



The Oxford Handbook of Linguistic Fieldwork

Nicholas Thieberger (ed.)

<https://doi.org/10.1093/oxfordhb/9780199571888.001.0001>

Published: 2011

Online ISBN: 9780191744112

Print ISBN: 9780199571888

CHAPTER

17 Toponymy: Recording and Analysing Placenames in a Language Area

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<https://doi.org/10.1093/oxfordhb/9780199571888.013.0018> Pages 392–404

Published: 18 September 2012

Abstract

This article demonstrates toponymy recording and analyzing placenames in a language-specific area. Placenames are the most direct link between a language and its territory, current or ancestral. For many speech communities, placenames are an important part of their cultural heritage, encapsulating rights to land and recalling events, activities, and knowledge. Coming to grips with the placenames of a speech community involves understanding its landownership system, and the ways in which the people interact with the land. Knowing something of the history and prehistory of the area is also important, as placenames may be taken over from earlier inhabitants who spoke a different language; even if the earlier inhabitants spoke an earlier form of the modern language, the relevant vocabulary and morphological structures may have changed since the initial bestowal. This is easy to see in the case of languages with written records, such as English, and can sometimes be conjectured in the case of speech communities without written records. This article is directed at the situation of a language as spoken away from an urban area, in rural or more remote landscapes which the speakers have occupied for some generations. Placenames live on as landmarks long after the historical circumstance that made them once important.

Keywords: [toponymy recording](#), [placenames](#), [language area](#), [speech communities](#), [cultural heritage](#)

Subject: [Linguistic Anthropology](#), [Linguistics](#)

Series: [Oxford Handbooks](#)

Collection: [Oxford Handbooks Online](#)

17.1 Introduction

Placenames are the most direct link between a language and its territory, current or ancestral. For many speech communities, placenames are an important part of their cultural heritage, encapsulating rights to land and recalling events, activities, and knowledge. Coming to grips with the placenames of a speech community involves understanding its landownership system, and the ways in which the people interact with the land (i.e. the practical uses they make of it as well as the ways of talking and thinking about land). Knowing something of the history and prehistory of the area is also important, as placenames may be taken over from earlier inhabitants who spoke a different language; even if the earlier inhabitants spoke an earlier form of the modern language, the relevant vocabulary and morphological structures may have changed since the initial bestowal. This is easy to see in the case of languages with written records, such as English (Cameron 1996), and can sometimes be conjectured in the case of speech communities without written records.

p. 393 This chapter is directed at the situation of a language as spoken away from an urban area, in rural or more remote landscapes which the speakers have occupied for some generations. Working with speakers of such languages to document the placenames of an area requires working with as many speakers as feasible, since, as Hunn (1996) points out, speakers may vary considerably in the extent of the area they know, and the number of the placenames pertaining to that area. Thus placename documentation implicates variable collective knowledge to a greater extent than general lexical documentation. In many speech communities, placenames may be linked to landownership, and so can be sensitive topics; for example when there are disputes over the extent of an area designated by a placename. Sometimes placenames (as with proper names generally) may be treated as intellectual property, and there may be restrictions on dissemination of information about the place or the placename (Bradley and Kearney 2009).

Toponymy is the study of placenames and their systematic properties within a geographic area or speech community. The need to understand toponymy arises in interdisciplinary and multidisciplinary fieldwork, most obviously in basic location references, whether in biological and physical sciences, or as resonant landmarks in biography and narrative. See also the chapters in this volume on astronomy (Holbrook, Chapter 15), and geography (Turk et al., Chapter 16). Placename documentation relates also to general site recording, cartography, and GIS (Geographic Information Systems: software for storing, managing, and displaying data about places linked to coordinate systems). These related fields are beyond the scope of this chapter.

17.2 Linguistic Aspects

Recording the linguistic properties of the name(s) of a place focuses on treating each placename just as any other lexical item in the language. To recognize the placename as a lexeme means first distinguishing it from a description—what makes for example *Bald Mountain* a placename rather than a description of a particular bare mountain. This is not always easy; placenames may have ‘descriptive force’ (Hunn 1996), in that the name calls to mind some property of the site, or something associated with it. Indeed, descriptions and placenames may merge (Wilkinson, Marika, and Williams 2009), especially for communities in which placenames are created readily for minor places, as Widlok argues is the case for the #Akhoe Hai//om people of northern Namibia (Widlok 2008).

p. 394 Having ascertained that an expression is a placename, we need to describe its denotation, the sense of the name (literal meaning), how the sense relates to the \perp denotation, its etymology if it is not transparent, including any folk etymologies, and its connotations. We also need to find out the grammatical properties of the placename, both the internal morphological properties and the combinatory properties.

In addition to these usual properties of a lexical item, a placename has further properties to document: the origin of the name (how the name was bestowed and by whom), and the properties of the place denoted: the location of the denotation according to some geographic coordinate system, possibly the social location of the place (e.g. in the land tenure system of the speakers), and associated history, stories, songs, designs, uses, and resources.

A useful general field guide to eliciting placenames and landscape terms has been prepared by researchers at the Max Planck Institute (Nijmegen) (Bohnemeyer et al. 2004; Burenhult 2008a). For work on the placenames of a particular language, a good start is to seek out gazetteers and materials on placenames of the region, and neighbouring groups, because sometimes similar strategies for forming placenames and attitudes towards placenames are found among neighbours (cf. the calquing of morphological properties of placenames in neighbouring but genetically distant languages in northern Australia: McConvell 2009).

17.2.1 Location of the denotation—in the field

With a view to toponymic recording, one can supplement the usual field equipment with good maps and a GPS receiver. Basic topographic survey maps can be supplemented by cadastral (land tenure), geological, and vegetation maps. Historical maps can be useful to understand references to past events. In countries that have been colonized, early maps and surveyors' field notes and diaries may contain reference to placenames or variant forms of placenames of the people displaced by the colonizers.

Maps may already be available in digital form, and if not, can be scanned for portability. Digital maps, like any digital graphics, are of two basic kinds: raster and vector, with the latter being more amenable to manipulation by software. Digital maps may constitute interrelated 'layers' within a GIS, including image maps derived from aerial photographs and/or satellite imagery.

Ideally the fieldworker would visit each site with several knowledgeable people, determine with them the area, and maybe photograph or sketch aspects of the site. Even without a site visit, the researcher can have the locals sketch the place in their own terms. This may be a map, or it may be a route map locating the place on a track with respect to other places. (*The History of Cartography* (Harley and Woodward 1987, 1998) includes coverage of indigenous mapping practices around the world.) With the help of locals, the researcher can locate the area on a survey map and determine its coordinates. Below, we discuss further the kind of information involved in placename documentation.

p. 395 17.2.2 Denotation

Several senses of the 'meaning' of a placename are to be distinguished. Most basic is its location, part of the denotation of the placename. Understanding the denotation of a placename requires working out what is denoted spatially (including landform, landmark, and built structures). The literal meaning, etymology, and etiology or story behind the name are other aspects (considered below). A place can be conceptualized as having zero (a point), one (linear), or two (areal) dimensions (possibly even three dimensions). For example, a name apparently denoting a river may on inquiry be shown to denote the entire river (and tributaries or possibly its entire catchment), or just a stretch of the channel, or just a pool in the river. The placename may have a narrow (focal) referent and extended referents. What counts as a place worthy of a name will depend on the geographic types recognized by speakers of the language, as well as on the way the speakers use the land, and on historical circumstance.

Each language can be expected to have its own classification of landforms (see Turk et al., Chapter 16 above, and the papers in Burenhult 2008a). At a basic level this depends on the environment, what geographical features are present. But this will be tempered by the ways in which the language's speakers interact with

the landscape. For some groups, watercourses are significant places worthy of names; others emphasize the eminences. For some groups, a hill may be a noticeable feature crying out for a name; for others, a well (or rockhole) beside the hill may be much more nameworthy. For some, soil types may be important, determining plants and animal habitats or what crops can be grown.

Hence, the fieldworker needs to work with speakers to document the categorization of landform types in that language, as well as the built structure types (e.g. bridges, aqueducts, irrigation channels), types of habitation (e.g. villages, hamlets, cities, parishes), and farming and forestry types (e.g. paddock, copse, forest, common).

The term 'landform' needs to be considered to include places away from land such as water features; coastal and maritime communities can be expected to have names for sandbars, reefs, currents, fishing grounds, or navigational waypoints. The fieldworker should not expect an equivalence between, say, the category of *mountain* in English, and a category used to denote eminences in the language concerned (Levinson 2008). See also Turk et al. (Chapter 16 above).

It is important to work with consultants to determine good, prototypical examples of particular landform types. This requires paying attention while travelling around the territory. A useful technique can be to ask for guidance on photographing exemplars of each landform type named within the language. This can be cross-checked by photo-matching games in which one speaker is asked to describe a photograph of a landscape to another speaker in such a way that the second speaker can pick out the correct photo from a set.

p. 396 The contribution of land use varies considerably around the world. Universally, people need fresh water, and so there will be words for sources of water, whether natural (springs, rivers, pools, soakages) or constructed (wells, dams, reservoirs, canals, irrigation channels). Communities living by rivers will have names for crossings or bridges. Communities with well-defined travel routes may have names for paths and trails. Farming communities may have names for fields and grazing land. Sedentary communities can be expected to have names for groups of dwellings. There may be no hard and fast line between landform types and places arising from the inhabitants' interaction with the landscape; for example, a particular tree may be a favourite place to camp, or some bushes may do double duty as a windbreak (Widlöck 1996). In some speech communities celestial patterns may be treated as part of the landform categorization (Cablitz 2008), and then may be named in ways which extend placename systems.

Once the landform and built structure categorization has been determined, it can be compared with the kinds of categories used in placenames. They may be the same (e.g. *bridge* and *Cambridge*). Sometimes the placenames may contain landform or built structure names not used in everyday speech, whether archaic as *-ham* in English *Birmingham*, or borrowed from an earlier occupier (e.g. *Lancaster*, which includes Latin *castra* 'camp').

Some places will gain names by virtue of their role as landmarks for travellers, whether by sea or by land. Thus navigation and mapping tasks may be helpful tools in eliciting placenames (Burenhult and Levinson 2008a). Landmarks are part of way-finding, and how people navigate and use the land may affect their place-naming systems. For example, in some communities there are placenames which derive from other placenames because a basic place is taken as a reference point for other places: so *North Sydney*, *South Sydney*. A similar pattern is evident where a base name repeats in a set of derived toponyms, even though the base is not used as a toponym absolutely, such as *Great Haseley*, *Little Haseley*; *Upper Mangrove*, *Lower Mangrove*.

Placenames live on as landmarks long after the historical circumstance that made them once important. For example, the placename *Charing Cross* in London derives from a Christian cross erected in a former hamlet

Charing: the hamlet and the cross no longer exist, but the place where they were is a reference point in London.

17.2.3 Sense, etymology, and etiology

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A placename may be transparent; its sense may consist, for example, of a landform type *El Paso* (The Pass), or of a modifier plus landform or built structure type *Red River*, *Rio Grande*. If such a placename becomes associated with a nearby habitation, then the sense and the denotation diverge, and with time the relation becomes less clear. So *El Paso* is better known as the name of a city. However, it is quite normal in some speech communities for a placename to have no synchronic analysis, whether because the name has been taken over from another language or because the sense has been lost through the generations.

Determining whether a placename is semantically transparent is not easy, since people and communities may well develop folk etymologies for the names of places. It is also difficult if there are concerns about landownership; speakers of language X may be reluctant to admit that a placename in their country is analyzable in language Y if speakers of language Y formerly inhabited that country. Without knowing the circumstances of the bestowal of the name, we can rarely be certain that we have accurately determined the etymological sense of the placename. This is not to discount the importance of recording folk etymologies—the folk etymology of a landform may actually link it into placename subsystems that have emerged since the initial bestowal. Folk etymologies are useful for understanding how speakers fit the place and the placename into their understandings of the land and its ownership. Ideally, the etymology of a placename is discovered by finding out who bestowed the name, and the circumstances of the bestowal. This is usually impossible for speech communities that do not have written records extending back before oral traditions—indeed, there may be traditions of how all places have been named by ancestral beings (Tamisari 2002). These sometimes competing accounts constitute the etiology of the name.

Once a large body of placenames has been collected, it may be possible to find patterns of placenaming which in turn may help in elucidating the senses of the placenames and the semantic systems of the speech community (Hunn 1996). For example, some speech communities use landform and built structure types as parts of placenames, creating binomial structures or possessive structures, as English speakers do. Others rarely use them. Some communities create placenames from short sentences describing events that happened at the place or that describe characteristic activities at the site. Some communities build the names of people into placenames, whether reflecting some kind of ownership or association or commemoratively, as in the many places in colonized countries named after grantees of the colonizing countries.

Even if a landform or structure is used as part of the sense of the name, the modifier may require exposition. It may be a commemorative modifier (the name *Flinders Island* consists of a landform type and a modifier commemorating the explorer Matthew Flinders), or a metaphor, which describes the landform or something which is associated with the landform (*Pelican Lagoon*), or a modifier which sets a landform as part of a subsystem (*First Creek*, *Second Creek*).

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17.2.4 Social position of the place

Which places get named will be affected by sociocultural practices. Some places may have religious significance. The landownership and governance system of a group will also result in the creation of areas which then are assigned names. The area serviced by a particular church may get a parish name; areas ruled by particular types of people or institutions may be named (County Antrim, Ulster Province, and so on).

Areas of land may be related hierarchically, e.g. farm/parish/region/state. Basso (1984) has described what he calls 'placename partitioning' among the Western Apache, according to which, as population size increases, social differentiation occurs, and a need arises for assigning names to places within named areas. This also results in relations between places being expressed in the names *New X* and *Old X*, *East X* and *West X*, *Little X* and *Great X*, *Upper X* and *Lower X*. The need to differentiate places with the same name may add to this: *Aix-en-Provence*, *Aix-la-Chapelle* (*Aachen*), *Aix-les-Bains* are three French names for places where the base *Aix* derives from the Latin *aqua* 'water', but which are differentiated further (in Provence, 'the chapel', 'the baths'). Places may also be related linearly, as places along a path or trail as in pilgrimages, or more abstractly, as in the Australian 'Dreaming tracks' (the travels of an ancestral being).

17.2.5 Connotations of the placename

Places will have linked to them stories of events that happened at those places, and they may figure as landmarks in biography (Myers 1991) and narrative. The name of the place may be a mnemonic for an event which is believed to have happened at the place (whether in actuality or in mythology) (Merlan 2001), and so placenames may be used allusively in everyday conversation to remind people of those stories (Basso 1996). A placename may evoke a mnemonic network containing it, such as a known travel route, or (as mentioned) a mythic route such as an Australian 'Dreaming track'.

A placename may form the basis of a personal name, from a life event strongly associating a person to a place. In Australia at least, a deceased person may be conventionally referred to by their place of death (e.g. Myers 1991:132, possibly suffixed, as in Warlpiri with *-wana* 'general locative').

Places may have associated songs, dances, or designs, knowledge of which acts in part as signs of landownership, as in central Australia. Styles of cooking, clothing, or craft all may be associated with particular areas and places.

17.3 Grammatical Properties of Placenames

Here we consider the structure of placenames, and the syntactic constraints on the use of placenames. Placenames are proper names and as such may constitute a word class in some languages, with placenames as a subclass. According to the degree of shared properties in morphology, syntax, and semantics, there may also be subclasses within the toponym class.

17.3.1 Morphological structure of placenames

Placenames may be monomorphemic, they may consist of compounds, or they may consist of derived nominals with productive or unproductive suffixes. In many European languages there are binomial placenames, with generics as part of the name (e.g. *Loch Lomond*, *Lake Windermere*, *Bodensee*, where *Loch*, *Lake*, and *See* are generics denoting water features).

In some languages, placenames may consist of reduced clauses, as in some North American and Australian languages (Basso 1996; Baker 2002). Placenames may consist of phrases. These may be synchronically 'transparent', e.g. the French *Côte d'Azur* (coast of blue). A name like *Newcastle* is evidently made up of an adjective and a noun, but the initial stress alerts us to the fact that it is a proper name, and not a compound. Placenames may retain archaisms—for example, *le* in the English placename *Chester-le-Street* is a vestige of Old French *en le* 'in the'. Other examples include the lack of article found in names such as the French *Villefranche-sur-Mer* or the English *Southend-on-Sea*, where *mer* and its counterpart, *sea*, lack articles.

17.3.2. Morphology special to toponyms

Placenames may have special morphological properties. These can consist of derivational affixes which are found only on placenames but they can also relate to allomorphy. For example, in the Australian language Pintupi the augment allomorph *--nga* occurs just on C-final proper name stems, such as in *Narrkalnga* or *Purlpurlnga* (Myers 1991: 132). Other examples include possibilities such as requiring locative case to express static locations on all location nouns except placenames (Harvey 1999; McConvell 2009). The researcher needs to be alert to forms derived from placenames, adjectival or gentilic ('inhabitant of') forms; these may well exhibit irregularities, as in English *Novocastrian*, *Mancunian*, *Michigander*, *Sydney-sider*.

p. 400 17.3.3 Syntactic properties of placenames

An important syntactic property of placenames is their interaction with definiteness. Any proper name is inherently definite; in a language where definiteness is a grammatical category, placenames can be expected to count as definite, even if not explicitly marked as such. To illustrate: in English, a small fraction of placenames begin with 'The...' (such as *The Briars*, or names of rivers, *the Danube*, the Thames), but rarely if ever begin with the indefinite article A...; and note that derived placenames drop the article (*Thames Head*, *Thames Ditton*).

A second important syntactic property is how placenames behave with respect to the expression of locational relation. Is a placename inherently locational, or must it receive some marking for locational relations such as static location (*at, in, on*) or direction (*to, from*)? In some Australian languages, some placenames are unmarked for static location, but marked for direction (McConvell 2009). In some languages special locational prepositions are used for placenames and nominals viewed as locations, distinct from other nominals (so a difference between *in London* and *in a canoe*) (Cablitz 2008).

17.3.4 Sample dictionary (or gazetteer) entry

Here is an example from central Australia of a placename as it might appear set out as an entry in a dictionary of one of the local languages, Warumungu:

Warupunju. ['waru,pun^ytu] Area of Murchison Range, 20°S 13°20' E. Fire Dreaming spread from focal site. Alyawarr equivalent Rweputy (*Rubuntja*) analysable as *rwe* 'fire', *-penty* 'toponymic suffix'. The name is not analysable in Warumungu. See the Aboriginal Land Commission (1991) report.

The Marshallese–English online dictionary (Abo et al. 2009) lists more than 3,000 placenames, both alphabetically and geographically. Kari (2008) has compiled an exemplary gazetteer of over 2,000 placenames in a part of Alaska. One of the most detailed published gazetteers of an Australian language is the companion to the Bardi dictionary (Aklif 1999).

17.4 Wider Implications

17.4.1 Alternative names for one place

p. 401 There may be two or more synonyms for a placename. In some speech communities, the more important a place is deemed to be, the more likely it is to bear more than one name; this may arise from there being an alternative name in a neighbouring language, and can relate to a view that multiple names are an index of importance (Wilkinson et al. 2009). The synonyms might vary according to speech types or register; thus in a song, the form of a placename may be modified. A variant can be used for poetic or humorous effect, such as referring to Edinburgh as *Old Reeky*, or New York City as *The Big Apple*. In Australia and New Zealand many placenames as used in English (especially long ones) have commonly used abbreviations, thus the Sydney suburb *Woolloomooloo* is called by locals *The 'Loo* (Simpson 2001).

Placename synonyms will be encountered in languages spoken in a culture which observes avoidance of the name of a recently deceased person: if a placename derives from, or just sounds similar to, a personal name, and the personal name can no longer be uttered, then the placename can be replaced by a synonym or perhaps by a revealing circumlocution. In Aboriginal Australia, for instance, a proscribed placename might be replaced by a descriptive term based on distinctive flora, or the place's Dreaming affiliation. The use of a particular placename may be proscribed for the whole community or just for a few close relatives, and the proscribed placename can return to general use once the mourning period has passed.

With a complex site, different site elements may not be terminologically distinguished, or else a generic term may be optionally added to the placename to distinguish a site element, such as a hill, well, or claypan at the location. Whether the composite nominal is itself a placename may not be clear.

17.4.2 Language engineering and loans

Not all placenames are necessarily 'old'. There are situations where a new placename is required because there is a new 'place'. Typically this arises from extensions and modifications of the built environment: street names are a common example, or a new centre of habitation, but it might result from a landslide or sinkhole collapse or some such natural change. Placename replacement and revival may arise during upheavals in political history, such as when one colonial power has been replaced by another.

The new placename, as in the rest of the vocabulary, might be a lexical creation, or might result from shifts of meaning. Lexical creations may involve the internal resources of the language, or may involve borrowing. Borrowing of a placename leads to the existence of two separate places with the same name, so that a placename echoes another place with the same or overlapping name. An example is in English *Waterlooville*, which designates an English village that grew up after the decisive battle fought against the French near Waterloo in Belgium. *Waterloo* commemorates the victory; the final descriptor is the French *ville* 'town, city'.

p. 402 A new name might be imposed by the dominant authority, and may be in a language which dominates the local language; sometimes a more or less sensitive attempt is made to derive a name using the resources of the local language (Amery 2002; Baker 2002). If these new names are to be listed in a dictionary or gazetteer, it is a good idea to flag them as 'introduced'.

Especially in a postcolonial situation, placenames may occur in doublets, one from the traditional land owners and the other bestowed in the historical colonial period. In some jurisdictions this is officially recognized as Dual Naming. An example is the monolith in central Australia known as Uluru and Ayers Rock.

There can be disagreement, at times passionate, within the language community over what the 'true' name of a place is—or, even when the name is agreed, the 'true' location of the place.

17.4.3 Extensions of placenames

There are other complex lexemes incorporating a placename: such as *Boston bun*, *Antarctic tern*. These are expected in languages which have spread considerably from their original territory, but are not nearly so common in 'small' languages which are not languages of wider communication. In some Australian languages, the same word can be a placename and the term for a commodity (such as an ochre) sourced from that place—rather like the English word *china* (*chinaware* crockery), from *China*.

17.5 Data Storage and Presentation

Information collected on placenames can be stored in data files organized like a dictionary. Indeed, each placename can be an entry in the master dictionary file for the language under study. Alternatively, the placenames can be maintained in a dictionary file of their own, effectively a digital gazetteer. A placename entry has fields in common with those of other lexemes (spelling, pronunciation, part of speech, irregular morphology, variant forms, denotation, synonyms, cross-references, etymology), and some special additional fields (location coordinates, corresponding name in other languages). Whether to maintain the placename information in the master dictionary file or in a separate gazetteer is a decision for each project. Relevant considerations would include the extent to which placenames derive from ordinary vocabulary; if quite a lot of placenames derive from other vocabulary items, there can be value in explicitly showing the relationship by way of composite dictionary entries.

If a placenames data file includes geographic coordinates (typically latitude and longitude) for each site, then a Keyhole Markup Language (KML) file can be derived. KML is a file format and associated XML (Extensible Markup Language) specification, which allows interchange of locational data between various software, and in particular allows display by Google Earth. The KML file format also allows the storage of other attributes along with each location, and also allows storage of celestial data (such as stars, constellations, planets). For linguistic research, however, KML would not be an ideal master format, as it is primarily about locations, not about names (as words).

Toponymic data can be combined with other spatial data in a GIS application. Usually this is achieved by inclusion of a placenames layer. In multimedia GIS, each name may be linked to images, sound files, etc. In recent years there have emerged applications tailored for Third World situations, under the headings of Public Participation GIS (PPGIS) and Participatory 3D Modelling (P3DM), and these could offer a framework for detailed research on toponymy. See Chapin, Lamb, and Threlkeld (2005) and the extensive references.

A range of accessible materials can be produced from placename documentation. Maps and gazetteers are obvious and useful reference works for community members and schools, as well as for informing a wider public about local nomenclature. An encyclopedic gazetteer based around geographic knowledge and placename networks is another rewarding way of presenting the information and its wider links. An excellent example is *Shem Pete's Alaska* (Kari, Fall, and Shem Pete 2003), which documents 973 named places in the Upper Cook Inlet area, a brilliant representation and evocation of Dena'ina and Ahtna knowledge. Alongside dictionary-style presentation, graphic representation employing expert cartography enhances accessibility.

17.6 Further Reading

p. 404 Harley, John B. and David Woodward (eds.) 1987–1998. *The history of cartography*. University of Chicago Press. Koch, Harold and Luise Hercus (eds.) 2009. *Aboriginal placenames: Naming and re naming the Australian landscape*. (Aboriginal History Monograph 19) Canberra: ANU E Press and Aboriginal History Incorporated. (http://epress.anu.edu.au/placenames_citation.html Accessed 8 April 2010) ↳ Stewart, George R. 2008 [1945/]. *Names on the land: A historical account of place-naming in the United States*. New York : New York Review Books. Tobias, Terry N. 2010. *Living Proof: The Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys*. Ecotrust Canada and the Union of BC Indian Chiefs. <http://nativemaps.org/node/3684>

<http://www.ecotrust.ca/first-nations/new-book-use-and-occupancy-map-surveys-now-available>

Also the more popular version *Chief Kerry's Moose*, published in 2000, available at http://www.ubcic.bc.ca/files/PDF/Tobias_whole.pdf

Wikipedia entries (Accessed 8 April 2010):

Participatory 3D Modelling (P3DM): [http://en.wikipedia.org/wiki/Participatory_3D_Modelling_\(P3DM\)](http://en.wikipedia.org/wiki/Participatory_3D_Modelling_(P3DM))

Public Participation GIS: <http://en.wikipedia.org/wiki/PPGIS>