

# Exploring the renaissance of wayfinding and voyaging through the lens of knowledge representation, organization and discovery systems

Renaissance of  
wayfinding  
and voyaging

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## Abstract

**Purpose** – The purpose of this paper is to provide a critical analysis from an ethical perspective of how the concept of indigenous wayfinding and voyaging is mapped in knowledge representation, organization and discovery systems.

**Design/methodology/approach** – In this study, the Dewey Decimal Classification, the Library of Congress Subject Headings, the Library of Congress Classifications systems and the Web of Science citation database were methodically examined to determine how these systems represent and facilitate the discovery of indigenous knowledge of wayfinding and voyaging.

**Findings** – The analysis revealed that there was no dedicated representation of the indigenous practices of wayfinding and voyaging in the major knowledge representation, organization and discovery systems. By scattering indigenous practice across various, often very broad and unrelated classes, coherence in the record is disrupted, resulting in misrepresentation of these indigenous concepts.

**Originality/value** – This study contributes to a relatively limited research literature on representation and organization of indigenous knowledge of wayfinding and voyaging. This study calls to foster a better understanding and appreciation for the rich knowledge that indigenous cultures provide for an enlightened society.

**Keywords** Indigenous knowledge, Knowledge representation, Knowledge representation and organization, Indigenous knowledge representation and organization, Indigenous wayfinding and voyaging, Polynesian wayfinding and voyaging, Organization and discovery systems

**Paper type** Research paper

## Introduction

Growing up in Hawai'i in the nineteen sixties, I found my Hawaiian culture ebbing away. I had never seen an authentic hula, attended a traditional ceremony and seldom heard our language spoken. It was a confusing time for me and I felt lost between worlds that seemed in conflict. All that changed one night when Herb Kane introduced me to the stars and explained how my ancestors had used them to find their way across a vast ocean to settle all of Polynesia. At that moment, my vision of my ancestry became timeless and alive in those same stars. (Thompson, 2013, p. ix)

Nainoa Thompson's (2016) recreation of a Hōkūle'a, the traditional Eastern Polynesian voyaging canoe of around the 12th century, revived the ancient Hawaiian legends of voyages of over 5,000 miles in the open ocean between two Polynesian islands, Hawai'i and Tahiti (Finney, 1979, 1999). At a minimum, the navigation required the ability to determine



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directions in order to set the course toward the destination, maintain the course en route, and, finally, make landfall on the coastal headlands. In modern times, this task is complex even with the aid of a variety of navigational tools, maps, charts and communication technologies. Yet, with only their senses, knowledge and natural phenomena as tools, the ancient Pacific navigators found their way from island to island with an outstanding degree of accuracy (Finney *et al.*, 1986).

Revival of traditional Polynesian voyaging has involved years of resuscitation of sophisticated and rich indigenous knowledge, skills and practices (Low, 2013). Indigenous knowledge is inherently relational and located at the nexus of body, mind and spirit (Meyer, 2008), involving spirituality and knowing (i.e. the cultural context of knowledge), physical place and knowing (i.e. orientation in the natural environment), the cultural nature of the senses (i.e. expanded ideas of empiricism), relationship and knowledge (i.e. self through other), utility of knowledge (i.e. ideas of wealth and usefulness), words and knowledge (i.e. causality in language and thought) and the body–mind question (i.e. illusions of separation) (Meyer, 2001, p. 126). Even though indigenous navigational knowledge has been communicated from generation to generation without the benefit of written communication, the sophistication and details of their geographic understanding and seafaring techniques underscore the contrasts in cartographic achievements between non-Western and modern academic cartographers (Feinberg *et al.*, 2003). Feinberg and colleagues point out that the remarkable indigenous cartographic and navigational systems “remind us [of ways of knowing] . . . that have been lost as a result of European contact . . . because it simply did not occur to so many of our predecessors to ask the local experts what they knew” (p. 251). As it is an ethical imperative to ensure that cultural resources are well-represented and accessible to all users across various cultures and belief systems (Olson, 2001), our aim in this study is to shed light on the representation of indigenous Pacific islanders’ practices of voyaging and wayfinding in knowledge representation, organization and discovery systems. In particular, we analyzed major subject and classification systems and the Web of Science (WoS) citation database to find how the concept of indigenous wayfinding and voyaging is mapped in these systems and discover patterns and trends in wayfinding and voyaging scholarly production related to the Hawaiian renaissance.

#### *Indigenous wayfinding and voyaging*

Lewis (1978) outlines the following main features of ancient Pacific navigation:

- (1) *Direction determination*, determining direction based on perception of the rise (i.e. in the east) and set (i.e. in the west) of the stars. Thus, the navigator used the stars as a map by night and the sun, winds and oceanic swells as guidelines by day to remain oriented toward the set destination.
- (2) *Dead reckoning*, keeping track of progress toward reaching the destination and making necessary adjustments. While it is unclear exactly how the ancient Pacific navigators applied dead reckoning, the process involved the mental ability to segment the voyage based on *etaks* or reference islands as they are perceived during movement from one star point to another.
- (3) *Expanding the target*, interpreting patterns of ocean swells and birds’ flight trajectories and tracking islands ahead by observing the clouds.

Feinberg (1991, 2014, 2016) recognized the complex expression of the spatial culture of indigenous Taumako people in everyday contexts, arguing that the existence of multiple spatial models enables “individuals, as they confront the challenges of daily life . . . [to] choose among alternatives and draw upon whichever ones appear most helpful. . . [wherein] utility

depends on judgement, memory, and selective focus attention” (p. 302). In contrast to the common belief that indigenous practices of wayfinding have long been extinct, [Feinberg \(1988\)](#) observed that indigenous people of Anuta, a Polynesian Outlier in the eastern Solomon Islands, made canoe voyages to islands about 30 miles away until the 1960s. In this regard, [Simpson \(2004\)](#) argues that indigenous knowledge sustained complex social, cultural, spiritual and political systems long before the arrival of the Europeans (p. 375).

[Frake’s \(1995\)](#) comparison of indigenous and Western navigation systems emphasizes the importance of situational contextualization in indigenous navigation, in particular practical knowledge of the sea and the sky. [Enos’s \(2015\)](#) investigation of the impact of voyaging experience on women crewmembers of the E Mau voyage, a modern replication of the early two-hulled canoe crossings of vast expansions of the Pacific, revealed that the indigenous learning process the women experienced was reciprocal in nature, involving observation, application and expectation of teaching others as part of the learning environment, an experience that overall had profound effects on their lives.

However, as observed by indigenous scholar and voyager Chad Kālepa Baybayan and his colleagues ([1987](#)), there has also been considerable skepticism with regard to the unique indigenous knowledge of wayfinding and voyaging:

Yet, many modern armchair scholars doubt the historicity of these legends of return voyages . . . to the homeland area, as well as of subsequent colonisation voyages back to the North Island based on information supplied by the returnees. Nor do they consider seriously the possibility that the tales might contain valuable information about routes in question and the problems in sailing over them. Instead, they hypothesise that these tales refer to voyaging and colonisation events along the coast of the North Island and were composed primarily for validating tribal identity, pressing land claims or other local purposes . . . , or, alternatively, that they are simply religious myths. . . ([Baybayan et al., 1987](#), p. 197)

Nevertheless, the Hawaiian renaissance of indigenous practices of wayfinding provides a unique opportunity to learn from the indigenous experts about their remarkable cartographic and navigational skills ([Feinberg et al., 2003](#)). Along these lines, [Doyle \(2013\)](#) pointed out that bringing indigenous traditions into new contexts elucidates new connections and ways of thinking that represent indigenous approaches to understandings of how the world works and our responsibilities within it.

As fair inclusion of various perspectives and cultures is considered a foundation of ethical knowledge representation, organization and discovery systems, the question arises as to whether these systems facilitate discovery of and learning from indigenous knowledge of wayfinding and voyaging. [Simpson \(2004\)](#), whose response to this question was negative, stated that the answers to the further questions of how and why indigenous knowledge has become threatened lie embedded in the crux of the colonial infrastructure, and unless properly dismantled and accounted for, this infrastructure will only continue to undermine efforts to strengthen indigenous systems (p. 375).

Thus, this study addresses the question of how the concept of indigenous wayfinding and voyaging is mapped in knowledge systems and how the WoS citation database represents the patterns and trends in indigenous wayfinding and voyaging scholarly publications. As background, following is a discussion of the nature and limitations of knowledge representation and organization systems.

### **Knowledge representation and organization**

As [Bowker and Star \(2000\)](#) put it, from simple classifications of commodities such as groceries to more complex classifications of knowledge such as medical taxonomies of diseases, in general, our lives are “hinged round with systems of classification, limned by

standard formats, prescriptions, and objects” (p. 1). In their seminal work, they define a classification as a “spatial, temporal, or spatio-temporal segmentation of the world” (p. 10), which exhibits the following properties:

- (1) Consistent, unique classificatory principles in operation, such as hierarchical biological classification from genus to species;
- (2) Mutual exclusivity, that is, clear demarcation of categories in a system in which, ideally, an item fits into one and only one category;
- (3) Completeness of the system, that is, the assumption that the system accommodates the entire known universe of its constituents, including newly discovered items, such as a newly discovered plant or disease.

In his seminal work, [Furner \(2009\)](#) argued that success in building better systems depends at least partly on one’s ability to measure the goodness of current systems and to recognition of the factors that affect system performance. Traditionally, knowledge organization systems have been based on standards and rules of boundaries and relationships, such as classification systems, subject headings and metadata schemas, to map knowledge and ensure consistency in its representation and organization. Thus, a classification scheme “establishes the physical parameters of the domain and ensures the meaning of each term. . . [and] is not susceptible to the vagaries of natural language” ([Jacob, 2001](#), p. 87).

But is this claim of linguistically unadulterated objectivity realistic in a product that relies on language and indeed a particular language? Arguably, the most fascinating aspect of a classification system is that it is a human creation, which may be particular to the practical or linguistic organizations of one culture and not replicated in other cultures of the world ([Rosch, 1978](#)), such as the classification of the animal kingdom, entitled the Celestial Emporium of Benevolent Knowledge, that is attributed to an ancient Chinese encyclopedia:

On those remote pages it is written that animals are divided into (1) those that belong to the Emperor, (2) embalmed ones, (3) those that are trained, (4) suckling pigs, (5) mermaids, (6) fabulous ones, (7) stray dogs, (8) those that are included in this classification, (9) those that tremble as if they were mad, (10) innumerable ones, (11) those drawn with a very fine camel’s hair brush, (12) others, (13) those that have just broken a flower vase, (14) those that resemble flies from distance (Borges, 1966, as cited in [Rosch, 1978](#), p. 108)

As [Bowker and Star \(2000\)](#) recognize, classifications that “appear natural, eloquent, and homogenous within a given human context [might] appear forced and heterogeneous outside that context” (p. 131).

One may say, therefore, that knowledge representation and organization systems possess considerable power in their license to create the maps of discovery ([Hajibayova, 2018](#)). In this regard, [Foucault \(1977\)](#) argues that power is entwined with knowledge: “it is not possible for power to be exercised without knowledge, [and] it is impossible for knowledge not to engender power” (p. 52). Thus, knowledge as commonly construed is a constituent part of the process of “power-knowledge . . . that determines the forms and possible domains of knowledge” ([Foucault, 1977](#), p. 28).

[Mai \(2004\)](#) argues that classification is “relative in the sense that no classification can be argued to be a representation of the true structure of knowledge” because “classification is merely one particular explanation of the relationships in a given field that satisfies a group of people at a certain point in time” (p. 41). Hence, knowledge representation and organization systems are inherently social constructs that reflect biases and presumptions of the cultures from which they have emerged and in which they have been situated ([Adler, 2017a,b](#); [Foskett, 1971, 1984](#)). [Olson \(1998, 2001, 2007\)](#), one of the most prominent critics of traditional systems of knowledge organization has demonstrated their fundamentally

discriminatory nature. For example, [Olson's \(2002\)](#) analysis of the Dewey Decimal Classification (DDC) and the Library of Congress Subject Headings (LCSH) related to African American women, Chicanas, lesbians, Asian American women, working class women, Jewish women and North American Aboriginal women revealed sidelining and exclusion of these topics from the mainstream views and concludes that these systems often introduce "blatant biases or, more commonly, subtle, insidious marginalization" ([Olson, 2002](#), p. 6) of these groups. In her more recent analysis of Library of Congress Classification (LCC) System, [Adler \(2017a\)](#) argued that the organization of "unified subject around a heteropatriarchal universality that assume whiteness inhibits analysis that interweaves sexualities with racial and ethical dimensions" (p. xvi).

Thus, a number of library and information science scholars have argued that unbiased and fair representation and organization of knowledge is an ethical obligation of library and information specialists ([Beghtol, 2002, 2005](#)). [Mai \(2013\)](#), for instance, argued that the standards, norms and practices of current systems of representation and organization of knowledge should be critically re-evaluated to "regain the authority they have sacrificed in the name of presumed neutrality" (p. 252). In this regard, [Fox and Reece \(2012\)](#) proposed an ethical approach for information representation and organization based on: (1) a duty of care, that is, imaginative, empathetic application of standards through information specialists' judgment and obligation to accommodate salient contexts to preserve agency; (2) consequence-driven decisions, which focus on improvement of practice, that is, regular monitoring and maintaining of users' satisfaction to ensure such norms as justice, care, hospitality and practical efficacy are in place; (3) treatment of individuals as ends with basic rights and responsibilities, that is, taking rights seriously based on historical realities of discrimination, genocide and all forms of conceptual violence that support such atrocities; and (4) prescription of no action that we are certain is wrong, that is, prevention of overt offenses and deliberate misapplication of standards to inhibit access (pp. 381–382).

[Beghtol \(2005\)](#) stated that the idea of an ethical framework for knowledge representation and organization derives from the concepts of cultural warrant; that is, the personal and professional cultures of information seekers and information specialists warrant the establishment of appropriate fields, terms, categories and/or classes in a knowledge representation and organization system. For Beghtol, cultural warrant underlies the rationale and authority for such decisions as what concepts and relationships are appropriate for a given system. As cultural warrant arises from the presumed information needs of the prospective users of the system, representation of various cultures not only recognizes particular cultural values, beliefs, histories and traditions but most importantly constitutes the foundation of the ethical knowledge representation and organization system. Based on Beghtol's conceptualization, it is argued here that the indigenous perspective is one of the essential building blocks of ethical knowledge representation, organization and discovery systems.

#### *Indigenous knowledge representation and organization*

[Doyle \(2006\)](#) asserts that indigenous scholars have demonstrated that their people are marginalized in knowledge organization systems through "historicization, omission, lack of specificity, lack of relevance and lack of recognition of sovereign nations" (p. 437). [Cherry and Mukunda \(2015\)](#), for example, pointed out that in the LCC system, the indigenous knowledge is often classed under *History*, giving the impression that native people no longer exist or narrowly classed as *Indians of North America*. Along these lines, [Dudley's \(2017\)](#) examination of the LCSH assigned to 34 titles concerning the indigenous genocides in North America revealed a number of highly problematic approaches to subject representation and classification of these titles, including:

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- (1) Treatment of the topic as an exception to the presumed norm as no dedicated subject heading(s) and classification number represent the indigenous American genocides;
  - (2) Disconnection from the related materials through assignment of various class numbers and dispersing the subject throughout the collection;
  - (3) Misrepresentation of the structure of the topic impeding an accurate discursive formation of the topic;
  - (4) Assignment of biased subject terms that are often euphemistic, colonial, vacuous and/or misleading;
  - (5) Omission of the topic in the majority of the subject assignments thereby hiding the materials from discovery.

Dudley (2017, p. 24) concluded that:

Indigenous genocide scholarship has – contrary to the Library Congress’ own guidelines – been disguised by biased, normative, and ideologically loaded terminologies and assumptions, which have served to delegitimize and destabilize this body of knowledge. Thus the nature and extent of Indigenous genocides are rendered essentially unknowable not only by the construction of knowledge in the literature of genocide studies, but by extension the knowledge organization structures layered onto this literature in the form of LCSH and classification.

Matsuda and colleagues (2017) have also observed similar misrepresentation of indigenous Hawaiian knowledge in the mainstream knowledge organization system (see also Hajibayova and Buenté, 2017).

Duarte and Belarde-Lewis (2015) claimed that the colonial logic of assimilation of indigenous knowledge into established organization systems contributes to a “blindness about the full depth and range of Native ways of knowing” (p. 685). By appropriating only particular fragments of the rich oral, communal, aesthetic, kinesthetic and emergent blend of indigenous knowledge, mainstream knowledge representation and organization systems not only separate the fragments from their context but also treat them as static and inflexible (Duarte and Belarde-Lewis, 2015; Grenersen, 2012). Duarte and Belarde-Lewis (2015) proposed imagining the creation of spaces for indigenous knowledge. Such an act of creation would involve understanding how colonization subjugated indigenous cultural heritage; identifying and conceptualizing the tools, techniques and values of institutions and processes that shape decolonization; building partnerships to spread awareness and acquire formal acknowledgment of the epistemic value of indigenous knowledge in context; seeking indigenous partners and using their knowledge to design indigenous ontologies that more accurately denote the indigenous culture; and creating experimental designs and pilot systems of representation of indigenous cultures to promote theoretical acknowledgment of work in a given area. In this vein, Simpson (2004) proposes that those of privilege (such as settler governments and Western academia) must take an active role alongside indigenous knowledge communities to deconstruct the relationship between colonial thinking and indigenous knowledge, to recover indigenous intellectual traditions and to create fair spaces for indigenous knowledge systems and their inherent processes, values and traditions.

Doyle (2013) proposed three interdependent dimensions to produce transformation in indigenous knowledge representation and organization: *naming*, that is, self-representation of indigenous knowledge ranging from concrete designations (such as people, places and things) to conceptual terms that decolonize the expression of indigenous thought and experience; *claiming*, that is, extension of naming to advocacy for recognition of indigenous self-representation by the international standards bodies and for information policy reform at

local and national levels; and *(re)creating*, that is, bringing indigenous traditions, including epistemological, ontological and axiological perspectives, into new contexts to create new connections and ways of thinking about the problems posed within the information disciplines and the wider world.

Applying Doyle's (2013), Duarte and Belarde-Lewis's (2015) and Simpson's (2004) conceptualization of the formation and representation of indigenous knowledge, this study addresses the broad question, *how is revival of indigenous practices of navigation or wayfinding reflected in knowledge representation, organization, discovery systems as well as scholarly publications in general?*

In the following section, we will describe the methodology applied to investigate this question.

### Methodology

Data collection occurred in January and February of 2019. We applied an exhaustive sampling method using broad search terms such as *wayfinding and voyaging* to find resources associated with indigenous wayfinding and voyaging represented in the widely used knowledge representation, organization and discovery systems including WorldCat and the WoS citation database. Analysis of the retrieved resources revealed versatile use of the term *wayfinding*, such as its use in the context of the built environment, that is, architecture and graphics for humans' spatial orientation as well as wayfinding and invasion of indigenous fauna by nonindigenous species. Due to lack of system subject qualifiers to distinguish between various uses of the terms of *wayfinding* and *voyaging*, a research assistant further refined searches using such terms as *waka* (canoe in Maori language), E Ala Voyaging Academy, Mau Piailug (famous master navigator), Hokule'a (name of a canoe), The Polynesian Voyaging Society, *ho'okele wa'a* (traditional navigation in Native Hawaiian language), *palu* (Polynesian term for "master navigator"), *hekenga* (migration in Maori language) and *Kanaka Maoli* (Native Hawaiian in Hawaiian language) to increase the precision of the search results. The research assistant discussed all findings with another researcher and further refined the search results as needed. In total, we found 354 records, 54 associated with the concept of wayfinding and 300 with the concept of Polynesian voyaging.

To determine how the indigenous practices of wayfinding and voyaging are represented in knowledge organization systems, we closely analyzed assigned classification numbers, both DDC and LCC numbers. In order to understand patterns and trends in scholarly publications on indigenous wayfinding and voyaging, we also analyzed WoS indexed publications.

### Results and discussions

Analysis of the 354 records associated with the concept of wayfinding and voyaging involved consideration of subject headings and classification of resources. A breakdown of the representation of the concepts of wayfinding and Polynesian voyaging in subject representation and classification systems is provided further.

#### *Knowledge representation and organization systems: Library of Congress Subject Headings (LCSH)*

Examination of subject headings associated with the concept of wayfinding and voyaging did not show any direct subject term. The closest LCSH term associated with the indigenous practice of wayfinding is *Astronomy, Polynesian* or more general terms such as *Navigation; Astronomy, Nautical; and Celestial Navigation*.

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*Knowledge representation and organization systems: classification*

Neither DDC nor LCC provides dedicated class numbers for the concept of indigenous wayfinding and voyaging. Analysis of the assigned class numbers associated with the sampled resources revealed 120 resources that were assigned DDC numbers (42 unique class numbers) and 279 records that were assigned LCC numbers (55 unique class numbers). The DDC class 527 Celestial Navigation (Science–Astronomy–Celestial Navigation) and 343.0966 Navigation (Social Sciences – Law – Branches of Law. . . – Military, defense. . . – Control of public utilities – Specific kinds of transportation and ground transportation – Water Transportation – Facilities, operations, services – Navigation) can be considered the classes that come closest to representation of indigenous practices of wayfinding and voyaging applying the DDC tables for ethnicity. However, the assigned DDC class numbers were quite scattered – ranging from Social Sciences (300), Science (500) and Technology (600) to History and Geography (900) (see [Table 1](#)). Under Social Sciences, indigenous wayfinding and voyaging were classified as leadership, transportation and nomads, whereas under Science they were referenced in star catalogs and as celestial navigation and islands and reefs. The Walt Disney Animation Studio’s recently released depiction of ancient practices of wayfinding, *Moana*, was classified under Animated Films (791.4334) and Film Music (781.542) in the main category of Arts and Recreation. Voyaging and wayfinding were also significantly referenced within the DDC class of History and Geography, emphasizing the geographical focus of the concept (see [Table 1](#)).

Similarly, the LCC-assigned class numbers were distributed across History of Oceania, Geography, Astronomy and Naval Architecture (see [Table 2](#)).

This analysis suggests that by scattering the representation and organization of indigenous practices of wayfinding and voyaging across various, often very broad and unrelated, classes, such as the DDC class 993.01 (Early history to 1840) or the LCC class E109.P65 (America – Discovery of America and early explorations – Pre-Columbian period – Special – Other, A–Z – Polynesian), both classification systems skewed the coherence of the record, resulting in not only misrepresentation but also trivialization of the indigenous concepts.

*Knowledge representation, organization and discovery systems: WoS*

Including over 100 years of comprehensive coverage and more than 1bn cited references from over 18,000 high-impact journals, 180,000 conference proceedings and over 80,000 scholarly books, the WoS is considered as one of the most powerful citation databases ([Meho and Yang, 2007](#)). This study utilized a variety of keywords to retrieve relevant literature, including Hawai’i and navigation or voyaging or wayfinding; Pacific and navigation or voyaging or wayfinding; Polynesian navigation or voyaging or seafaring; Polynesian Voyaging Society; Vaka Moana; Vaka Taumoko; and Hokulea or Hokule’a.

Analysis of publications indexed in WoS databases revealed 43 publications associated with wayfinding and voyaging. These publications were predominantly categorized in the WoS categories of anthropology (22) and archaeology (9) (see [Table 3](#)). Resources investigating application of indigenous practices of wayfinding and voyaging in computer gaming were categorized under *Computer Science Cybernetics* and *Computer Science Software Engineering*, whereas theatrical performance was categorized under *Theater*.

Similarly, WoS also identified wayfinding and voyaging in the research areas of anthropology (22), archaeology (9) and science technology (8) (see [Table 4](#)).

Analysis of most cited authors in WoS revealed that Ben Finney (85 citations), followed by David Lewis (84 citations), Atholl Anderson (68 citations) and Richard Feinberg (27) were the most prolific authors on the topic.



		Renaissance of wayfinding and voyaging
300-Social sciences	303.34 Leadership 303.4832 Transportation 304.83–304.89 Migration 305.8009 Historical, geographic, persons treatment 305.906918 Nomads 306.09 Social history 320.41–320.49 Geographic treatment 325.32 Imperialism 387.2043 Sailing ships, . . . 387.21 Biremes, . . . 398.2 Folk literature	<hr/>
500-Science	508.4 Natural history – Europe 523.80216 Star catalogs 527 Celestial navigation 551.42 Islands and reefs 569.9 Homo and related genera	
600-Technology	623.82 Nautical craft 623.89 Navigation 629.13251 Navigation	
700-Arts and Recreation	741.5973 Comic books – United States, . . . 781.542 Film music 791.4334 Animated films 791.4372 Single films	
900-History and Geography	909.2 13th century, 1200–1299 910 Geography and travel 910.452 Shipwrecks 910.41 Trips around the world 910.45 Ocean travel and seafaring adventures; 970.01 Early history to 1599 910.4 Accounts of travel and facilities for travelers 910.91 Geography of and travel in areas, regions, places in general; 919 Geography of and travel in Australasia, Pacific Ocean islands, Atlantic Ocean islands, Arctic islands, Antarctica and on extraterrestrial worlds 919.5 New Guinea – geography 919.6 Polynesia – geography 930.1 Archaeology 970.012 Chinese claims 993 New Zealand 993.01 Early history to 1840 996 Polynesia and other Pacific Ocean islands 996.3 Southeast central Pacific Ocean islands 996.9 Hawaii and neighboring north central Pacific Ocean islands	

**Table 1.**  
DDC numbers assigned to represent the concept of wayfinding and Polynesian voyaging

The distribution of the 43 WoS indexed publications for the period from 1959 through 2016 did not reveal a significant spike in scholarly publications. The highest number of publications (five) were indexed in 2017.

### Conclusions

The concept of ethical knowledge representation, organization and discovery systems assumes recognition of the rich cultural values, beliefs and histories of diverse population of individuals and communities. Therefore, the indigenous perspective should be one of foundational blocks of ethical systems of knowledge representation, organization and discovery systems. Regrettably, the findings of this study do not support this assumption.

CB5	History of civilization – Collected works (nonserial) – Several authors
CC72.4	Archaeology – Philosophy. Theory – Social archaeology
DS811	History of Asia–Japan – Description and travel – 1946–1989
DU1	History of Oceania (South Seas) – Periodicals. Societies. Serials
DU17	History of Oceania (South Seas) – General works
DU19	History of Oceania (South Seas) – South Sea description and travel. Voyages – General history of voyages and discoveries
DU20	History of Oceania (South Seas) – South Sea description and travel. Voyages – Through 1800
DU28	History of Oceania (South Seas) – Social life and customs. Social antiquities. Ethnography
DU410	History of Oceania (South Seas) – New Zealand – Description and travel – Through 1839
DU423.A15	History of Oceania (South Seas) – New Zealand – Ethnography – Maori – Study and teaching
DU510	History of Oceania (South Seas) – Polynesia (General)
DU622	History of Oceania (South Seas) – Smaller island groups – Hawaiian Islands. Hawaii – Gazetteers. Handbooks. Guidebooks
DU624	History of Oceania (South Seas) – Smaller island groups – Hawaiian Islands. Hawaii – Antiquities
DU624.5	History of Oceania (South Seas) – Smaller island groups – Hawaiian Islands. Hawaii – Social life and customs. Civilization. Intellectual life
DU624.65	History of Oceania (South Seas) – Smaller island groups – Hawaiian Islands. Hawaii – Ethnography – Polynesian Hawaiians
DU625.8.A-Z8	History of Oceania (South Seas) – Smaller island groups – Hawaiian Islands. Hawaii – History – Study and teaching – General works
DU900	History of Oceania (South Seas) – Smaller island groups – Tubuai Islands
E109.P65	America – Discovery of America and early explorations – Pre-Columbian period – Special – Other, A–Z – Polynesian
G420.A–Z	Geography (General) – Special voyages and travels – Modern, 1521 – Circumnavigations (Expeditions) – By explorer or traveler, or if better known, by name of ship, A–Z
G477	Geography (General) – Special voyages and travels – Modern, 1521 – Travels in several parts of the world – America and the Pacific
G88	Geography (General) – History of geography – Ancient – Voyages
GB471	Physical geography – Geomorphology. Landforms. Terrain – Islands – General works
GN303	Anthropology – Ethnology. Social and cultural anthropology – Collected works (nonserial) – Several authors
GN370	Anthropology – Ethnology. Social and cultural anthropology – Migrations of peoples (General)
GN387	Anthropology – Ethnology. Social and cultural anthropology – Collected ethnographies – Ethnographies of special categories of peoples – Nomadic peoples
GN440	Anthropology – Ethnology. Social and cultural anthropology – Cultural traits, customs and institutions – Technology. Material culture – Transportation – Transportation by water. Navigation – General works
GN440.2	Anthropology – Ethnology. Social and cultural anthropology – Cultural traits, customs and institutions – Technology. Material culture – Transportation – Transportation by water. Navigation – Canoes
GN662	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – General works
GN663	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – General special
GN670	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – By country, island or island group – Polynesia (General)
GN671.A–Z	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – By country, island or island group – Other countries, islands or island groups, A–Z

**Table 2.**  
LCC numbers assigned to represent the concept of wayfinding and Polynesian voyaging

(continued)

CB5	History of civilization – Collected works (nonserial) – Several authors
GN671.C3	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – By country, island or island group – Other countries, islands or island groups, A–Z – Caroline Islands
GN671.M3	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – By country, island or island group – Other countries, islands or island groups, A–Z – Marquesas Islands
GN671.S6	Anthropology – Ethnology. Social and cultural anthropology – Ethnic groups and races – By region or country – Australia and Pacific islands – By country, island or island group – Other countries, islands or island groups, A–Z – Solomon Islands
GN799.B62	Anthropology – Prehistoric archaeology – By special topic – Other special topics, A–Z – Boats
GN855.A–Z	Anthropology – Prehistoric archaeology – By region or country – Asia – By region or country, A–Z
GN871	Anthropology – Prehistoric archaeology – By region or country – Australia and Pacific islands – General works
GN875.A–Z	Anthropology – Prehistoric archaeology – By region or country – Australia and Pacific islands – By country, island or island group, A–Z
HM1261	Sociology – Social psychology – Social influence. Social pressure – Leadership – General works
M1527.2	Music – Vocal music – Secular vocal music – Dramatic music – Motion picture music – Excerpts
N7433.4.A–Z	Visual arts – Miscellaneous genres and media, not limited by time period, style, place or subject matter – Artists’ books – Special artists, A–Z
PN1997.2.A–Z	Drama – Motion pictures – Plays, scenarios, etc. – Individual motion pictures – Motion pictures produced 2001- . By title of motion picture, A–Z
PN6747.A–Z	Collections of general literature – Comic books, strips, etc. – By region or country – United States – Individual authors or works, A–Z
PS153.I52	American literature – History of American literature – Special classes of authors – Other classes of authors, A–Z – Indians, American
QA13.5.A–Z	Mathematics – Study and teaching. Research – By region or country – United States – By region or state, A–Z
QB65	Astronomy – Atlases and charts
QB802	Astronomy – Descriptive astronomy – Stars – Constellation figures. Star names
QB982	Astronomy – Cosmogony. Cosmology – Popular works
QP443	Physiology – Neurophysiology and neuropsychology – Senses. Sensation. Sense organs – Perceptual process – Space
VK555	Navigation. Merchant marine – Science of navigation – General works – 1801-
VM156	Naval architecture. Shipbuilding. Marine engineering – Theory of the ship. Principles of naval architecture – General works
VM321	Naval architecture. Shipbuilding. Marine engineering – Special types of vessels – Small craft – General works
VM353	Naval architecture. Shipbuilding. Marine engineering – Special types of vessels – Small craft – Boats. Rowboats, small sailboats, etc. – Special – Canoes
VM5	Naval architecture. Shipbuilding. Marine engineering – Congresses

Table 2.

Rather, they echo [Simpson’s \(2004\)](#) argument that the traditional classification systems can be viewed as sites of the ultimate undoing of indigenous knowledge by “locking its interpretation in a cognitive box delineated by the structure of a language that evolved to communicate the worldview of the colonizers” ([Simpson, 2004](#), p. 380). We also conclude that the indigenous tradition of noninstrumental wayfinding and voyaging of Pacific islanders has been significantly ignored in knowledge representation, organization and discovery systems. By dispersing the concept of indigenous wayfinding and voyaging across various

Web of science category	Number of resources
Anthropology	22
Archaeology	9
Multidisciplinary sciences	8
Area studies	2
Oceanography	2
Astronomy astrophysics	1
Computer science cybernetics	1
Computer science software engineering	1
Education educational research	1
Geography	1
Geosciences multidisciplinary	1
History	1
Humanities multidisciplinary	1
Theater	1

**Table 3.**  
Distribution of WoS  
indexed resources  
across the Web of  
Science categories

Web of science category	Relevant studies, #
Anthropology	22
Archaeology	9
Science technology other topics	8
Area studies	2
Oceanography	2
Arts humanities other topics	1
Astronomy astrophysics	1
Computer science	1
Education educational research	1
Geography	1
Geology	1
History	1
Theater	1

**Table 4.**  
Distribution of WoS  
indexed resources  
across the Web of  
Science research areas

often unrelated classes, the classification systems have destroyed any coherence in the record and thus misrepresented and trivialized the indigenous practice of wayfinding and voyaging.

Taking into consideration the various contexts in which the concept of wayfinding is used, one of the relatively simple solutions for facilitation of accurate representation and organization of indigenous practices of wayfinding could be assignment of subject qualifiers to distinguish among various contexts in which this concept is used.

While rich representation of and equal access to diverse cultural heritages has long been considered an ethical and essential mission of library and information professionals, there are still considerable shortcomings in efforts to accomplish this mission. Echoing Baybayan and colleagues' (1987) call, library and information professionals should practice due care and consideration in the representation of the practices of indigenous peoples to foster a better understanding and appreciation of the rich knowledge that indigenous cultures can provide for an enlightened society.

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Renaissance of  
wayfinding  
and voyaging

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