and Cliff Goddard for their comments and suggestions. Participants at the Australian Linguistics Society conference held in Sydney, 2008, and the NSM Semantics Workshop, Canberra, 2009 contributed a number of valuable comments. I am also grateful to the seven anonymous Language Sciences reviewers whose reports helped me improve this paper. Naturally, none of these people are responsible for any shortcomings or errors in this study, they are my all my own.

Ethnogeographical categorisation is a topic of interdisciplinary interest. It has been studied in anthropology (e.g. Hirsch and O'Hanlon, 1995), and there is a history of linguistic interest in the field (see e.g. Boas, 1964; Egli, 1893). Recent linguistic work in this area has been particularly prompted by the cognitive geographer David Mark and collaborators, who have found that simply using English landscape terms does not suffice in geographic work (e.g. Mark, 1993, 2007; Mark and Turk, 2003a,b; Mark et al., 2007). The present paper contributes to renewed linguistic discussion of landscape following the 2008 Special Issue of *Language Sciences* (Burenhult, 2008) *Language and landscape: geographical ontology in cross-linguistic perspective*.

The study of ethnogeographical categories is comparable to the better known and well researched fields of ethnobiological classification (e.g. Berlin, 1992; Hunn, 1982; Medin and Atran, 1999); body part classification (e.g. Majid et al., 2006); colour labeling (e.g. Berlin and Kay, 1969; Wierzbicka, 2008); and kinship systems (e.g. Schneider, 1984; Wallace and Atkins, 1969). These areas all raise interesting, and sometimes controversial, broader questions about the relationships between language, culture, and human cognition. One issue is whether there are universal categories. For example, “do all people have a category of ‘mountains’?” (see e.g. Smith and Mark, 2001). Another important question is to what extent the way in which people describe the external world is shaped by intellectual interest, or by culture and utility (see e.g. Enfield, 2008; Malt, 1995).

The present study is not seeking to capture a scientific reality of the Earth. My goal is, rather, to describe some ways in which people conceptualise the landscape through looking at the picture created by relevant lexical items. I am drawing upon what Apresjan (1992) says about “the naïve picture of the world”, which is language-specific and reflects the experience of a culture. The “naïve picture” differs from the scientific view which would not depend on the language of the description.

The science of ethnophysiology, a branch of cognitive geography, proposed by Mark and Turk (2003a,b) also compares landscape terms used in different languages and cultures, rather than relying on scientific categories. However, at times ethnophysiology seeks to define the meanings of folk terms in a framework of proposed universal concepts such as “concave” and “convex”, “vertical” and “horizontal”, and “land” and “water” (Mark and Turk, 2003b). The methodology used in this study is NSM (Natural Semantic Metalanguage), an approach which will be discussed in the next section. I argue that NSM provides a new and effective way of studying the semantics of landscape terms.

In using the NSM approach to semantic analysis of landscape terms I am describing in subtle detail a number of lexical items from two languages. This allows both cross-linguistic comparison, and the insight such microanalyses afford into human cognition and culture. In this way my approach differs from that of Mark and collaborators, whose interest lies in comparative extensional semantics in the field of landscape. It also differs from the take of contributors to Burenhult (Ed.), who concentrate on landscape systems and how one can view wider linguistic concerns through the prism of landscape. Undertaking NSM analyses of terms make it possible to “begin small”, and precisely. This allows one to gather a body of meanings which can, in addition, be used for further language and culture work.

In my analysis of the selected landscape concepts I uncover differences within and across the two languages, as well as common elements. I find that in both these languages features of size, shape, material make-up are important to categorisation, but that the relative priority which is given to these factors differs. I also look at the role of varying geographies and cultures.

A notable aspect of my analysis is the proposal that, like the meanings of other concepts based in the concrete world, the meanings of geographic concepts incorporate a human-centred perspective (see also, Baudoin de Courtenay, 1929; Fillmore, 1982, p. 121; Wierzbicka, 1989). In a literal sense, there are human interests in the landscape. Landscape features are places that people can see and places in which people be.² For example, geographers may have an objective measurement in thousands of metres which is used to deem some landforms *mountains* and others *hills*. But, ordinary speakers of a language make these kinds of decisions on the basis of human vision and experience in space. As compared with a *hill*, a *mountain* occupies a larger part of the landscape. To a person standing in one place looking at a *mountain*, a *mountain* fills a greater part of the distance between the ground and the sky than does a *hill* (Wierzbicka, 1989, p. 54). Therefore, my definition of a *mountain* states that the top part of a *mountain* is very far above the ground, and that, because of this, people can see a *mountain* from far away.

A further case in which there is human perspective in the landscape is the situation in which the same referent can be conceptualised as places of different kinds, depending on the point of view of an observer (Fillmore, 1982, p. 121; Mark et al., 2007, p. 15). In English, the boundary between land and sea can be described as both *shore* and *coast*. *Shore* bases its meaning on the perspective of someone in the water, and *coast*, on the vantage of someone on land (Fillmore, 1982, p. 121). To take another example, in Yindjibarndi (Western Australia), cliff features are given different labels on the basis of whether the viewer is looking up or down (Mark et al., 2007, p. 15). Naming metaphors relating to the human body, such as “the mouth of a river”, or body-based measures, such as “a hill of 428-feet”, (particularly commented on by, e.g., Baudoin de Courtenay, 1929; Vico, 1968[1744]), also provide evidence for the anthropocentric nature of landscape concepts.

² The conceptualisation of landscape features is anthropocentric a different way from that of animals and artefacts, which can be seen as similar areas to landscape features. All three groupings of vocabulary are based in the concrete world. Artefacts are human-centred in terms of how they are handled by the human body and for what purpose they are designed. For example, a *mug* can be held in one hand and is used by people to drink hot drinks from (Goddard, 1998, p. 236). Human beings come into the meanings of animal terms in that the size of animal can be defined in relation to the human body. An animal's relationship to people is also important. In the case of *cats*, they are of a size that they can be picked up by a person with her two hands. For example, *cats* live, for the most part, with humans (Goddard, 1998, p. 248). Landscape features are anthropocentric in that they are places people can see and places in which people can be.

My study explores ‘familiar’ English-language terms. Given that cross-linguistic comparison is used in the study of landscape categories, it makes sense to include the researchers’ home, or academic home, language, that is, English (for an example of a study which includes English see Mark, 1993). In order to get the full picture when, as Burenhult and Levinson put it (2008, p. 14) “capturing landscape ontology cross-culturally” English landscape terms, such as *mountain* and *river*, are in as much need of being explained as ‘exotic’ concepts, such as *apu/puli* and *karu* in the Australian Aboriginal language Pitjantjatjara/Yankunytjatjara treated in this paper.

I also seek to articulate an indigenous model of meaning by presenting semantic explanations which can be formed and read in the languages under investigation themselves. Contrasting landscape terms from an indigenous language with comparable terms in the English language of the colonizers, newcomers to that land, provides an insight into how different groups of people can think and speak about the same landscape and the same referents in different ways using words with different meanings (see Bonyhady and Griffiths, 2002; Carter, 1987).

2. Using NSM to tap into the meanings of landscape terms

The present study adopts the NSM (Natural Semantic Metalanguage) approach to linguistic analysis. In NSM analysis, meanings are expressed via reductive paraphrases (referred to as “explications”) using a metalanguage. NSM is a “mini-language” of semantic explanation, based upon natural languages. It consists of an inventory of 63 semantic primes, posited as elementary units, and proposed as universal (based on empirical studies). The metalanguage also has its own inherent grammar (Goddard, 2008; Goddard and Wierzbicka, 2002; Peeters, 2006). An English-language version of a table of the semantic primes of NSM is included as Appendix A.

The advantages of the NSM “reductive paraphrase” approach are that it avoids definitional circularity, it can be used across languages and cultures without running the risk of terminological ethnocentrism, and its analysis can be made clear and accessible to non-specialist readers.³ More specifically, the NSM approach has been adopted in the present exploration of landscape terms for a number of reasons.

Firstly, one can tease out individual differences in meaning between terms and capture these meanings in a more systematic way, than using English-language glosses. Furthermore, simple words such as “place” and “above” are clearer than semi-technical terms such as “convex”, “topographic” or “feature”, which are more obscure than the terms *hill* and *mountain* themselves. Mark (2007), a pioneer in the study of ethnogeographical classifications, points to the problem of circularity and suggests that “we probably need a controlled vocabulary for use in defining landscape terms in the ontology” (Mark, 2007).

The key primes used to explicate the meanings of landscape terms are PLACE and KIND which are combined in the phrasing “a place of one kind” (to be discussed further in the next section). Parts of these places can be described using the prime PART. Also of use are spatial terms like ABOVE and ON ONE SIDE. For example, in explaining the meaning of the term *mountain*, one can say in NSM semantic primes (as a one part of a more elaborate meaning) “a place of this kind is above other places on all sides of this place” to describe a shape in the landscape protruding upwards.

Another important feature of the explications is the use of what are called semantic molecules (see Goddard, 2007, in press-a; Wierzbicka, 1991). Many concepts, including landscape terms, can only be explicated in stages. One must use intermediate concepts which themselves need to be explained via semantic primes. For example, a semantic explication of the word *walk* would have to include the semantic molecules “legs” and “ground” (see Wong et al., forthcoming). Prominent semantic molecules present in the meanings of landscape concepts are environmental molecules, such as “water” (“kapi/mina” in Pitjantjatjara/Yankunytjatjara) and “ground” (“manta/paga” in Pitjantjatjara/Yankunytjatjara); physical descriptors such as the shape concept “long” (“wara” in Pitjantjatjara/Yankunytjatjara); and topological terms such as “top”. Molecules are indicated by an *m* in brackets, as in ‘water [m]’.

The NSM semantic analysis of landscape terms presented in the paper is based on conceptual analysis. This analysis can be likened to the conceptual analysis of natural kind words and of concrete objects (see, e.g. Goddard, 1998; Wierzbicka, 1985). NSM provides a way to construct plausible and testable hypotheses about indigenous meanings, in the form of the reductive paraphrase explications. As Goddard writes, “Doing NSM analysis is a demanding process and there is no mechanical procedure for it” (Goddard, in press-b) He continues, “Published explications have often been through a dozen or more iterations over several months”, and those contained in this study are no exception. Writing explications requires introspection as well as empirical work.

One can test NSM explications by way of two main conditions. The first condition is that explications be well-formed. Explications must be phrased using semantic primes and molecules, adhere to the syntax of the Natural Semantic Metalanguage, and within them the components have to make sense as a whole package. The second condition is substitutability. It is necessary that explications be able to be substituted into their contexts of use with no change in meaning.

³ An anonymous reviewer asks about the ability of NSM semantics to deal with a range of different linguistic phenomena. There is not sufficient space available to deal with all these topics but I will address the query, also raised in other forums, of how NSM treats language change. Meaning changes through time and one can posit different NSM semantic explications for various stages of meaning (see, e.g. Wierzbicka, 2010 on the Anglo English cultural keyword, *evidence*). Of particular interest to NSM semantics is the interrelation between cultural change and semantic change (see, e.g. Bromhead, 2009 on the influence of the rise of British empiricism on the meaning of English epistemic expressions).

One can use various pieces of linguistic evidence to help in the process of devising explications, or to test them in terms of the substitutability condition. In NSM analysis collocations and phraseology are used to give clues as to the meanings of words (e.g. Goddard, 1998, pp. 241–242). As J.R. Firth, who coined the term collocation, writes: “You shall know a word by the company it keeps” (Firth, 1957, p. 11; see also Apresjan, 2000, pp. 50–54). To take an example from another field of vocabulary, collocations such as *angry backlash*, *angry response*, and *angry confrontation*, suggest that part of the meaning of the emotion term *angry* is based on someone wanting to do something in retaliation (Wierzbicka, 1999, pp. 87–89). Looking at animal terms, a phrase such as *as quiet as a mouse* is indicative of the perceived quietness of mice (Goddard, 1998, p. 242). In the area of landscape terms, we can take the example of the common collocation, *a river flows*. This collocation is consistent with the idea that water in a river moves all the time.

Throughout the paper, I mention similar collocations in the analysis of the selected terms. In many cases, when looking at the English terms I use results from the word sketch feature of the Collins Wordbanks corpus of English. As de Schryver writes, “A word sketch is an automatically produced, corpus-based summary (i.e. ‘sketch’) of a word’s grammatical and collocational behaviour” (de Schryver, 2009, pp. 479–480). From looking at word sketches, one can see whether a particular collocation frequently occurs, but one can also use the data in a more nuanced way. In my analysis, I find especially clear contrasts when I compare common collocates with the absence of their antonyms in the word sketch. For example, the fact that *tall mountain* is a frequent collocation in the word sketch of *mountain* whereas *short mountain* is not, tells us something about the size and height of a *mountain*. Statistical measures aside, collocation can also be tested through native speaker intuition.

In devising and testing explications, many examples of the use of the terms in question are also examined. In this study, a number examples of the chosen words appear, which are naturally occurring uses taken from the Collins Wordbanks corpus, media, dictionaries, and (for Pitjantjatjara/Yankunytjatjara) field notes and recordings. These examples are often used to illustrate various collocations of relevance to the argumentation. Furthermore, in the course of my work I have checked the acceptability of certain combinations by informally consulting native speakers, a time-honoured technique in linguistic research.

I did my fieldwork among Pitjantjatjara/Yankunytjatjara speakers in the community of Ernabella (Pukatja), South Australia, for six weeks in May–June 2009. My five formal consultants whom I recorded were senior women, respected for their knowledge. I also spoke to younger women more informally. I accompanied language speakers on bush trips. These are expeditions into the surrounding country in a vehicle for the purposes of food gathering and land management. Bush trips were good opportunities to consult with speakers because it is appropriate to talk about the topic of landscape in the actual natural environment. In consulting Pitjantjatjara/Yankunytjatjara speakers, I asked questions about the landscape and recorded stories in which landscape features occurred. Questions were generally asked casually and could be enquiries along the lines of, “What do you call places like this?”, “What is the sand in a *karu* called?”, “What did you used to do in a *karu*?”. As a supplementary tool, photos were used, firstly, to see how a referent was labeled, and, secondly, to promote general discussion around the terms.

3. Background: people, land and language

3.1. Pitjantjatjara/Yankunytjatjara

Pitjantjatjara and Yankunytjatjara are two mutually intelligible neighbouring varieties of the, much wider, Western Desert Language family. These varieties are still spoken as a mother tongue in parts of Central Australia.⁴ Pitjantjatjara and Yankunytjatjara are grouped together as Pitjantjatjara/Yankunytjatjara in the present study, as in the Pitjantjatjara/Yankunytjatjara to English dictionary and a number of pedagogic works (e.g. Eckert et al., 2007; Goddard, 1993). According to the Australian Bureau of Statistics Census 2006, there are approximately 2700 Pitjantjatjara/Yankunytjatjara speakers number. Western Desert Languages are typical Pama-Nyungan languages (Dixon, 1980). Pitjantjatjara/Yankunytjatjara is suffixing and agglutinative, with a well-developed case system and a flexible but basically subject–object–verb word order. In terms of Australian languages, the two varieties are well-described.⁵

Pitjantjatjara/Yankunytjatjara is spoken across a vast, arid area of Central Australia in the North-West of South Australia and the South-West of the Northern Territory. The landscape is extremely dry and rainfall is variable. However, there are times when the rain comes in a deluge (Layton, 1986, pp. 24–28, 34–35). Rocky ranges run through Pitjantjatjara and Yankunytjatjara country and the land is dotted with rocky outcrops. The landscape can be divided into different kinds of locales and ecological habitats such as spinifex plains (*pila*) and scrub country (*puṭi*) (e.g. Bromhead, forthcoming; Layton, 1995, p. 213), as is the case with other parts of Aboriginal Australia (see, e.g., Layton, 1999, pp. 22, 24–25 on the Alawa people).

For the most part, Pitjantjatjara/Yankunytjatjara speakers now live in small remote communities of a couple of hundred people. However, traditionally, Anangu (the name Pitjantjatjara/Yankunytjatjara speakers use to refer to themselves) were nomadic hunter–gatherers who travelled across large areas. They skillfully used the plants, animals and limited water to sustain themselves, and often their movement was dictated by the availability of water (Keen, 2004, pp. 109–111).

⁴ A number of vocabulary items in the two varieties, Pitjantjatjara and Yankunytjatjara, differ and the terms meaning ‘hill, mountain, rocky outcrop’ *apu* (Yankunytjatjara) and *puṭi* (Pitjantjatjara) treated in this paper are a case in point. In the paper the form *apu/puṭi* is used. Some examples given use the Yankunytjatjara version, *apu*, and others the Pitjantjatjara *puṭi*. Other terms of this kind include *kapi/mina* ‘water’ and *manta/pana* ‘ground’.

⁵ Pitjantjatjara/Yankunytjatjara language publications include a grammar (Goddard, 1986), a dictionary (1996, compiled by Goddard), language teaching texts (e.g. Eckert and Hudson, 1988) and a variety of vernacular texts for use in communities and in schools (e.g. Brumby et al., 2008; Nganampa Health Council, 1991).

In Anangu cosmology the landscape is created and shaped by the movements of Ancestral Beings during the creative period known as the Tjukurpa or Dreaming. This worldview is similar to the beliefs of other Australian Aboriginal groups (Keen, 2004, p. 211). Keen (2004, p. 218) writes of Anangu belief, “Ancestors made waterholes by digging for water and left creekbeds where they crawled; depressions remained where they had slept. Their bodies and bodily substances changed into rocks and markings”. Furthermore, individual landforms are associated with specific Dreamings (creation stories) and spiritual concerns. To take one example, Layton speaks of “a hill called Wiputa, associated with the legend of the Two boys who built Uluru from mud during the *tjukurrpa*” (Layton, 1986, p. 3). These Dreamings also help form a system of placenames (see e.g. Hercus, 2010; Hercus and Simpson, 2002).

Despite the spiritual beginnings of the landforms, topographic terms like *karu* and *apu/puli* do have more prosaic, down-to-earth meanings. Layton writes in his book chapter “Relating to the Country in the Western Desert”, “When the landscape appears as an ‘object’ of subsistence activities in indigenous discourse, there is much in common with Western ecological understanding, even if indigenous discussions are more fine-grained than ours” (Layton, 1995, p. 212). I would suggest that the origins of many Pitjantjatjara/Yankunytjatjara landscape features are not part of the lexical meanings of the terms, especially since all landscape is said to have its genesis in the Tjukurpa. Therefore these origins are not expressed in the semantic explications in the current study. The concrete can be just as culturally revealing and worthy of examination as the abstract. However, the study of individual place names and sacred sites would naturally include spiritual concerns. Furthermore, a spiritual reference may be appropriate in the explications of certain landscape terms. One candidate is *wala* ‘springs’. In *wala* live *wanampi* ‘water snakes, Rainbow serpent’, which are “a class of legendary beings who carry water underground from one available source to another” (Layton, 1986, p. 25, see also Young, 2006).⁶ (Similar beliefs are found in other areas of Australia. For the case in Yindjibarndi, see Mark et al., 2007, pp. 13–14).

Landscape also makes its way into the language by way colour terms, which can be based on happenings in the natural environment. Young (2005) writes of the Pitjantjatjara and Yankunytjatjara country in her study of ‘the smell of greenness’ as follows, “The earth in the Western Desert is red but after heavy or prolonged rain, and the immediate germination of opportunistic seeds, the ground begins to turn a brilliant green” (Young, 2005, p. 62). One Pitjantjatjara/Yankunytjatjara colour term, or, more precisely, visual vocabulary term, is based on the prototype of fresh, new growth – *ukiri-ukiri*, literally, ‘grass-grass’. Similar terms exist in the neighbouring, related language of Warlpiri, spoken in the Tamami Desert, north of the Western Desert, and some of these Warlpiri terms have been explored in Wierzbicka, 2008.

3.2. English

The English I treat in this paper can be referred to as “English of the inner circle” (Kachru, 1985), i.e. the English of Britain and its settler societies e.g. the United States, Australia and so on. This is not to say that these varieties of English do not vary as to their landscape terms. For example, the term *beck* ‘brook or stream often with rugged course’ seems to be confined to certain dialects of British English and the term (borrowed from Spanish) *arroyo* ‘dry riverbed’ is only used in some varieties of American English. To take another case, the terms *brook* and *woods*, found in both British and American English, are not used in Australian English.

Many writers on the topic of landscape terms (e.g. Stock, 2008) are struck by their “relative” nature. For example, people living in the rather flat Australia label certain landforms as *mountains* which, in New Zealand, or other more mountainous areas, would only be called *hills*. Similarly, the British English prototype of a *river* may be wider than an Australian English prototype. Nonetheless, I would argue that it is justified to say in the semantic explication of *river* proposed: “these places are big places” for both British English and Australian English speakers. To Australian English speakers their relatively narrow *ivers* seem ‘big’ because they do not have bigger features with which to compare them. As Moore (2008, p. 37) writes of Australian English speakers, “Their language is largely transported. For example, they know that antipodean rivers are not like European rivers, since Australian rivers are often dry, but in their minds and even in the dictionaries they produce into the 21st century, they will continue to define a river as: ‘a large natural stream of water flowing in a channel to a sea or lake.’” My project is to find the common core of meaning of a number English-language landscape terms across varieties.

Nonetheless, in this paper I also examine the Australian English *creek*.⁷ I have chosen to examine *creek* because it provides a point of comparison with the Pitjantjatjara/Yankunytjatjara term *karu* which is usually glossed as ‘creek’. *Creek* is a significant word in Australian English given the dry nature of the Australian continent. As Arthur writes, “Colonial Australia has always had a problem with water: it’s never where it’s wanted, and never around when it’s needed” (Arthur, 2003, p. 18).

Next, I move to discuss the selected landscape terms in the two languages, English and Pitjantjatjara/Yankunytjatjara, beginning with terms for elongated water features.

⁶ In an explication of *wala* components such as “things of some kinds not like people live there” could be used to account for the association with *wanampi*. One anonymous reviewer asks whether NSM would be able to handle spiritual associations of landscape. Cultural norms, values and practices can be articulated using the “cultural scripts” technique which uses the language of NSM (see, e.g., Goddard, 2006). Some Jewish and Christian religious cultural scripts have been explored in Wierzbicka (2001). Formulating such scripts for Anangu spirituality is not a task which can be undertaken in the present study.

⁷ The term *creek* means in British English, roughly, ‘an inlet in the coast-line of the sea running up to a river’. In other “New World” English varieties such as American, New Zealand and Canadian English the term *creek* has the approximate meaning of ‘a watercourse smaller than a river’, similar to its meaning in Australian English.

4. Places where there can be water: river, stream, creek and karu

One thing common to all human beings is the need for water, specifically fresh water. It is hypothesized in the NSM research program that the concept of “water” is found universally, and acts as a semantic molecule in many different concepts (see Goddard, *in press-a*). However, languages lexicalize concepts for sources of water differently. These concepts reflect particular geographies, and the speakers’ way of life and worldview. For example, in the article *Water as Country on the Pitjantjatjara Yankunytjatjara Lands South Australia* (2006) Diana Young covers some Pitjantjatjara/Yankunytjatjara terms for water sources and the relationship between each one and the Anangu world view. She writes, “in the classifications of water sources and in material practices, Anangu realise a compelling relationship between the surfaces of country and human bodies”. (Young, 2006, p. 256). Water acts as a mirror. Young continues, “Certain water features in country provide the means to create a double image of country, sky and living beings” (Young, 2006, p. 251). *Warku* ‘shallow rockpools’ and *tjukula* ‘rock-holes’ both reflect things. But, as Young writes, “*Warku* do not offer the hidden depths nor the anxieties about who might be within them that deep waterholes evoke, but provide on clear days a perfect blueness in their surface reflection of the sky” (Young, 2006, p. 250).

In English-speaking cultures *rivers* are also revealing. In *From landscape to literature: The river and the myth of geography* (1986), Wyman H. Herendeen, writing of “rivers” in Western culture, states that:

Rivers are a natural condition with which we are always contending – crossing, damming, fleeing, or flocking to, and generally trying to tame in one way or another. (Herendeen, 1986, p. 5)

He goes on to say, “The river, in geography and as an image, takes on the characteristics of the culture of which it is a part.” (Herendeen, 1986, p. 5) Consider the comparison of the English and French “river” concepts. French, partially for reason of geography, makes a lexical distinction between large watercourses which flow into the ocean, *fleuve*, and those which do not, *rivière* – a distinction which is not made in English. Differences of this kind lead one to a discussion of the meanings of such lexical items. As Herendeen writes, “Rivers seem to force us to ask certain basic questions, such as: What is a river?” (Herendeen, 1986, p. 3). In this section I ask what the English *river*, *stream*, *creek*, and the Pitjantjatjara/Yankunytjatjara *karu* mean.

4.1. River

The use of the word *river* is illustrated in the following examples:

- (1) ... castles overlook the **river's** twisting **course**... (Collins Wordbanks British Ephemera)
- (2) ... fortresses had been built **along the lengths** of the **rivers**... (Collins Wordbanks British Books)
- (3) The Zaire is the seventh **longest river** on earth... (Collins Wordbanks British Books)
- (4) ... walking by the **riverside** with honeyed breezes blowing over the Shannon... (Collins Wordbanks British Books)
- (5) The **rivers flow** to the sea... (Collins Wordbanks US Books)
- (6) ... they were **crossing** the great **river** on a creaking, paddle-driven ferry. (Collins Wordbanks British Books)

A *river* is a place where there is water, it is long in shape, and the water in it moves. The following explication [A] captures the features of the meaning of *river*:

- [A] *a river*
- a. a place of one kind
 - b. there is a lot of water [m] in places of this kind
 - c. these places are long [m] places
 - d. places of this kind have two sides [m]
 - e. places of this kind are big places
 - f. at many times when someone is on one side of a place of this kind
if this someone wants to be on the other side,
this someone can't be on the other side after a very short time
 - g. the water [m] in places of this kind is always moving
 - h. when someone is somewhere on one side of a place of this kind, this someone can think like this:
“some time before this, this water [m] was in a place far from this place here
some time after this, this water [m] will be in another place far from this place here”

Component (a) “a place of one kind” appears as a first component, a header if you will, in all the explications of all landscape terms in this study.⁸ As discussed in Lyons (1977, p. 693) and, notably, by Cablitz (2008), generic landscape features can be ambiguous between objects and places. Lyons distinguishes between first-order entities (usually humans, animals and objects) and places/locations, and states that:

⁸ As one anonymous reviewer points out, readers may wonder why component (a) is phrased as “a place of one kind” rather than “a kind of place”. Both formulations would be possible. However, “a place of one kind” works better in substitution, e.g. “two *rivers*” are “two places of one kind”, rather than “two kinds of places”.

There are some first-order entities that are either permanently or normally static, rather than self-moving or moveable: but they will not count as first-order entities unless the language so classifies them and they stand out from their environment with respect to their colour, shape or texture. Such aggregates, collections or conglomerations of matter as cliffs, clouds, lakes, and so on, may or may not be perceived and conceptualised as first-order entities: their status is indeterminate; and they may be treated differently by different languages. (Lyons, 1977, p. 693)

Cablitz describes the interesting case of landscape terms in Marquesan, an Eastern Polynesian language. Some terms, such as *mouka* 'inland mountain', take the same prepositional marker as common full words for first-order entities (Cablitz, 2008, p. 216). Other terms, such as *motu* 'island, islet, can appear with prepositional markers for both objects and places, depending on the circumstances. Another group of terms, for example *uta* 'inland', are only found with the marker for a place (Cablitz, 2008, p. 219). English and Pitjantjatjara/Yankunytjatjara treat terms such as *river*, *mountain*, *apu/puli* and *karu* in the same way as they treat more thing-like terms, such as *car* and *house*. For example, locative constructions are alike for both types of terms, e.g. *in the river* and *in the car*; *karu-ngka* 'in the karu' and *mutuka-ngka* 'in the car'. The landscape terms discussed in this study are placed into the category of "places of some kinds" rather than "things of some kinds" on semantic grounds. This is in line with Lyons' statement that a language will not deem landscape terms "things" unless it classifies them as such. In the case of Marquesan, further consideration would be necessary to form explications for its landscape terms, particularly in regard to the categories of "thing" and "place".

The NSM prime KIND combines with substantive primes, such as PLACE, to form phrases expressing classification (see Goddard, 2008, pp. 63–64). In this regard, there is some crossover with other approaches. Places which can be given common names (e.g. *river*, *hill*, *desert*) and are countable have been considered to belong to "kinds" in an ontology of landscape discussed by Mark and Turk (2003b). As Mark and Turk (2003b) write, "those things, which get common names (that is, things that are considered to belong to kinds)".

The next component (b) states that a *river* that it has a lot of water. Component (c) treats the shape of a *river* using the semantic molecule "long", that is, in terms of it being a "long place". *Rivers* have *length*, as in example (2), they can be *long* in dimension, as in example (3), and there is also the combination "along the *river*", as in example (2). I argue, following Wiezbicka (2007), that the term *long* is polysemous. *Long* has at least three meanings: (1) "long" as in "a stick is something long"; (2) "long" as in dimension, for example, "a particularly long stick"; and (3) "long" as in a "long place", such as in the case of a *river* and related terms. To say that a place is "long" is to say, roughly speaking, that it has two ends, far from one another, and that it takes a long time for someone to travel between these ends.

The long shape of a *river* is also covered in component (d) concerning "two sides". Phraseological support for this component includes the compounds *riverbank* and *riverside* (see example (4)), the expression "beside the *river*", and *rivers* also have *edges*. Similar "shape components" to (c) and (d) appear in the explications of other terms for waterways, such as, *stream*, *creek*, *karu*, *fleuve* (French), and *wadi* (Arabic).

Component (e) "places of this kind are big places" captures the size of a *river*. It is notable that the phrasing is "places of this kind are big places" rather than simply "places of this kind are big". Saying that a place is a "big place" has built into it the standard that "when people are in this place they can think about it like this: this place is big". Essentially "a big place" means "big" for a "place", rather than "big" in any objective sense. The same practice is followed in all the size components in the explications contained in this study.

Another aspect of *rivers* is that they are relatively impassible. People cannot easily get from one side of a *river* to another because of a *river's* width and volume of water. *Rivers* form natural borders. They often split cities into distinct parts, separate ethnic and linguistic groups, and divide political units. The wide expanse of water of *rivers* prevents people from going from one side of a *river* to the other "after a very short time". Rather, people must cross a *river* by using, for example, a bridge, a boat or swimming. Human concern with this aspect of *rivers* is reflected in the common collocation *cross the river*, as in example (6). *Cross* is the most common verb of which *river* is the object in Collins Wordbanks. This feature of the meaning of *river* is covered in component (f).⁹

Components (g) and (h) describe the movement of a *river*. *River* combines with many verbs which describe this movement. These include *run*, *meander*, *amble*, *tumble* and *flow*, as in example (5). *Flow* is the most common verb of which *river* is a subject in Collins Wordbanks. In component (h) the *river* is thought of as traveling from a distant source to a destination far away. Terms associated with *rivers*, such as *upstream*, *downstream*, *mouth* and *source*, attest to this understanding. Also people can speak of the *course of rivers*, as in (1), and also, of *rivers going through places*.

In the more arid regions of Australia, what are named rivers do not always contain flowing surface water. But this does not invalidate the proposed explication of the meaning of *river*. Often *rivers* of this kind, such as the Todd River in Alice

⁹ One anonymous reviewer asks why a component accounting for the width of *rivers* should be phrased in terms of human movement instead of, for example, a visual experience or hearing. There is no general principle that bodily movement is more salient than seeing or hearing in NSM analysis. One must consider what a particular phrasing implies, on a case by case basis. A few points about why component (f) includes a person's potential to cross a *river*. Firstly, the reviewer asks if one could have a component stating that it is hard to hear someone call across a *river*. However, this would not fit in the case of *rivers* across which someone could not be heard at all. Secondly, component (e) is not simply capturing the width of *rivers*, but also the fact that they difficult to traverse because of the water. Thirdly, it would seem that moving across a *river* is of greater importance and utility to humans than looking across a *river*. The language surrounding *rivers* does not support the primacy of hearing or seeing a *river*. As mentioned in the body of the article, *cross* is the most common of the verbs of which *river* is a collocate in Collins Wordbanks. There are 386 instances of *river* with *cross*, as against 34 examples of *river* with *look across*, and 7 examples of *river* with *look over* (in the relevant sense, rather than "a house looking over a river").

Springs, are locally referred to as a *creek* or *creekbed*. Furthermore, as Mark et al. (2007, p. 7) write, “English speakers normally indicate frequency of flow by adding adjectives such as ‘seasonal’, ‘intermittent’, or ‘ephemeral’ to nouns that canonically refer to flowing water features.”

4.2. Stream

The next term I will discuss is *stream*, whose explication can be compared with the explication of *river*.¹⁰ A *stream* differs from a *river* in that a *stream* is smaller and has less water, and this water moves quickly. Some examples of *stream* (7)–(9) and a semantic explication [B] follow:

- (7) ...before noon he came to a **small stream**... (Collins Wordbanks US books)
- (8) Long ago, a group of people lived along a **stream**. (Collins Wordbanks US Spoken)
- (9) ...pretty camp spots beside **mountain streams** (Collins Wordbanks Oznews)

[B] *a stream*

- a. a place of one kind
- b. there is water [m] in places of this kind
- c. places of this kind are long [m] places
- d. these places have two sides [m]
- e. these places are not big places
- f. the water [m] in these places is always moving
- g. this water [m] moves quickly [m]
- h. when someone is somewhere on one side of a place of this kind, this someone can think like this:
“some time before this, this water [m] was in a place near this place here,
some time after this, this water [m] will be in another place near this place here”

Component (b) differs from that in the explication of *river* in that it speaks only of “water”, rather than “a lot of water”. The size component (e) shows a *stream* as smaller than a *river*, in that it is “not a big place”.¹¹ These intuitively plausible differences are backed up by collocational tendencies of the two terms. Combinations such as *?great stream*, *?grand stream*, *?big stream* are not well attested in corpora nor very acceptable to native speakers, as against the same adjectives combined with *river*. Conversely, collocations such as *little stream* and *small stream*, as in (7) sound better to native speakers compared to similar collocations with *river*.

The combination of components (f)–(h) articulates the idea of constant fast-moving water. In addition to the meaning of *stream* as a landscape term, the noun *stream* has a sense referring to flowing movement of liquid, as in example (10):

- (10) Miguel had been immersing his head under the **stream** of water from the tap. (Cobuild US books)

One component in [B] with no counterpart in the explication for *river* is the speed component (g). The word *stream* is particularly associated with “mountains”, as in the compounds *alpine streams* and *mountain streams*, as in example (9). This association with *mountains* is the result of geography – as a children’s encyclopedia tells us “Rivers begin in the hills as small streams” (McKie, 2003). The fact that *streams* flow down mountainous terrain explains the quickly running nature of their water.

4.3. Creek

Creek is an important landscape term in Australian English. It is a word which fits with the dry nature of the Australian continent and its intermittent supply of water.

- (11) The property also includes...fruit trees and a **permanent creek**. (Collins Wordbanks OzNews)
- (12) In the wet season the region becomes a huge catchment, filling the many usually **dry creeks** that flow from the higher country to the coast. (Collins Wordbanks OzNews)
- (13) A man died after his car ran off the road and into a **creek bed**... (Collins Wordbanks OzNews)

¹⁰ The vast majority of instances of *stream* in corpora do not have geographic meaning, being rather, *streams of blood*, *stream of spectators* and so on. For this reason, I asked native speakers what collocations they found more natural and acceptable, rather than relying on data from a Collins Wordbanks word sketch.

¹¹ In the explication of *stream*, the phrasing “not a big place” is not intended as an inbuilt comparison to the explication of *river*, which uses the phrasing “a big place”. Rather, the size components used throughout the paper can be seen as functioning on a scale. “Not a big place” stands alone rather than as an inverse to “a big place” in the explication of *river*. Clearly, “not a big place” does not mean something as great in size as would be meant by “a big place”. However, nor is the meaning of “not a big place” identical to that of “a small place”. The same applies for other size components, such as “the top [m] of a place of this kind is not very far above the places on all sides of this place” used in explication [F] of *hill*

I propose that a *creek* is a long place which can have (hence, by implication, not always) water in it. *Creeks* can at times be without a lot of water. To say *the creek* “dried up” could be describing a commonplace occurrence (as in example (12)), but to say that a *river* or a *stream* “dried up” would imply an ecological disaster. On the Australian National Dictionary database the adjective *permanent* collocates with *creek*, suggesting that *creeks* may not be permanent by definition (see example (11)). However, *permanent* did not combine with *river*, suggesting that a *permanent river* would be a tautology (Arthur, 2003, pp. 21–22). That said, some presence of water is part of the meaning of *creek*. The term *creekbed*, as in example (13), refers to the dry surface. But the fact that people say *creekbed*, rather than simply *creek*, implies that the presence of some water at times is necessary for calling a place a *creek*. The explication of *creek* [C] and some discussion are below:

- [C] *a creek*
- a place of one kind
 - often there is water [m] in parts of places of this kind
 - sometimes there is water [m] in all parts of places of this kind
 - these places are long [m] places
 - these places have two sides [m]
 - these places are not big places
 - often the water [m] in these places is moving
 - often when someone is somewhere on one side of a place of this kind, this someone can think like this:
“some time before this, this water [m] was in a place near this place here,
some time after this, this water [m] will be in another place near this place here”

Components (b) and (c) convey the varying amount of water in a *creek*. Component (b) says that often there is some presence of water in a *creek*.¹² Component (c) adds the information that sometimes there can be a substantial amount of water there, with water being in all parts of the place. The varying amount of water in a *creek* is attested too in the fact that the four most common verbs of which *creek* is a subject in Collins Wordbanks Online are *overflow*, *spill*, *swell* and *dry*. In the explications of *river* and *stream* only one component for water appears and does not specify that the amount varies at different times. Component (b), phrased “parts of places of this kind”, can account for a *creek* when it has patches of water interspersed with dry areas (see also Arthur, 2003, p. 22).

Component (f) covers the size of a *creek* as being “not big”, as in the case of *stream*. The water in a *creek* is not always moving. There are descriptions of *creeks*, such as *chain of pools* and *chain of ponds* in Australian English (see also Arthur, 2003, p. 22). In components (g) and (h) the water moves often. In the explications of *river* and *stream*, however, the water is described as always moving.

4.4. Karu (Pitjantjatjara/Yankunytjatjara)

I will now turn to discuss is the Pitjantjatjara/Yankunytjatjara *karu*, glossed in English as “creekbed or creek” or “creek-line”. Examples (14)–(20) follow:¹³

- (14) Ka **karungka** uru pulka ukalingangi.
 ka karu-ngka uru pulka ukalinga-ngi.
 CONJ karu-LOC surface water big move.down-PST.IPFV
 ‘There was a lot of water flowing in the karu.’ (Pitjantjatjara/Yankunytjatjara to English dictionary)
- (15) Uru pulka **karungka** ngarinyangka, tjitji tjukutjuku tjuta tjartjarta
 uru pulka karu-ngka ngari-nyangka, tjitji tjukutjuku tjuta tjartjar-ta
 surface water big karu-LOC lie/be-CIRC child small PL shallows-LOC
 kutju tjarpapai munuya ngati wantipai ilunytjaku tawara.
 kutju tjarpa-pai munu-ya ngati wanti-pai ilunytja-ku tawara.
 only swim-CHAR CONJ-3.PL deep refrain-CHAR die-PURP lest
 ‘When there’s a lot of water in a karu, little kids only play in the shallows, and keep away from the deep, or else they could drown.’ (Pitjantjatjara/Yankunytjatjara to English dictionary)

¹² The elements, ‘sometimes’ and ‘often’, used in some explications, are shorthand forms and equivalent to the forms ‘at some times’ and ‘at many times’, listed in the table of primes in Table A.1.

¹³ List of abbreviations of the interlinear glosses: 1: First person, 3: Third person, ALL: Allative, CHAR: Characteristic, CIRC: Circumstantial, CONJ: Conjunction, DEM: Demonstrative, FUT: Future, IPFV: Imperfective, IMP: Imperative, INS: Instrumental, LOC: Locative, PL: Plural, PRS: Present, PST: Past, PURP: Purposive, SER: Serial.

- (16) Apaṛa tjuṭa ngaraḷa wanaḷi karungka.

Apaṛa tjuṭa ngara-la wana-ḷi karu-ngka
 river.red.gum PL be-SER follow-PRS karu-LOC

'River red gums line the karu.' (Pitjantjatjara/Yankunytjatjara to English dictionary)

- (17) Karu kampa kutjupakutula yara.

karu kampa kutjupa-kutu-la ya-ra.
 karu side other-ALL-1.PL go-IMP

'Let's go to the other side of the karu.' (Pitjantjatjara/Yankunytjatjara to English dictionary)

- (18) Tjitji tjuṭa pakingka inkanyi.

Tjitji tjuṭa paki-ngka inka-ny.
 child PL creek.sand-LOC play-PRS

'Children play in the creek sand.' (Field notes)

- (19) Nyakupai ngurilpaila mina wiyaringkunyaṅka mina pitjala ka karungka

Nyaku-pai nguril-pai-la mina wiyaringku-nyangka mina pitja-la ka karu-ngka
 see-CHAR search-CHAR-1PL water finish-CIRC water come-SER CONJ karu-LOC

wiyaringkunyaṅka. Wirkara nyanganyi karu puḷka nyaratj tjinguru mina ngarinyi. Palu
 wiyaringku-nyanka. Wirka-ra nyanga-nyⁱ karu puḷka nyaratja tjinguru mina ngari-nyⁱ. Palu
 finish-CIRC arrive-SER see-PRS karu big DEM maybe water be-PRS CONJ

pitjala nyakupai. Kurupangka wakara ilalpai nyakupai ngarinyi

pitja-la nyaku-pai kurupa-ngka waka-ra ilal-pai nyaku-pai ngari-nyⁱ
 come-SER see-CHAR crowbar-INS stick.into-SER pull. out-CHAR see-CHAR lie/be-PRS

munu tjawalpai tjukitji mina tjukitji. Tjawara utilpai ka mina puḷka pakalpai.

munu tjawal-pai tjukitji mina tjukitji. Tjawa-ra util-pai ka mina
 CONJ dig-CHAR soakage water soakage dig-SER uncover-CHAR CONJ water

puḷka pakal-pai
 big come.up-CHAR

'We would go searching for water when the (surface) water was all finished, (after) it came down and it all finished in the karu. We get there and look around. "That's a big karu, maybe there's water there (below surface)". So we'd go and see. We'd stick in a crowbar (in the sand) and pull it out (to see): "It's there". Then we'd dig a tjukitji [soakage], tjukitji well. We'd dig and uncover it and a lot of water would come up.' (Field recording)

- (20) Munuya karungka warngalykuṛa tjikilpai.

Munu-ya karu-ngka warngalyku-ṛa tjikil-pai.
 CONJ-3.PL karu-LOC draw.water-SER drink-CHAR

'So they dug in the karu for soakage water.' (Pitjantjatjara/Yankunytjatjara to English dictionary)

A *karu* is a place long in shape, with a formed creek bed of sandy ground which, after rain, can contain water (see also Young, 2006, pp. 249–250). In English there is a distinction between words for long places which are depressions in the land, such as *gullies*, and words for long places which have water in them, like *rivers* and *creeks*. This distinction is not made in many Australian languages spoken in dry areas, a fact which has been notably discussed by Mark et al. (2007, p. 8) with reference to the similar Yindjibarndi term *wundu*. The same situation is found in other Central Australian languages such as Anmatjarra and Kaytetye (Harold Koch, personal communication). (For a similar case on another continent see Widlok, 2008, p. 369 on the Khoisan language ≠Akhoe Hai//om). Explication [D] of *karu* reflects the lack of this distinction, and Pitjantjatjara/Yankunytjatjara versions of the semantic molecules used appear in brackets.

- [D] *karu* ('creekbed, creek')
- a. a place of one kind
 - b. sometimes there is water[m] (*kapi/mina*[m]) in places of this kind
 - c. these places are long[m] (*wara*[m]) places
 - d. these places have two sides [m]
 - e. the ground[m] (*manta/paṅa* [m]) in a place of this kind is below the ground[m] on both sides of a place of this kind
 - f. it is not like the ground[m] in other places, it is soft[m] (*tjula*[m])
 - g. when there is water[m] in places of this kind, sometimes this water[m] is moving
 - h. often there is water[m] in some places below the ground[m] in places of this kind

Component (b) speaks of the water that can be found in a *karu*. In examples of *karu* the terms *kapi/mina* 'water' and *uru* 'water flowing or lying on the ground' are used, as in (14), (15) and (19). The explication states that water is only present sometimes because, for most of the time, a typical *karu* is dry. Components (c) and (d) are shape components shared with *river*, *stream* and *creek*. A *karu* can be described as *karu wara* 'long karu' and trees can be said to follow (*wanaṅi*) the *karu* in a line, as in (16).¹⁴ Additionally, one can speak of *karu kantilpa* 'edge of the karu' and *karu kampa* 'side of the karu', as in example (17).

Component (e) concerning the ground in a *karu* differs from the components used in the explications of *river*, *stream* and *creek*. This component reflects the idea that a *karu* is not viewed as being composed of water itself, as with the English terms, but rather is conceptualised as a depression in the ground. When asking Anangu about what a *karu* is like, some who speak some English mention the term, *sand*. Component (f) accounts for the soft, sandy nature of the ground in a *karu*, as distinct from the ground in other places. The ground in a *karu* is called *paki* 'creek sand', as in example (18), and *paki* is described as *tjula* 'soft'. People do things in a dry *karu*, such as camp and play in the sand, as in example (18), and the first school lessons at Ernabella began in the dry *karu* (Gale, 1997, p. 108).

Component (g) speaks of the movement of water in a *karu*. This is seen in example (14), which uses verb *ulkalinganyi* 'flow, run down'. Such a happening is very occasional and only occurs after a lot of rain. Therefore, the description of the movement is qualified as being "sometimes" and "when there is water in places of this kind". Young writes of this situation, "To have the creek in Ernabella flow, rather than merely half-fill with a small static lake when paltry amounts of rain fall, is a matter of local pride." (Young, 2006, p. 249).

A *karu* is not only significant in the traditional desert lifestyle and culture because people can use its surface water. Even when there is not water on the surface of a *karu*, water can be uncovered beneath the ground by digging in a soakage well, *tjukitji* (e.g. Layton, 1986, p. 18), as in example (20).¹⁵ Example (19) describes Anangu obtaining water in the earth after surface water has dried up. The speaker tells of digging in *karu* sand with a crowbar until ground water seeps out. Component (h) expresses the idea of water held in the ground, which can be termed in Pitjantjatjara/Yankunytjatjara in one way, *kapi mantangka* (*kapi/mina* 'water', *manta/paṅa* 'ground', *-ngka*, locative suffix).

A component mentioning ground water is not found in the explication for the Australian English *creek*. The same referent could be called a *creek* by Australian English speakers and a *karu* by Pitjantjatjara/Yankunytjatjara speakers. However, the fact that water is present under the ground in this place it is not culturally salient for Australian English speakers, whereas it is for Pitjantjatjara/Yankunytjatjara speakers. As Myers writes of the neighbouring Western Desert group, the Pintupi:

For hunters and gatherers, the unavailability of water supplies poses the fundamental subsistence challenge. It is important to understand the nature of this resource. Although there are no permanent surface waters in the area, the Pintupi have found it possible to exploit other types of water supply. (...) Water is, then, a geographically specific resource, and Pintupi subsistence technology depends on knowledge of the location of water sources and the conditions under which they are likely to be usable as well as on movement to use them. (Myers, 1991, pp. 26–27)

Pitjantjatjara/Yankunytjatjara speakers, too, have traditionally used a number of other water resources, such as *tjukula* 'rockholes', *tjintjira* 'claypans', *warku* 'rockpools', and *tjukitji* 'soakages', mentioned in the account in example (19) (for explorations of these terms see Bromhead, forthcoming). One prominent feature of Pitjantjatjara/Yankunytjatjara water place concepts is the material make-up of a type of place. These materials are "ground" ("*manta/paṅa*") and "rock" ("*apu/puli*"). For example, *karu* and *tjintjira* are composed of "ground", and *tjukula* consists of "rock". Similar distinctions are made in other Aboriginal languages spoken in dry regions (see, e.g. Lowe and Pike, 1990 on Walmatjarri, pp. 11–19; Myers, 1991, pp. 26–27 on Pintupi). It is interesting to note that the Aboriginal English terms *soakage/tjukatja* and *rockhole/rakurla* are used by both Aboriginal and non-Aboriginal arid zone residents with semantic scope equivalent to the Pitjantjatjara/Yankunytjatjara *tjukitji* and *tjukula*.

¹⁴ *Karu* are easily spotted from afar by the strings of River Red Gum trees which grow along them.

¹⁵ Nowadays Anangu drink water from rainwater tanks and bores, but the collection of water in the desert is well within living memory. Furthermore, as Young notes, "The holes dug in creek beds to extract the river red gum roots are perhaps the nearest contemporary equivalent [to digging soakage wells, H.B.] (...). The process of digging them is similar to that used to maintain soaks, as one digs downwards and water wells up from below." (Young, 2006, pp. 249–250).

5. Elevated places: mountain, hill and apu/puli

I will now turn to examine “elevated” features: the English *mountain* and *hill*, and the Pitjantjatjara/Yankunytjatjara *apu/puli* (‘hills, mountain, rocky outcrop’). Places of these kinds are visually prominent. One finds concepts for “elevated” features across many languages. Swadesh included “mountain” as his 86th item on the 100-word list of Basic Vocabulary Items (Swadesh, 1972, p. 283). As chains, “elevated” places also act as natural barriers (see Bromhead, forthcoming for discussion of *mountain ranges* and similar concepts). Mountains can serve as political borders and separate ethnic and linguistic groups. For example, mountains within the Caucasus divide a large number of languages and people (e.g. Comrie, 2008), and the Andes separates Argentina and Chile. One might have reason to think that mountains are universal (see also Smith and Mark, 2003 for discussion on the existence of “mountains”). John Searle uses the category of mountain as an exemplar of a completely objective physical reality in his argument against social constructivism (Searle, 2009). Yet concepts of “elevated” features do vary across languages and cultures as I will discuss in this section with regard to English and Pitjantjatjara/Yankunytjatjara.

5.1. English mountain and hill

Mountain is illustrated in examples (21)–(26) and is explicated in explication [E]:

- (21) There is a **big mountain** behind it that reflects the colours wonderfully. . . (Collins Wordbanks Times)
- (22) Erwin looked back up at the **mountaintop**. . . (Collins Wordbanks British books)
- (23) The sun in his eyes was slipping down behind the **towering mountains**. (Collins Wordbanks US books)
- (24) . . . we may need to **climb mountains** . . . (Collins Wordbanks British books)
- (25) . . . the wispy band of cloud kissing the distant **mountain peaks** . . . (Collins Wordbanks British books)
- (26) . . . snowboarding down **steep mountain slopes**. (Collins Wordbanks OzNews)

[E] *a mountain*

- a. a place of one kind
- b. places of this kind are very big places
- c. a place of this kind is above the places on all sides of this place
- d. the top[m] of place of this kind is not like all the other parts of these places
- e. when people see a place of this kind,
they can think that the other parts of this place are on all sides of the top [m], below the top [m]
- f. the top[m] of a place of this kind is very far above the places on all sides of this place
- g. because of this, when people are far from this place they can see this place
- h. people can think about places of this kind like this:
“there are not many people in places of this kind”

Component (b) is phrased “places of this kind are very big places”. When a person looks at a *mountain* it takes up a large amount of her frame of vision. A *mountain* is understood to cover a large part of the Earth. Component (c), “this place is above the places on all sides of this place”, covers the most important part of the shape of a mountain. This component is used in the explications of similar features, such as *hill* and *apu/puli*. (Pitjantjatjara/Yankunytjatjara) as seen in this study, as well as in the explications of like terms such as *ridge*, *cliff*, *colina* (Spanish), *butte* (French) (see Bromhead, forthcoming).

The semantic molecule “top” is used in explications of places of these kinds. Its significance in the meaning of *mountain* can be seen in the compound *mountain top* (or *mountaintop*), as in example (22). Component (d) captures the idea that *mountains* have summits which are distinct from the rest of the place. We see evidence for this conceptualisation in expressions such as *mountain summit*, *snow capped mountains* and *mountain peak*, as in example (25).

Component (f) accounts for the height of *mountains*. The adjectives *tall* and *towering*, as in example (23), both appear on the list of frequent adjective modifiers in a Collins Wordbanks word sketch for *mountain*. However, no antonyms such as *short* appear there.

People first enter the explication in component (e). In components (e) and (g), the explication presents a *mountain's* shape and size as being perceived visually by people from outside. Component (g) covers the visual prominence of a *mountain* from afar. One compound found is *mountain view*. In component (e) the sloping shape of a *mountain* is portrayed. Collins Wordbanks word sketch lists *steep mountain*, not *flat mountain*, and *mountain slope*, not *mountain flat* (see example (26)). A slope of varying degrees of steepness is required for a land formation to be called a *mountain* or a *hill*. For example, the Australian landmark Uluru (Ayers Rock), with its long flat top and relatively sheer sides, is described in English as a *rock*, rather than as a *mountain* or a *hill*.¹⁶ In response to the question “What makes Ayers Rock a rock and not a mountain?” posted on Yahoo

¹⁶ Uluru (Ayers Rock) is also described as a *rock* because of its composition – it is made of sandstone and extends under the ground.

Answers, a respondent wrote in part, “They [*mountains*] are a different shape and are a lot higher”.¹⁷ Furthermore, a piece of ethnographic, but non-linguistic, evidence is that sloping sides are an important part of how people draw *mountains* and similar concepts (see e.g. Trend et al., 2000).

Component (h) brings in human activity as an aspect of landscape features, or, in this case, a lack of it. *Mountains* are often rugged, snowy and remote places, on which large human settlements are not usually built. People who spend time on *mountains* and scale them have a special name, *mountaineers*.

5.1.1. Hill

Next I will move down from a *mountain* to discuss the term *hill*. *Hill* appears in examples (27)–(29) and its meaning is explicated in [F].

- (27) Eastborough was a tightly packed community at the foot of a **steep hill** (Collins Wordbanks British Books)
 (28) A cold wind had whipped up over the **rolling brown hills**. (Collins Wordbanks US News)
 (29) I walk my dog on the **hill** every morning. (Collins Wordbanks Canadian News)

[F]

- a. a place of one kind
 b. places of this kind are big places
 c. a place of this kind is above the places on all sides of this place
 d. when people see a place of this kind,
 they can think that the other parts of this place are on all sides of the top [m], below the top [m]
 e. the top[m] of a place of this kind is not very far above the places on all sides of this place

The analysis of the meaning of *hill* found in explication [F] reads as a “scaled down” version of that for *mountain* in explication [E]. In component (b), places of this kind are “big places”, as opposed to being “very big places”. In (e) the “top part” of the place is characterized as “not very far” above other places, unlike a *mountain* for which the comparable component is “very far”. Combinations such as *?tall hill* and *?towering hill* sound a lot less natural to native speakers than to the same adjectives joined with *mountain*, and do not appear in the Collins Wordbanks word sketch for *hill*. Conversely, the collocation *low-lying hill* does appear. The basic shape of a *hill* as sloping and above other places is specified in components (c) and (d), which are the same as those used for *mountain* ((c) and (e)). The most common adjective collocate with *hill* on Collins Wordbanks is *steep*, as in (27). The two components are discussed in the treatment of *mountain*.

No type of “summit” component, comparable to component (d) of the explication of *mountain*, is included in the explication of *hill*. Collocational evidence includes the fact that one finds *undulating hills*, *rounded hills* and *rolling hills* (example (28)) in a Collins Wordbanks wordsketch. However, *rounded*, *undulating* and *rolling* are not among the common collocates of *mountain*.

5.2. *Apu/puli* (*Pitjantjatjara*/*Yankunytjatjara*)

Next, I will turn to look at the *Pitjantjatjara*/*Yankunytjatjara* term, *apu/puli*, a polysemous word, examples of which appear in (30)–(37).

Examples with the meaning *apu/puli*₁

- (30) *apu*: (1) rock, stone:
 Mungartji ngayulu liru atunu **apungka**.
 mungartji ngayulu liru atu-nu apu-ngka.
 yesterday 1.S snake hit.with.a.stone-PST apu-INS
 ‘Yesterday I killed a snake with a stone.’ (*Pitjantjatjara*/*Yankunytjatjara* to English dictionary)

- (31) **Apu** pitjiltjunanyi, pakalpaingka, pitji lipi ngaranytjala.
 apu pitjil-tjuna-nyi, pakal-pai-ngka, pitji lipi ngara-nytjala.
 apu pile.rocks-put-PRS come out-CHAR-LOC hole wide be-CIRC
 You pile up rocks, so it (perentie lizard) can’t get out where the burrow’s wide. (*Pitjantjatjara*/*Yankunytjatjara* to English dictionary)

¹⁷ <http://answers.yahoo.com/question/index?qid=20080113194929AAAbXzU5>, accessed 30.01.09

Examples with the meaning *apu/puli*₂

- (32) *apu*: (3) hills, mountain:
 Kala Mulga Parkala wirkara ngaringu. **Apu** pulka itingka ngaringi.
 ka-la Mulga Park-ala wirka-ra ngari-ngu. apu pulka itingka ngari-ngi.
 CONJ-1.PL Mulga Park-LOC arrive-SER camp-PST apu big near camp- PST.IPFV
 ‘When we arrived at Mulga Park Station we camped. We were camping near the big hill (there).’ (Pitjantjatjara/Yankunytjatjara to English dictionary)
- (33) Wati tjuṭa anu **pulikutu** helicopter-ngka.
 wati tjuṭa a-nu puli-kutu helicopter-ngka.
 man PL go-PST puli-ALL helicopter-LOC
 ‘The men went to the hills in a helicopter.’ (Field notes)
- (34) **Puli** nyara **katu** nyawa. Waḷu ngaranyi ka tjukuḷa ngaranyi
 tjukutjuku.
 puli nyara katu nya-wa. waḷu ngara-nyi ka tjukuḷa ngara-nyi tjukutjuku.
 puli DEM top see-IMP rockface be-PRS CONJ rockhole be-PRS small
 ‘Look up at the top of the hill. There’s a rockface and there’s a rockhole, a small (one).
 (Pitjantjatjara/Yankunytjatjara to English dictionary)
- (35) Munula palulanguru ruta wiya anu tali pulkangka – tali paluru pulka mulapa,
 Munu-la palulanguru ruta wiya a-nu tali pulka-ngka – tali paluru pulka
 CONJ-1.PL from.there road no go-PST sandhill big-LOC sandhill 3.S big
 panya **puli** purunypa.
 mulapa, panya puli purunypa.
 really DEM puli like
 ‘From there on we went cross-country, through the sandhills – the sandhills are really big, like hills.’
 (Pitjantjatjara/Yankunytjatjara to English dictionary)
- (36) **Puli** panya nyara taan nyinanyi, palula ngura ngaranyi.
 puli panya nyara taan nyina-nyi, palula ngura ngara-nyi.
 puli DEM DEM hump be-PRS there place be-PRS
 ‘In the hills, where that hump is, that’s where the place is.’ (Pitjantjatjara/Yankunytjatjara to English dictionary)
- (37) **Puli** nyangatja lalpa. Mapalku ma-tatira ma-ukalingku-ku.
 puli nyangatja lalpa. mapalku ma-tati-ra ma-ukalingku-ku
 puli DEM flat ‘in no time’ towards-climb-SER towards-go.down-FUT
 ‘This is a hill that’s easily climbed. You can climb up and down (the other side) in no time.’ (Pitjantjatjara/Yankunytjatjara to English dictionary)

Apu or *puli* can mean ‘rock’, as in example (30), translated as “killed a snake with a stone”. This meaning will be called *apu/puli*₁. In my discussion of landscape terms, I will examine the geographic meaning of *apu/puli* (*apu/puli*₂), which is glossed as ‘hills, mountain’ or ‘rocky outcrops’. But firstly, I will consider the polysemy. The NSM test for polysemy applied here follows the traditional ‘definitional’ approach (Geeraerts, 1994). To begin, one assumes there is a single meaning and tries to form a single paraphrase which predicts the correct range of use (Goddard, 2000, pp. 132–133). In the case of *apu/puli* a paraphrase such as “something very hard (or *witu-witu* in Pitjantjatjara)” would be too broad for its range of use. In examining the use of the word *apu/puli*, the two meanings emerge sharply. Some examples show the *apu/puli*₁ meaning – *apu/puli*₁ is something one can do things with, such as kill a snake, as in example (30), or pile up, as in example (31). Explication [G] is proposed for the meaning of *apu/puli*₁.

- [G] *apu/puli*₁
- something of one kind
 - things of this kind are very hard [m]
 - people can do things of many kinds with things of this kind (e.g. kill snakes, pile up)

Other examples show *apu/puli*₂ as a place where one can do things, such as camp near ('ngarinyi'), as in (32), climb ('tatin-i'), as in (37), and go to ('ananyi'), as in (33). Another illustration of the specific "place" meaning of *apu/puli*₂ is the contrast between *apu/puli*₂ and terms for places of other kinds, such as *taan(pa)* 'rise, hump, outcrop', as in example (36), and *tali* 'sandhill', as in example (35).

An explication for *apu/puli*₂ appears in [H] and is discussed below.

- [H] *apu/puli*₂
- a place of one kind
 - places of this kind are big places
 - a place of this kind is above the places on all sides of this place
 - the top[m] of a place of this kind is far above the places on all sides of this place
 - when people see a place of this kind they can think like this:

"there is a lot of rock[m] (*apu/puli*₁[m]) in this place"

Component (b) gives the idea that to be an *apu/puli*₂, a formation must be of a reasonable size. Example (35) shows how *apu/puli* are thought of as big, when *tali* ('sandhills') are likened to *apu/puli* because of their large size. Component (c) is the component used in the explications of both *hill* and *mountain* to convey the basic shape of the formations.

In component (d) the top of an *apu/puli*₂ is described as being "far above the places on all sides of this place". Evidence for component (d) can be found in the use of *apu/puli* with the spatial adverb *katu*, which can mean 'above, on top of' and 'high, high in', as in example (34). One can also use the verb *tatini* 'climb, get up on' with *apu/puli* as in example (37).

There is no 'steepness' component in the explication of *apu/puli*, as there is in the explications of *hill* and *mountain*. This is because the term covers places with a wide range of gradients. A level of steepness is not part of the criteria for calling a place an *apu/puli*. For example, Uluru (Ayers Rock) is an *apu/puli* but it would not be classified as a *mountain* in English, as previously discussed.

Component (e) covers the material from which *apu/puli* must be made – rock. In this component *apu/puli*₁ ('rock') is used as a semantic molecule. It is the material of an *apu/puli*, not simply its elevation, which distinguishes it from the land around it.

Unlike in English, there is no size-differentiation in the terms for elevated features (for similar cases see e.g. Levinson, 2008, p. 261; O'Connor and Kroefges, 2008, p. 298). Places ranging in size from a modest rock outcrop, a rocky formation protruding above the ground, to South Australia's highest peak, Mt Woodroffe, are called *apu/puli*. In some languages "elevated" landscape concepts for which size is not a primary defining factor have a specific shape definition (such as conical, in the case of the Yéî Dnye *mbu*, Levinson, 2008). However, in Pitjantjatjara/Yankunytjatjara the material make-up of the feature is crucial to the meaning of the term, rather than a particular shape (beyond elevation) (for a similar case in Seri, see O'Meara and Bohmeyer, 2008, pp. 224–225).

Other Pitjantjatjara/Yankunytjatjara terms for elevated places include *apu/puli murpu* 'mountain range', *warara* 'cliff' and *tali* 'sandhill' (for discussion of these terms see Bromhead, forthcoming). As is the case with water sources, the material from which a feature is composed is important in the conceptualisation of "elevated" features. The term *tali* resembles *apu/puli* in that it is polysemous between a geographic meaning 'sandhill' and a substance meaning of 'sand'. *Apu/puli* has other meanings apart from *apu/puli*₁ and *apu/puli*₂, which are not discussed in detail in this article. *Apu/puli* also has the senses, roughly, of 'mountainous area', 'tool made from stone' and 'coins'. Similar 'rock' polysemies operate in many other Australian Aboriginal languages. One example is Warlpiri which has the term *pirli*, whose meanings are proposed as 'rock', 'mountain' and 'money' (Nash, 1983–1984).

6. Concluding remarks

In agreement with some previous studies (e.g. Burenhult, 2008; Mark et al., 2007), I have argued in this paper that categories derived from English-language classifications like *mountains* and *hills* are not universal but rather are culture- and language-specific. At the same time I have sought to go further than these previous studies by demonstrating how the semantic differences between two languages (English and Pitjantjatjara/Yankunytjatjara) can be captured and stated in precise detail using semantic explications composed according to the NSM (Natural Semantic Metalanguage) approach (e.g. Goddard, 2008; Goddard and Wierzbicka, 2002; Peeters, 2006). The NSM method of semantic explanation derives its effectiveness from its reliance on simple terms, in contrast to more technical, opaque and language-specific ones, and the detailed explications provide a means of teasing out the differences in meaning between individual landscape terms, both within and

across languages. This capacity to provide nuanced analyses of individual terms adds a dimension to the cross-cultural study of language which has frequently had a different focus. Mark and collaborators, for example, have been interested in overarching categorisation of parts of the natural landscape, and the contributors to Burenhult (2008) have concentrated on category systems. The present study also contributes to the wider ongoing NSM research program, a program which has the scope to deal with the lexical and grammatical semantics of language at large. It opens up another realm of vocabulary, that of landscape, which can be illuminated by means of the NSM methodology.

In my semantic exploration I have uncovered, along with differences, certain shared elements in the conceptualizations of landscape categories. Size, shape and material make-up are important in the meanings of geographic concepts. There are clear categories which cross cultures, such as longitudinal features (“long places”), water sources (“there is water in these places”), and elevated places “a place of this kind is above the places on all sides of this place”). However, the relative priority given to these common factors evidently varies across languages. English employs some size distinctions in its landscape terms (cf. *mountain* vs. *hill*, *river* vs. *stream*), whereas in Pitjantjatjara/Yankunytjatjara neither “elevated” place terms nor elongated hydrological feature terms come in different sizes, so to speak. On the other hand, as in a number of other languages (e.g. Seri, cf. O’Meara and Bohmeyer, 2008), material composition is a leitmotif of landscape categorisation in Pitjantjatjara/Yankunytjatjara; notably, the substances “water” (“kapi/mina”), “ground” (“manta/paṅa”), “rock” (“apu/puli”) and “sand” (“tali”). For example, we have seen the distinction made between water features located in “ground” versus those located in “rock” (see e.g. Lowe and Pike, 1990, pp. 11–19 on Walmatjarri; Myers, 1991, pp. 26–27 on Pintupi).

English and Pitjantjatjara/Yankunytjatjara treat water in notably different ways. Like many languages from places with wetter climates, English makes a sharp distinction between water and land; for example, in the differentiation between a *river* and a *gully* (see also, Mark et al., 2007). In languages spoken in arid areas, such as Pitjantjatjara/Yankunytjatjara, landscape features are conceptualised as being composed of both water and a “dry substance”, such as “ground” or “rock”.

Culture and human affordance also play roles in the meanings of landscape terms, as seen in the importance of ground water to the Pitjantjatjara/Yankunytjatjara concept of a *karu*. Understanding the cultural factors in the meanings of individual lexical items, such as *river* and *karu*, makes it possible to see the relationships between lexical semantics and categorisation, on the one hand, and wider cultural models of land use, on the other; for instance the traditional water-gathering practices of Anangu (see, e.g., Strauss and Quinn, 1997; Maffi, 2001). Furthermore, as previously mentioned, Anangu class different types of areas of country as distinct locales and ecological zones, such as spinifex plains (*pila*) and scrub country (*puti*). These zones all have habitat-specific materials and food sources which people hunt and gather. The fact that these zones are resources for Anangu is part of the meanings of the terms (see Bromhead, forthcoming).

This study has also proposed that the meanings of landscape concepts, like those of other concepts based in the concrete world, are anchored in a human-centred perspective. Landscape concepts are based on human vision and human experience in space. The fact that there are both common elements, such as the salience of longitudinal features (“long places”), and culture-specific factors, suggests that landscape categorisation is based in both intellectual and utilitarian concerns (Enfield, 2008; Malt, 1995).

Above all, I hope to have shown in this study that the NSM method of semantic analysis provides a new and dynamic technique to bring to the emerging study of landscape terms and ethnogeographical categories.

Appendix A

See Table A.1

Table A.1

A table of universal semantic primes – English version.

I, YOU, SOMEONE, SOMETHING/THING, PEOPLE, BODY	Substantives
KIND, PART	Relational substantives
THIS, THE SAME, OTHER/ELSE	Determiners
ONE, TWO, SOME, ALL, MUCH/MANY	Quantifiers
GOOD, BAD	Evaluators
BIG, SMALL	Descriptors
KNOW, THINK, WANT, FEEL, SEE, HEAR	Mental predicates
SAY, WORDS, TRUE	Speech
DO, HAPPEN, MOVE, TOUCH	Actions, events, movement, contact
BE (SOMEWHERE), THERE IS	Location, existence,
HAVE, BE (SOMEONE/SOMETHING)	Possession, specification
LIVE, DIE	Life and death
WHEN/TIME, NOW, BEFORE, AFTER, A LONG TIME, A SHORT TIME, FOR SOME TIME, MOMENT	Time
WHERE/PLACE, HERE, ABOVE, BELOW, FAR, NEAR, SIDE, INSIDE	Space
NOT, MAYBE, CAN, BECAUSE, IF	Logical concepts
VERY, MORE	Intensifier, augmentor
LIKE/WAY	Similarity

Notes: Primes exist as the meanings of lexical units (not at the level of lexemes). Exponents of primes may be words, bound morphemes, or phrasemes. They can be formally complex. They can have different morphosyntactic properties, including word-class, in different languages. They can have combinatorial variants (allollexes). Each prime has well-specified syntactic (combinatorial) properties. Two (or more) primes can share the same lexical exponent, with different syntactic properties.

References

- Apresjan, J.D., 1992. *Lexical Semantics*. Karoma, Ann Arbor, MI.
- Apresjan, J.D., 2000. *Systematic Lexicography*. Oxford University Press, Oxford.
- Arthur, J.M., 2003. *The Default Country: A Lexical Cartography of Twentieth-century Australia*. University of New South Wales Press, Sydney.
- Baudoin de Courtenay, J., 1929. Einfluss der Sprache auf Weltanschauung und Stimmung. *Prace Filologiczne* 14, 184–225.
- Berlin, B., 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton University Press, Princeton.
- Berlin, B., Kay, P., 1969. *Basic Color Terms: Their Universality and Evolution*. University of California Press, Berkeley.
- Boas, F., 1964. On geographical names of the Kwakiutl. In: Hymes, D. (Ed.), *Language in Culture and Society: A Reader in Linguistics and Anthropology*. Harper & Row, New York, pp. 171–181.
- Bonyhady, T., Griffiths, T. (Eds.), 2002. *Words for Country: Landscape and Language in Australia*. University of New South Wales Press, Sydney.
- Bromhead, H.E., 2009. *The Reign of Truth and Faith: Epistemic Expressions in 16th and 17th century English*. Mouton de Gruyter, Berlin, New York.
- Bromhead, H.E., forthcoming. *Mountains, Rivers and Billabongs: Ethnogeographical Categories in Cross-linguistic Perspective*. PhD thesis, Australian National University, Canberra.
- Brumby, A., Ken, S., Wilson, G., Zellmer, M., 2008. *Kalaya's Shoes = Kalayaku Puuta*. Anangu Education Services, Northgate, SA.
- Burenhult, N. (Ed.), 2008. Special Issue on "language and landscape: a cross-linguistic perspective". *Language Sciences* 30 (2–3).
- Burenhult, N., Levinson, S.C., 2008. Language and landscape: a cross-linguistic perspective. *Language Sciences* 30 (2–3), 135–150.
- Cablitz, G.H., 2008. When "what" is "where": a linguistic analysis of landscape terms, place names and body part terms in Marquesan (Oceanic, French Polynesia). *Language Sciences* 30, 200–226.
- Carter, P., 1987. *The Road to Botany Bay: An Essay in Spatial History*. Faber and Faber, London, Boston.
- Collins Wordbanks Online. HarperCollins Publishers Ltd.
- Comrie, B., 2008. Linguistic diversity in the Caucasus. *Annual Review of Anthropology* 37, 131–143.
- de Schryver, Gilles-Maurice, 2009. *An analysis of practical lexicography. A reader* (ed. Fontenelle 2008). *Lexikos* 19, 458–489.
- Dixon, R.M.W., 1980. *The Languages of Australia*. Cambridge University Press, Cambridge.
- Eckert, P., Hudson, J., 1988. *Wangka Wiru : A Handbook for the Pitjantjatjara Language Learner*. South Australian College of Advanced Education, Underdale, SA.
- Eckert, P., Pitjantjatjara/Yankunytjatjara Speakers, 2007. *Pitjantjatjara/Yankunytjatjara Picture Dictionary*. IAD Press, Alice Springs.
- J.J. Egli, *Nomina Geographica*, second ed., Zurich, 1893.
- Enfield, N.J., 2008. Linguistic categories and their utilities: the case of Lao landscape terms. *Language Sciences* 30 (2–3), 227–255.
- Fillmore, C., 1982. Frame semantics. In: *The Linguistic Society of Korea (Eds.), Linguistics in the Morning Calm: Selected Papers from SICOL-1981*. Hanshin Publishing Company, Seoul, pp. 111–137.
- Firth, J.R., 1957. *Papers in Linguistics 1934–1951*. Oxford University Press, London.
- Gale, M., 1997. *Dhaṅm Djorra'wuy Dhāwu: A History of Writing in Aboriginal Languages*. Aboriginal Research Institute, University of South Australia, Underdale, South Australia.
- Geeraerts, D., 1994. Polysemy. In: Asher, R.E., Simpson, J.M.L. (Eds.), *The Encyclopedia of Language and Linguistics*. Pergamon, Oxford, pp. 3227–3228.
- Goddard, C., 1986. *Yankunytjatjara Grammar*. Institute for Aboriginal Development, Alice Springs.
- Goddard, C., 1993. *A Learner's Guide to Pitjantjatjara/Yankunytjatjara*. Institute for Aboriginal Development, Alice Springs.
- Goddard, C., 1998. *Semantic Analysis. A Practical Introduction*, revised 2nd ed. Oxford University Press, Oxford.
- Goddard, C., 2000. Polysemy: a problem of definition. In: Ravin, Y., Leacock, C. (Eds.), *Polysemy and Ambiguity: Theoretical and Applied Approaches*. Oxford University Press, Oxford, pp. 129–151.
- Goddard, C. (Ed.), 2006. *Ethnopragmatics: Understanding Discourse in Cultural Context*. Mouton de Gruyter, Berlin.
- Goddard, C., 2007. Semantic molecules. In: Mushin, I., Laughren, M. (Eds.), *Selected Papers of the 2006 Annual Meeting of the Australian Linguistic Society*.
- Goddard, Cliff, 2008. Towards a systematic table of semantic elements. In: Goddard, Cliff (Ed.), *Cross-Linguistic Semantics*. John Benjamins, Amsterdam, pp. 9–81.
- Goddard, C. (Ed.), 2008. *Cross-Linguistic Semantics*. John Benjamins, Amsterdam.
- Goddard, C., in press-a. Semantic primes, semantic molecules, semantic templates: key concepts in the NSM approach to lexical typology. *Linguistics* (special issue on "Lexical Typology", edited by Maria Koptjevskaya-Tamm).
- Goddard, Cliff, in press-b. The Natural Semantic Metalanguage approach to linguistic analysis. In: Heine, B., Narrog, H. (Eds.), *The Oxford Handbook of Linguistic Analysis*. Oxford University Press, New York.
- Goddard, C., Wierzbicka, A. (Eds.), 2002. *Meaning and Universal Grammar: Theory and Empirical Findings*, vol. 2. John Benjamins, Amsterdam.
- Hercus, L., 2010. Murkarra, a landscape nearly forgotten: the Arabana country of the noxious insects, north and north-west of Lake Eyre. In: Koch, H., Hercus, L. (Eds.), *Aboriginal Place names: Naming and Re-naming the Australian Landscape*. ANU E Press and Aboriginal History Inc., Canberra, pp. 257–272.
- Hercus, L., Simpson, J., 2002. Indigenous placenames: an introduction. In: Hercus, L., Hodges, F., Simpson, J. (Eds.), *The Land Is a Map: Placenames of Indigenous Origin in Australia*. Pandanus Books, Canberra, pp. 1–23.
- Herendeen, W.H., 1986. *From Landscape to Literature: The River and the Myth of Geography*. Duquesne University Press, Pittsburgh.
- Hirsch, E., O'Hanlon, M. (Eds.), 1995. *The Anthropology of Landscape: Perspectives on Place and Space*. Clarendon Press, Oxford.
- Hunn, E., 1982. The utilitarian factor in folk biological classification. *American Anthropologist* 89, 146–149.
- Kachru, B., 1985. Standard, codification and sociolinguistic realism: the English language in the outer circle. In: *English in the World: Teaching and Learning the Language and Literatures*. Cambridge University Press, Cambridge, pp. 11–30.
- Keen, I., 2004. *Aboriginal Economy and Society: Australia at the Threshold of Colonisation*. Oxford University Press, Melbourne.
- Layton, R.H., 1986. *Uluru: An Aboriginal History of Ayers Rock*. Australian Institute of Aboriginal Studies, Canberra.
- Layton, R.H., 1995. Relating to the Country in the Western Desert. In: Hirsch, E., O'Hanlon, M. (Eds.), *The Anthropology of Landscape: Perspectives on Place and Space*. Clarendon Press, Oxford, pp. 210–231.
- Layton, R.H., 1999. The Alawa totemic landscape: ecology, religion and politics. In: Ucko, P.J., Layton, R.H. (Eds.), *The Archaeology and Anthropology of Landscape: Shaping your landscape*. Routledge, London, pp. 219–239.
- Levinson, S.C., 2008. Landscape, seascape and the ontology of places on Rossel Island, Papua New Guinea. *Language Sciences* 30 (2–3), 256–290.
- Lowe, P., Pike, J., 1990. *Jilji. Life in the Great Sandy Desert*. Magabala Books, Broome, Western Australia.
- Lyons, J., 1977. *Semantics*. Cambridge University Press, Cambridge.
- Maffi, L. (Ed.), 2001. *On Biocultural Diversity: Linking Language, Knowledge, and the Environment*. Smithsonian Institution Press, Washington, DC.
- Majid, A., Enfield, N.J., van Staden, M. (Eds.), 2006. Parts of the body: cross-linguistic categorisation. *Language Sciences* 28 (2–3), 137–360. Special Issue.
- Malt, B.C., 1995. Category coherence in cross-cultural perspective. *Cognitive Psychology* 29, 85–148.
- Mark, D.M., 1993. Toward a theoretical framework for geographic entity types. In: Frank, A.U., Campari, I. (Eds.), *Spatial Information Theory: A Theoretical Basis for GIS, LNCS*, vol. 716. Springer-Verlag, Berlin, pp. 270–283.
- Mark, D.M., 2007. *Geospatial Categories*. In: Paper Presented at the Summer Institute on Geographic Information Science. The Vespucci Initiative for the Advancement of Geographic Information Science.
- Mark, D.M., Turk, A.G., 2003a. Landscape categories in Yindjibarndi: ontology, environment, and language. In: Kuhn, W., Worboys, M., Timpf, S. (Eds.), *Spatial Information Theory: Foundations of Geographic Information Science, LNCS*, vol. 2825. Springer-Verlag, Berlin, pp. 28–45.
- Mark, D.M., Turk, A.G., 2003b. *Ethnophysiology*. In: Paper Presented at Workshop on Spatial and Geographic Ontologies (prior to COSIT03).

- Mark, D.M., Turk, A.G., Stea, D., 2007. Progress on Yindjibarndi Ethnophysiography. In: Winter, S. et al. (Eds.), *COSIT 2007, LNCS*, vol. 4736. Springer-Verlag, Berlin, pp. 1–19.
- McKie, A., 2003. *The Great Big Book of Knowledge*. Granddreams Books, Bath, UK.
- Medin, D.L., Atran, S. (Eds.), 1999. *Folkbiology*. MIT Press, Cambridge, MA.
- Moore, B., 2008. *Speaking Our Language: The Story of Australian English*. Oxford University Press, South Melbourne, Vic.
- Myers, F.R., 1991. *Pintupi Country, Pintupi Self: Sentiment, Place, and Politics Among Western Desert Aborigines*. University of California Press, Berkeley and Los Angeles.
- Nash, D., 1983–1984. *Warlpiri Topography Classification*. Warlpiri Literature Production Centre.
- Nganampa Health Council, 1991. *Anangu Way*. H.A.L.T., Nganampa Health Council.
- O'Connor, L., Kroefges, P.C., 2008. The land remembers: landscape terms and place names in Lowland Chontal of Oaxaca, Mexico. *Language Sciences* 30 (2–3), 291–315.
- O'Meara, C., Bohnermeyer, J., 2008. Complex landscape terms in Seri. *Language Sciences* 30 (2–3), 316–339.
- Peeters, B. (Ed.), 2006. *Semantic Primes and Universal Grammar: Empirical Evidence from the Romance Languages*. John Benjamins, Amsterdam.
- Pitjantjatjara/Yankunytjatjara to English Dictionary, 1996. Compiled by Goddard, C., 2nd ed. IAD Press, Alice Springs.
- Schneider, D.M., 1984. *A Critique of the Study of Kinship*. The University of Michigan Press, Ann Arbor.
- Searle, J.R., 2009. 'Why should you believe it?' review of 'fear of knowledge against relativism and constructivism' by Paul Boghossian. *New York Review of Books* 56 (14).
- Smith, B., Mark, D.M., 2001. Geographical categories: an ontological investigation. *International Journal of Geographical Information Science* 15 (7), 591–612.
- Smith, B., Mark, D.M., 2003. Do mountains exist? Towards an ontology of landforms. *Environment & Planning B: Planning & Design* 30 (3), 411–427.
- Stock, K., 2008. *Ontology–schmology*. In: search of informal semantics. In: Position Paper Presented at the Workshop on Geographic Ontologies Grounding and Vagueness, Ilkley, UK, pp. 17–18.
- Strauss, C., Quinn, N., 1997. *A Cognitive Model of Cultural Meaning*. Cambridge University Press, Cambridge.
- Swadesh, M., 1972. In: Sherzer (Ed.), *The Origin and Diversification of Language*. Routledge and Kegan Paul, London.
- Trend, R., Everett, L., Dove, J., 2000. Interpreting primary children's representations of mountains and mountainous landscapes and environments. *Research in Science & Technological Education* 18 (1), 85–112.
- Vico, G., 1968[1744]. *The New Science of Giambattista Vico*. Cornell University Press, Ithaca, NY.
- Wallace, A.F.C., Atkins, J., 1969. The meaning of kinship terms. In: Tyler, S. (Ed.), *Cognitive Anthropology*. Holt, Rinehart and Winston, New York, pp. 345–369.
- Widlok, T., 2008. Landscape unbounded: space, place, and orientation in ≠Akhoe Hai//om and beyond. *Language Sciences* 30 (2–3), 362–380.
- Wierzbicka, A., 1985. *Lexicography and Conceptual Analysis*. Karoma, Ann Arbor.
- Wierzbicka, A., 1989. Baudouin de Courtenay and the theory of linguistic relativity. In: Rieger, J., Szymczak, M., Urbanczyk, S. (Eds.), *Jan Niecislaw Baudouin de Courtenay a lingwistyka.swiatowa*. Wroclaw, Ossolineum, pp. 51–57.
- Wierzbicka, A., 1991. Semantic complexity: conceptual primitives and the principle of substitutability. *Theoretical Linguistics* 17, 75–97.
- Wierzbicka, A., 1999. *Emotions Across Languages and Cultures: Diversity and Universals*. Cambridge University Press, Cambridge.
- Wierzbicka, A., 2001. *What did Jesus Mean?: Explaining the Sermon on the Mount and the Parables in Simple and Universal Human Concepts*. Oxford University Press, New York.
- Wierzbicka, A., 2007. Shape and colour in language and thought. In: Shalley, A., Khlentzos, D. (Eds.), *Language and cognitive structure, Mental States*, vol. 2. John Benjamins, Amsterdam/Philadelphia, pp. 38–60.
- Wierzbicka, A., 2008. Why there are no 'colour universals' in language and thought. *Journal of the Royal Anthropological Institute* 14 (2), 407–425.
- Wierzbicka, A., 2010. *Experience, Evidence and Sense: The hidden Cultural Legacy of English*. Oxford University Press, New York.
- Wong, J., Goddard, C., Wierzbicka, A., forthcoming. Walk, run, jump: the semantics of human locomotion.
- Young, D., 2005. The smell of green-ness: cultural synaesthesia in the Western Desert. *Etnofoor*. XVIII, 61–77 (Special issue on 'Senses' (Eds.) R. Bendix and D. Brenneis).
- Young, D., 2006. Water as country on the Pitjantjatjara Yankunytjatjara Lands South Australia. *Worldviews* 10 (2), 239–258.