Journeys in the Mind:
Cultural Aspects in Indigenous Mapping

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ABSTRACT

The aim of this paper is to identify the transference of cultural land relationships held by indigenous communities into spatial information systems. Indigenous communities possess spiritual, societal, stewardship and sometimes intangible relationships with land, and have successfully retained spatial aspects of these elements in their cultural mapping systems. Indigenous maps encode landscape relationships into cognitive, visual, verbal and movement communication types. This paper examines the combination of traditional indigenous knowledge with mnemonic and didactic communication systems to enhance spatial transference. The complexities of indigenous mapping programs are often under valued by westerners due to cultural misinterpretations and apparent lack of mathematical precision. This paper attempts to redress those misinterpretations by discussing elements of cultural mapping systems in global indigenous communities. The paper concludes that indigenous mapping programs extend the possibilities of western mapping by accommodating variable communication media and discovers that the perceived void between the two systems may be less than imagined.

Keywords and phrases: cultural mapping, traditional indigenous knowledge (TIK), indigenous communities, spatial information systems

1. INTRODUCTION

This paper addresses challenges confronting indigenous communities as they attempt to diffuse spatial information technology, developed through western ideals of cadastre and cartography, without diminishing cultural integrity. This paper addresses these challenges by examining elements of indigenous mapping programs and the types of cultural information they may accommodate. In doing so, this author regrettably generalizes about indigenous communities, repressing their multiplicities (Dovey 1999). While recognizing the diversity of global indigenous communities, the author has found they share similar philosophies on land stewardship, community responsibility and common property (Snyder 1990; Smyth 1998; Rennie 1999). Globally they face diminished recognition of their communities, land stewardship and

mapping systems and their mechanisms for dealing with such issues enable indigenous communities to share similarities in their approaches to bridging the culture-mapping divide as they address aspects of spatial information technology diffusion. Where indigenous perspectives are offered they are from referenced sources, this author neither claims to, nor aspires to, speak on behalf of indigenous peoples.

2. Land Relationships

Western society values and supports the rights of individuals to have a family, be educated, participate in business, support their country, earn money and own land: all self-perpetuating processes. The expansion of finance sectors to provide mortgages for land led to the development of active land markets in western society (Williamson 1994) and the requirement to accurately define land boundaries led to the development of spatial information systems (Dale & McLaughlin 1988; Monmonier 1996). Although land markets are catalysts for the development of spatial information technology, it was the values of western society that defined its cartography - when westerners map land it is with mathematical accuracy but with conceptual ambivalence. Maps are seen as 'metaphors for spatial reality' (Cartwright 1995) with generalized information converted into numbers and standard colours classified by their relative importance (Robinson et al. 1984). Monmonier (1996, p.5) identifies the three principal elements of maps as scale, projection and symbolization defining 'the essence of the map's possibilities and limitations'. Without an understanding of these elements, it is impossible to use or make maps effectively, he asserts.

Unlike western communities, where land is simply seen as a commodity, land is inseparable from the cultures of many indigenous communities (Barlow 1992; Baer 1994; Ezigbalike and Benwell 1994). Rarely even defined as a single entity, combined descriptions of land such as *vanua - the land and the people* in Fiji (Volavola 1995) or *leveki - trustees of the land* in Niue (Richmond-Rex 1995) are more common. Land stewardship involves language, law, kinship, mythological relationships and community rights and responsibilities (Baer 1994; Smyth 1998; Rennie 1999). It is respected through hunting, planting crops or vegetation, sharing resources or travelling over it and used resources must be replaced (Bjion 1995; Lakau 1995). Land is held in trust for future generations and as Bijon (1995, p.38) notes, a customary owner is foremost a custodian 'who is responsible for ensuring

that the land, from which man comes and to which he will return, is respected'. Responsibilities for land are based on kinship groups such as *magafaoa - extended family* in Nuie (Richmond-Rex 1995) or *kainga – a family sharing communal tenure rights* in Kiribati (Atanraoi 1995). Within indigenous societies, land defines cultures through relationships to community and thus defines its cartography. As Geisler (2000, p.52) notes 'culture marks corners and edges of place… it yields maps… and bestows place names… it defines tenure and… ownership types… and it decides the aesthetics and ethics of the land'.

3. Traditional Indigenous Knowledge (TIK)

Indigenous knowledge is not merely constrained to ecological aspects of knowledge as is inferred by the term Traditional Ecological Knowledge (TEK) (Tabor & Hutchinson 1994; Gonzalez 1995). Indigenous knowledge is diverse and the term Traditional Indigenous Knowledge (TIK) appreciates that diversity. Traditional indigenous knowledge holds many spatial attributes including information on land use patterns; significant sites; locations of food, shelter and water; resource use; historical and oral information; place names and names for natural resources or visual materials (Dodds 1994; Marozas & Goes In Center 1997). TIK may have tangible or intangible attributes as it defines spatially related experiences of previous generations including dreams or stories, oral histories or images of deceased community members.

Despite its compatibility with local environments, TIK was frequently ignored by colonial settlers, often to their detriment (Mathews 1994). Inappropriate clearing of vegetation, incorrect management of land and insufficient understanding of fauna have resulted in situations where biodiversity is under threat (Birckhead & Smith 1992; Crowley & Garnett 2000). In Australia while fire was used as a vegetation management tool by indigenous Australians, it was ignored by westerners in favour of European ideas of *conservation*, although this decision has now been reversed (Crowley & Garnett 2000). Indigenous knowledge, say Kemp and Brooke (1995, p.27) is 'vital, dynamic and evolving' and to merely collect and record aspects of it is 'counter-productive'. Both Payne and Benwell (1991) and Carter et al. (1998) agree while it is important to improve relationships between indigenous and non-indigenous societies by sharing knowledge, most indigenous communities are understandably less than forthcoming. 'Many Inuit remain resentful about what [has] happened to their heritage, to their traditional knowledge, and therefore to their intellectual and

cultural property' reveal Kemp and Brooke (1995, p.26).

4. Indigenous Mapping

Indigenous knowledge is reinforced through visual and oral media such as paintings, songs, carving, dances, stone cairns, stories, totem poles and even facial tattoos. The expression, transmission and preservation of TIK through these media types are in themselves forms of cultural mapping, preserving spatial relationships (Stanton 1989; Winmill & Morton 1992; Harmsworth 1997). These cultural expressions may not be interpreted by westerners as maps, but rather nice paintings, stories or unfamiliar songs since they have no scale, north point, datum, projection or legend and they use generalization to great effect. Yet these indigenous maps have been so successful that their descendants are still able to use the information to navigate vast distances across their country thousands of years later (Stanton 1989; Balodis 1995; Smyth 1998). Despite a reluctance by westerners to recognize many indigenous maps, indigenous mapping has been a long standing success (Aberley 1993). Devoid of text, early western anthropologists defined these maps as primitive, 'western society tends to be entirely preoccupied with the relatively narrow history and opinions of European culture...[and European]…mapping' Aberley (1993, p.8) explains. The ability of many indigenous societies to communicate spatial and cultural attributes without written languages only emphasizes their significance (Chatwin 1989; Balodis 1995; Dorais 1997). Balodis contends (1995, p.2052) 'human orientation and mapmaking ability…[are]…a function of accumulated spatial knowledge' supporting Turnbull's (1989) assertion that mapping is both a metaphor of knowledge and an expression of culture.

Information important to the definition of an area of land, or of a custodial responsibility of over it, is frequently memorized mnemonically, which is often described as cognitive mapping (Downs & Stea 1977). These cognitive maps, although more visual by description, may be reproduced in visual or oral form (Chatwin 1989; Caruana 1993; Smyth 1998). Visual representations of landscape, frequently expressed as art, encode relationships held by indigenous peoples, their traditional areas and their spiritual beliefs. Caruana (1993, p.59) comments often these expressions act 'as a conceptualised map of the clan's land'. Michaels (1994, p.55) reveals traditional indigenous paintings depict religious iconography or 'geographical sites for which the painters have some special responsibility'. He points out by participating in painting events, indigenous artists reinforce their custodial

stewardship to land. 'The purely spatial dimension of knowledge [is] made even more complex by the need to perceive how the element of time affect[s] each phenomena', claims Aberley (1993, p.13). Michaels continues 'all traditionally based [indigenous] paintings are…part of a series - in the simplest sense, as pages of an atlas, maps that describe as a whole, the…landscape' (Michaels 1994, pp.58-59).

5. Cultural Information

Cultural information applies traditional indigenous knowledge to mapping and other information systems. It may include community rituals, oral histories, memories, attitudes, values, tourism, artworks, interpretations of landscape, walking trails, sites of significance, camping and gathering sites or areas of traditional land use, natural resources or even sport (Aberley 1993; AusInfo 1995). According to Scovill, Gordon and Anderson (1977, as cited in MacNeill 1998, p.6) cultural information is non renewable; finite in quantity; patterned by human behaviour; interpreted data; and subtle, fragile and inconspicuous. MacNeill (1998) adds, cultural information is also incomplete because of the extraordinary length of time over which it has been recorded; is of indeterminate quality caused by differing recording methods and should be interpreted as only one epoch of a community rather than an entire cultural history. Despite these limitations, Marozas and Goes In Center (1998) believe recording cultural information with spatial IT is an excellent method to preserve traditional indigenous knowledge; protect cultural resources; record significant events and significant sites; and manage natural resources. These authors (ibid., p.9) say:

> there is a polarity between how indigenous peoples represent space
> and the Euro-American icons of spatial representation. Any research
> into incorporating oral histories [for example] into map form will have to
> take this fact into consideration.

6. The Challenge of Spatial IT

Despite colonization and the advent of new technology, indigenous communities continue to map their lands in the practice of their societies (Aberley 1993; Thrower 1996). Kemp and Brooke (1995), Carter et al. (1998) and Michelsen (1999) suggest this may be why indigenous people often find it easier to relate to aerial photos or satellite imagery than to paper maps. As Nietschmann (1995, p.37) explains for indigenous communities, mapping 'transcends literacy…[and]…is visually comprehensible,…can be more powerful than a flag or an anthem…[and]…provides strong credibility' to indigenous communities. Likewise Harmsworth (1997, pp.41-42)

states 'one of the most important aspects…is the development of…[spatial IT]…tools as complementary systems to indigenous knowledge systems'. Goes In Center (1997, p.1) proceeds 'it is with ideals of respect that we must approach and consider the use of modern information technology as an additional tool to enhance the [indigenous] way of life'. He (2000, p.2) reveals, indigenous communities are starting to embrace 'spatial and spectral technologies as an ultimate expression of self-determination and the reconstruction of their Nations'. Consequently, he believes 'the ancestral decision-making processes are applicable for every contemporaneous application' since the issues of today are the same as those of yesteryear, the exception being the technology used (Goes In Center 2000, p.1). Increasingly, indigenous communities are turning to the same technology as non-indigenous land administrators, viz. computer mapping, remote sensing and geographic information systems (GIS) to manage their resources (Carter et al. 1998). However 'the western way of knowing about the world...[is]...fundamentally incompatible with indigenous epistemology' claims Rundstrom (1995, p.48) since spatial IT uses 'boolean or mathematical logic' (Sheppard 1995, p.9). Indigenous knowledge combines logic with culture to produce maps that are more personable than pure mathematics. Any diffusion of spatial IT by indigenous communities must acknowledge and implement a 'special sensitivity to cultural resources' to ensure the spirit of each indigenous nation is protected (Marchand & Winchell 1994, p.51). Through implementing spatial IT into their communities, indigenous groups are looking beyond mapping capabilities towards community issues and epistemology as they develop guidelines for protecting as well as utilizing their information. These requirements are increasingly shared by other cultural mapping proponents including mapping of cemeteries; language; religious and statistical users. Indigenous communities are actively adopting spatial IT since it 'serve[s] as a catalyst to improved government within tribes' (Marchand & Winchell 1994, p.51). By using spatial IT to map and manage their traditional lands, indigenous communities may 'control…their own data management [allowing them to maintain] traditional knowledge - thus maintaining and/or re-learning the traditional way of life' (Bird 1995, p.24).

7. Conclusion

As indigenous communities tackle issues of protecting their communities and preserving their traditional knowledge, their exploration of spatial IT is a self-empowering process and a necessary step towards self-determination and reconciliation (Yapa 1991; Nietschmann 1995; Poole 1995a). While western paper

maps represent 'a static and unchanging world and the mental representations we derive from them limits our interaction with reality' (Cartwright 1999, p.31), multimedia mapping has the potential to diversify mapping products. Indigenous mapping accommodates a range of 'geographical information in an intuitive manner' (Cartwright & Peterson 1999, p.1) and may be considered as one form of multimedia mapping. Thus as indigenous communities explore the possibilities of multimedia mapping, so too are western cartographers who continue to 'struggle to represent [spatial] reality in a more meaningful way' (Cartwright 1999, p.31). An anonymous Nunavik Inuit cited in Kemp and Brooke (1995, p.25) succinctly illustrates the importance indigenous communities place on controlling their own information when he made the following observation:

> there are many ways to be poor, but in today's world not having the right kind of information represents a certain kind of poverty. As long as outsiders decide what is important and are in a position to ask all the questions, we will never be able to solve our own problems. Without information we are nothing at all and have no power to understand things or to change our life.

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